Transforming surfaces ....and beyond



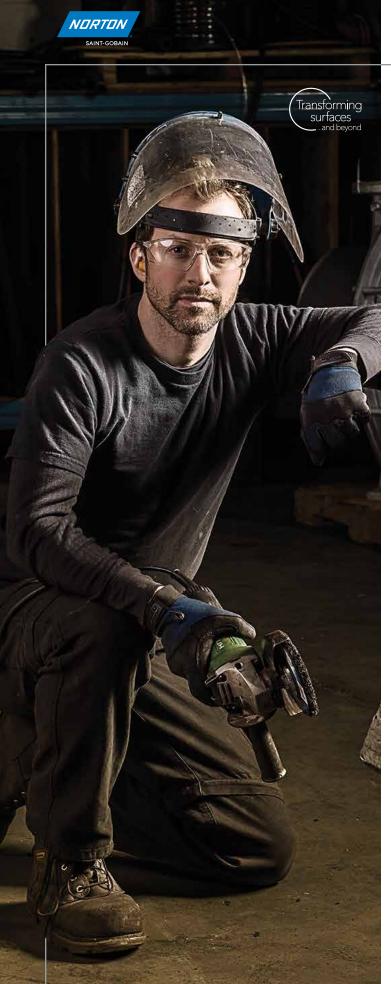
# CATALOG #7362

FULL-LINE STOCK CATALOG ABRASIVE PRODUCTS FOR THE INDUSTRIAL MARKET





BECAUSE **RIGHT CHOICES** MATTER™



## Our Mission

We offer powerful, precise, user-friendly solutions, which enable our customers to cut, shape and finish all materials even in the most complex and challenging applications. By working closely with end-users and our grinding expert partners, we design and provide customized solutions to secure the best option for performance, cost and safety.

## Our Expertise

Norton is the leading brand of Saint-Gobain Abrasives, with more than 135 years of experience in manufacturing abrasives.

We are committed to providing access to our expert's knowledge whenever you need it. Whether it is through our <u>Process Solutions Program (PSP)</u>, ongoing training programs, or through on-line expert articles and white papers you can stay up-to-date with Norton where and when you need it.

Bring us your grinding challenges, we have solutions!

## **Our Commitment**

You be the final judge in performance! We are so confident of the superior performance of our abrasive products, as recommended for specific applications, that we invite in-plant tests against any other brand of abrasive product on the market. Contact your Norton Representative to find out more about our No Risk test policy or visit nortonabrasives.com



## Why Tiers Matter

At Norton we believe in delivering right choices that matter. Our abrasives are classified in BEST, BETTER, and GOOD performance/ price tiers to help you choose the right product for your specific application every time.

#### BEST

Our BEST tier products are designed for the customer who is seeking the highest productivity at the lowest total cost.

#### BETTER

Dur BETTER tier products provide an excellent blend of performance and price.

#### GOOD

And, our GOOD tier products promise the highest quality you expect from the Norton name with a low initial price.

If you need help determining the right tier for your specific needs, don't hesitate to contact us directly or reach out to your Norton sales representative.

## Go Further

Visit our website at <u>nortonabrasives.com</u> for a more comprehensive outline of products, safety and application information. We continually update it with our most current information.

Connect with us:





## METAL FAB CUTTING AND GRINDING

#### Rough Grinding

neugh annang	
Depressed Center Wheels 8	6
Cut-off Wheels	
Small Diameter Reinforced Cut-off 18	6
Chop Saw Reinforced Cut-off	į
High-Speed Reinforced Cut-off	6
Stationary Saw Reinforced Cut-off 30	l
Toolroom Cut-off	
Metallurgical Non-Reinforced Cut-off33	,
Rail Reinforced Cut-off	
Foundry Wheels	
Foundry Cut-off	į
Portable Snagging	'
Floorstand and Swingframe Snagging41	

#### WIRE BRUSHES

Wire Brush Basics .						.44
Wire Cup Brushes .						.46
Wire Wheel Brushes						.48
End Brushes						.51
Tube Brushes						.53
Hand Brushes						.55
Nylon Brushes						. 56

#### COATED AND NON-WOVEN ABRASIVES

Coated Abrasive Basics	. 58
Non-Woven Basics	.61
Discs	
Fiber Discs	.64
Flap Discs	.69
Non-Woven Discs	
Non-Woven Depressed Center Discs	
Non-Woven Arbor Hole Discs	
Non-Woven Standard Back-up Pad Discs	3 . <b>83</b>
Non-Woven Speed-Change Discs	.85
Non-Woven Hook and Loop Discs	. 86
Cloth PSA Discs and Accessories	. 87
Paper Discs	. <b>90</b>
Mesh Discs	
Film and Foam Finishing Discs	
Flexible Diamond-Coated Discs	-
Sanding Accessories	103
Wheels	
Non-Woven Convolute Wheels	106
Non-Woven Unified Wheels	110
Belts	
File Belts	113
Portable Belts	
Narrow Belts	118
Wide Belts	124
FastTrack Service Made-to-Order Belts .	-
Non-Woven Belts	127
Rolls / Sheets	
Cloth Rolls and Sheets	130
Paper Rolls and Sheets	
Film Sheets	
Non-Woven Rolls	144
Sponges / Hand Pads	
Abrasive Sponges	145
Non-Woven Hand Pads and Sponges	
Foam Hand Pads.	149
Flexible Diamond-Coated Hand Pads	150

#### PORTABLE TOOLS AND SPECIALTIES

Mini Angle Sander	. 152
Mini Flap Discs	. 153
Quick-Change Discs	. 154
Non-Woven Quick-Change Discs	
Quick-Change Disc Accessories	
Die Grinder	
Cartridge Rolls	
Spiral Rolls.	
Square & Cross Pads,	. 175
Overlap Slotted Discs	178
Spiral Bands	
-	
Tapered Cone Points	
Mandrels	
Test Kits	
Non-Woven Specialties	. 188
Non-Woven Disc Wheels	. <b>189</b>
Flap Wheels	. <b>190</b>
Non-Woven Flap Wheels	. <b>201</b>
Bore Polishers	. 203
FlexDrums	. 205
Carbide Burrs	

#### PRECISION OFFHAND/PORTABLE

Mounted Points		. 214
Sharpening Stones		. 219
Retail Dressing Sticks and Stones.		. 233
Rubbing Bricks		234

#### PRECISION GRINDING WHEELS

Bonded Abrasives Basics	226
Bench and Pedestal Wheels	238
Sawgumming Wheels	242
Toolroom Vitrified Wheels	243
Large Surface Grinding Wheels	259
Surface Grinding Segments	260
Cylindrical Wheels	262
Centerless and Feed Wheels	265
Creepfeed Blank Stock FastTrack Service 2	269
Quantum Blank Stock FastTrack Service	271
55A Blank Stock FastTrack Service 2	272
Gear Wheel Blank Stock FastTrack Service	273
ID, Race and Superfinishing Wheels	
and Sticks	275

## DRESSING SOLUTIONS

Diamond Stationary Dressing Tools 278
Single Point Tools
Toolroom Tools
Multi-Point (Grit) Tools
High Performance Grit Tools 289
Blade Tools
Form Tools
Cluster Tools
Accessories
Diamond Stationary Fliesen Tools 295
Diamond Rotary Dressing Tools 298
Truing Devices
Dressing Sticks
Truing and Dressing Guide 302

# GENERAL INFORMATION Table of Contents

#### DIAMOND AND cBN ABRASIVES

Diamond / cBN Basics	304
Diamond / cBN Wheels	309
B99 Express Resin Bond Wheels	319
Diamond / cBN CNC Wheels	321
Electroplated Products	327
Diamond Lapping Compound	336

#### CONSTRUCTION PRODUCTS

Diamond Blades	88
Diamond Cup Grinders	3
Diamond Core Bits	4
Equipment	5

#### FINISHING PRODUCTS

Buffing Compounds 35	0
Buffing / Finishing Compounds 35	2
Buffing / Protecting Compounds 35	3
Applicator Pads & Accessories 35	4
Micro-Fiber Cloths	6
Masking Products 35	7

#### SAFETY

Safety Icons	. 6
Safety Leadership / References	360
Safety Icon Meanings	361
Coated Abrasive Do's and Don'ts	363
Portable Grinding Safety	364
Starting a Grinding Wheel / Ring Test	366
Wheel Speed Conversion Table	367
Silica Precautions	368

#### **GENERAL INFORMATION**

Catalog Navigation .						. 4
Machine Index						. 4
Product Warranties						369
Trademarks						369
Abrasive Solutions .						370
Contact Information						371
My Abrasives						371

## GENERAL INFORMATION Machine Index and Catalog Navigation

9. Fixed Rail Saws

Rail Reinforced Cut-off Wheels

10. Flexible Shaft Motors



d Belts	
edestal Grinders Immeter Flap Wheels	
Grinders nd Belts118–123 Ielts127–129	
achines -off Wheels25-27	
3 ides	Vicit
ill Grinders 	E
I Cut-off Wheels	

















	Non-Woven Unified Wheels	10–112	
	11. Hand Finishing Applications Coated Abrasive Paper Discs	30–146 146 356-358 144-146 219-234 300-302 336	
	12. High-Speed Gas or Electric Sa High-Speed Reinforced Cut-off Wheels	. 28-29 338-342	
]	13. Horizontal/Straight Shaft         Portable Grinders         Coated Abrasive Flap Wheels with         Arbor Holes (3-1/2"-5" wheels).         Cones and Plugs         Mounted Points         Non-Woven Disc Wheels         Non-Woven Unified Wheels         Snagging Straight Wheels	6–37, 39 214–218 189 201-202 10–112	
	14. In-Line Drum Sanders         Coated Abrasive Portable Belts         Non-Woven Portable Belts		
	15. Jitterbug Sanders Coated Abrasive Sheets and Rolls Non-Woven Rolls.		

Non-Woven Hand Pads ..... 147-148

## Easy-to-Follow Page Guide

Key Questions to Simplify Product Selection

Am I in the right section?

- A Product
- **B** Category overview

NDRTDN

SAINT-GOBAIN

- **C** General attributes
- D Correct machine use

How do I narrow choices?

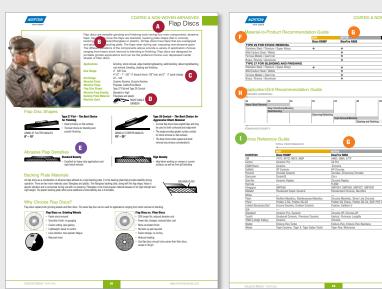
E Product design variations

How do I match my end-user needs?

- **F** Application recommendations
- G Best/Better/Good performance color coding
- H Full application / grit guide

How do I match or upgrade from a competitive product?

Cross reference guide

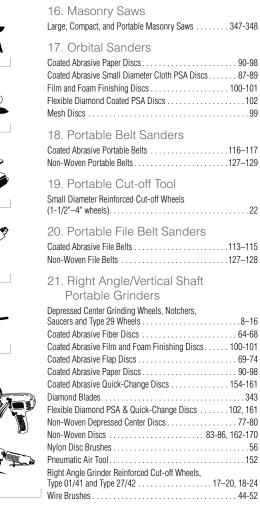


Flap Discs





## **GENERAL INFORMATION** Machine Index and Catalog Navigation



22	
<u> </u>	





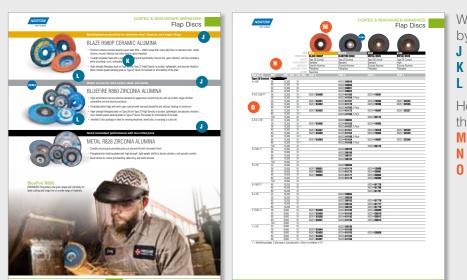


28





22. Right Angle/Vertical Shaft Portable

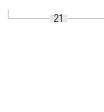


#### What are the Leading Products by Tier?

- J Tiers by color-coding: Best, Better, Good K Features and benefits
- L New, improved, and/or expanded offering

How Do I Find the Right Product for the job?

- M Visual identification
- N Key product attributes
- 0 Full specification and product number



20 -



## GENERAL INFORMATION Safety Basics



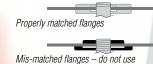
Visit our newly updated safety website for safety guides, safety data sheets, videos and lots of additional safety resources at nortonsga.us/safety

# **WARNING**

Improper use of abrasive products might cause grinding wheel breakage and serious injury. Comply with ANSI B7.1, OSHA and Safety Guide furnished with package. Don't overspeed, abuse, or drop wheel. Always use a guard, personal protective equipment and proper mounting procedures.



Speeds Check machine spindle speed and speed listed on machine against safe maximum operating speed marked on the grinding wheel. Do not overspeed the wheel.





When mounting most grinding wheels, use flanges of equal diameter and bearing surface. For exceptions, see ANSI B7.1.



Safety Gloves Grinding applications are conducted in harsh environments. The use of proper fitting gloves is recommended.



Wheel Guard Always use the wheel guard as supplied by the machine manufacturer, in the proper position.



Do Not Use Damaged Wheel Always check each wheel for cracks or damage before use. Never use a damaged wheel.



Eye/Face Protection Always wear governmentapproved face and eye protection when using abrasive products.



Hearing Protection Use of abrasive products can create elevated sound levels. Hearing protection must be worn where required.



Safety Guides, SDS and Wheel Warning Messages Before using any abrasive materials, READ:

- The Safety Guides
- Wheel Warning Messages
- Safety Data Sheets (SDS)

All Norton products provide information pertaining to safe use. Please take the time to read it carefully. Contact suppliers of the workpiece and abrasive materials for copies of the SDS if one is not readily available. Norton abrasives SDS can be obtained on nortonsga.us/safety



#### **Dust Protection**

Exposure to dust generated from workpiece and/or abrasive materials can result in lung damage and/or other physical injury.

Use dust capture or local exhaust as stated in the SDS. Wear government-approved respiratory protection and eye and skin protection. Failure to follow this warning can result in serious lung damage and/or physical injury.

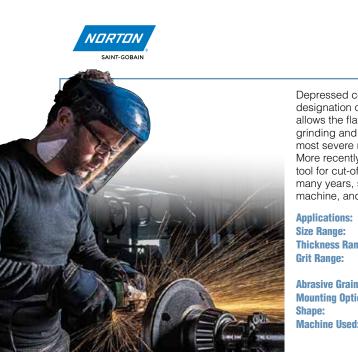
This is a general dust warning and does not cover specific situations. For more information, refer to the SDS dust warning provided with your products, and workpiece.

## Please see pages 359 - 368 for additional safety information

# Metal Fab Cutting and Grinding

# when the going gets rough RELY ON NORTON INNOVATION

For stock removal, rough blending, cleaning castings and welds...Norton depressed center wheels are constructed to tackle the demanding work of all material types.



Depressed center wheels may also be referred to as raised hub wheels or by their shape designation of "Type", with Type 27 being the most popular. The depressed center design allows the flange/lock nut to recess within the wheel so that it can be used for various grinding and cutting applications. Depressed center wheels are designed to handle the most severe right angle grinding applications from heavy stock removal to rough blending. More recently, depressed center wheels have been designed to increase the utility of the tool for cut-off applications. While large right angle grinders (7" & 9") have been around for many years, small or mini grinders that handle 4", 4-1/2", 5", and 6" wheels have made this machine, and wheel category, the most popular in power tools.

	Grinding, stock removal, edge chamfering, beveling, weld blending, and cutting-off 2" - 9"
nge:	.040" – 1/4"
-	24 – 46 grits for stock removal;
	60, 80 grits for blending and finishing
n:	Ceramic Alumina, Diamond, Zirconia Alumina, Aluminum Oxide, Silicon Carbide
ions:	Plain hole (3/8", 5/8" and 7/8") and mount (5/8"-11)
	Туре 27, Туре 28, Туре 29
d:	
	RIGHT ANGLE GRINDER

How to Pick the Right Wheel

<b>DEPRESSED CENTER WH</b>	EEL DESCRIPTION CO	DES	
BLANK = All Purpose	FC = Fast Cut	HD = Heavy Duty	INOX/SS = Contaminant Free
= Aluminum	= Foundry	Stainless	Steel / Metal
DESCRIPTION CODE DEFI	INITIONS		
BLANK = All Purpose	W	here an excellent blend of cut	rate and life is needed.
FC = Fast Cut	W	here fast stock removal is ne	eded, or the application only allows for low-pressure or under-horsepowered grinders.
HD = Heavy Duty	Tr	iple reinforced for the most a	ggressive foundry applications
INOX/SS = Contaminat	e Free Co	ontain <0.1% iron. sulfur or c	hlorine for rust-free and corrosion-free results. Will not contaminate stainless steel.

## How to Pick the Right Mount

Most wheel sizes come with a plain hole or a discard mount option. While the plain hole has a small, initial cost advantage, the discard mount can provide a labor cost advantage with the quicker wheel change.



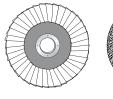
#### Mini-Mount Hub

Our unique mini-mount hub used on 4-1/2" and 5" depressed center wheels provides up to 30% more wheel life because the hub covers just a small surface area, providing maximum grinding area exposure and usage.

Standard throw-away hub size

## Why Choose Depressed Center Wheels?





#### Depressed Center Wheels vs. Flap Discs or Fiber Discs

- Up to 5X life over flap discs, less downtime and inventory
- · Up to 100X life over fiber discs, less downtime and inventory
- Rigidity for severe operations and high power grinders
- 1/8" wheels can be used for cutting and grinding
- · Can be used to grind inside corners at outer edge of wheel



How To Mount a Depressed Center Wheel: Mounted Hub vs No Hub **Nortonsga.us/7hc5m** 



## Type-To-Application Recommendation Guide

#### Wheel Type/Thickness Applications



		90° ANGLE	30° ANGLE	15° ANGLE
TYPE 27	Type 27 wheels are essentially straight wheels that have a "depressed center/ raised hub". Different types of fiberglass reinforcement mesh give the product stability for use on the periphery, on the face, or a combination of the two.			
.040", .045", and 1/16" Type 27/42 RightCut	Cutting only, where fast cutting and low kerf loss are desired	•		
3/32" and .125" Type 27/42	For tough cutting and notching applications where stability is important; cutting and cleaning burr-free narrow root pass welds	•		
1/8" Type 27	For multiple applications ranging from cutting-off, notching and light-duty side grinding	•	•	
1/8" Pipe Notcher Type 27	2-1/2 pieces of reinforcement; durable face grinding; root pass grinding without removing pipe material	•	•	
1/8" Type 27 Flexible	For light stock/blending/finishing/polishing		•	
.140" and 1/8" Type 27 Foundry Notchers	Triple-reinforced for grinding steel and dirty/scale-covered castings; removing and cleaning gates and risers	•	•	
1/4" Type 27	For light- to heavy-duty grinding on the bottom/face of the wheel		•	
1/4" Type 27 Foundry Snaggers	Designed for cleaning parting lines, pads and slag		•	
1/4" Type 27 Heavy-Duty Foundry	Triple-reinforced for the most aggressive foundry applications		•	
TYPE 28	Type 28 wheels are constructed with a downward angle built into the grinding section to facilitate a flatter grinding angle. These wheels can only be used on the face and never on the periphery for cutting-off.			
1/4" Type 28	Smooth, gouge-free grinding at shallow angles			٠
TYPE 29	Type 29 wheels are constructed with an upward angle built into the grinding section to provide full face contact for light stock removal and blending operations. These wheels can only be used on the face and never on the periphery for cutting-off.			
1/8" Type 29 Flexible, AVOS	Polishing and blending applications			•

## Material/Application-To-Product Recommendation Guide

	BEST	BETTER		GOOD		
	Quantum3	BlueFire	Norton for Aluminum	Gemini	Metal	
CUTTING						
Mild Carbon / High Tensile Steel	•	•		•	•	
Stainless Steel / Alloys	•	•		•	•	
Contaminate Free*		FC/INOX/SS		INOX/SS		
Cast Iron	•			•		
Aluminum / Bronze / Brass			•			
NOTCHING						
Mild Carbon / High Tensile Steel	•	•		•	•	
Stainless Steel / Alloys	•	•		INOX/SS		
Contaminate Free*		FC/INOX/SS		♦ INOX/SS		
Cast Iron	•	Foundry		•		
Aluminum / Bronze / Brass			•			
GRINDING						
Mild Carbon / High Tensile Steel	•	•		•		
Stainless Steel / Alloys	•	•		•		
Contaminate Free*	•	FC/INOX/SS		INOX/SS		
Cast Iron		Foundry		•		
Gray Iron	•	Foundry		•		
Aluminum / Bronze / Brass			•			
BLENDING						
Mild Carbon / High Tensile Steel				◆ Flexible		
Stainless Steel / Alloys				◆ Flexible		
Aluminum / Bronze / Brass			•	◆ Flexible		
Fiberglass / Plastic				•		

Typical Steel, Stainless Steel, Cast Iron Products: Angle Iron, Bar Stock, Ductile Pipe, Channel Iron, Decking, Rebar, I-Beams, Rail Steel, Studs, Tubing, and Welds

\* For use in nuclear and food industry applications that require contaminant free (<0.1% iron, sulfur or chlorine)



## **Cross Reference Guides**

#### Type 27 and 28 – 1/8" and 1/4"

	BEST	BETTER		GOOD				BETTER	
NORTON	Quantum3	BlueFire	BlueFire FC/INOX/SS	Gemini	Gemini Fast Cut	Gemini SS	Metal	BlueFire Foundry	Norton ALU
3M	Cubitron II	Silver, High Perform., Green Corps	-	-	-	-	-	-	-
Arc	-	-	-	Predator A24R	-	-	-	-	-
Bullard	TA24S	ZA24R Competitor	ZA24R	A24R	A24N	A46Q	A24R CompetitorC24R	-	AL36N
Camel	-	_	ZA24T	A24R	Ultra A24-N-BF, A24T Super Quickie Cut	WA24S	A24N, R&T Fast CutC24R	-	A30N, Fast Cut
DeWalt	XP Ceramic	XP, HP	-	-	-	HP SS	Metal	-	-
Flexovit	Flexon ZA24P, ZA30T, Flexon ZA20Q	Metalhog, AXT24S	-	High Perform. A24/30T	High Performance A30S, Specialist A30Q & R	Free Grind A30Q	High Perform. C24/30P	Flexon ZA16U	HP Aluminum
Vletabo	M-Calibur	ZA24T	-	A24R & T	A24N	A360	C24N	-	A36M
Pearl	_	-	Z24T	Premium Metal A24S, Redline Max A/WA24S	Premium Metal A24R, Redline Max A/WA24R	WA24R, SRT24	Silver Line A24R & & Silver Line C24S	-	D.A. Series AL24M
Pferd	SG-Elastic Ceramic CO24Q	ZA SGP, ZAT SGP, SG-Elastic	ZA R SGP, Z-SG	A-PS, A-SG	-	A-SG INOX, A-PS INOX	S-SG, Masonry	-	A-SG ALU
Sait	The Ultimate Grind, Saitech Ultimate Perform, Saitech Attacker, Pipeline	Z24R Z-Tech	Stainless	A24R, A24Turbo	A24N	XA24Q	A24T, C24N	CA24R - Foundry	A46N-ALU
Tyrolit	-	ZA24P- BFX	ZA24N-BFX	A30S & Q-BFX	A30R-BFX	A30-BF INOX	A30-BF	ZZA24R-BFX	A36N-BFX WA46-BF
Walter	-	Allsteel XX, Allsteel	Double-X	HP	-	Stainless	-	-	A30 Zip ALU
Weiler	Tiger Ceramic	Tiger Zirc, Tiger LL	Tiger Inox	Wolverine A24R	-	-	Wolverine A24N	-	Tiger ALU 24F

#### Type 27 - Flexible 1/8"

	GOOD
NORTON	Gemini Flexible
Bullard	Flexlite AC
Camel	FGF, Special Wheel
Flexovit	Flexcel
Metabo	Z-Plus
Pearl	Flexible AC
Pferd	SG-Flex
Sait	Challenger II
Walter	Flexcut









# QUANTUM3 CERAMIC ALUMINA

- 100% next-generation, uniquely-shaped, ceramic alumina abrasive grain and tough new bond system result in 5-6 times the life of aluminum oxide wheels and up to 100% increase in performance and life over competitive ceramic wheels
- · Significantly increase production, for the lowest total grinding cost of any wheel in the market place today
- Better operator control, improved comfort, and exceptional finished part quality with a more robust, sharper, yet
  smoother cutting action; wheels don't grab or dig

Best for metal plate, pipe, tubing, cast iron, carbon and mild steel, foundry and welding applications, and ceramics

# DIALAST DIAMOND WHEELS

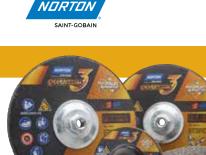
- A combination of high-quality diamond and advanced brazed single-layer bonding technology for extra-long life versus conventional abrasives or other vacuum-brazed diamond tools
- Retains diamond grains and wheel shape for full life with low sparks, while keeping a continuous grinding depth for
  exceptional wheel life; less blade changes reduce downtime and labor costs
- Environmentally friendly design generates minimal dust for less clean-up and safer working conditions



#### Better choice for stainless steel, carbon steel, alloys and gray iron

# BLUEFIRE ZIRCONIA ALUMINA / A/O BLEND

- A blend of the most advanced zirconia alumina and premium aluminum oxide abrasives delivers 2 to 3 times the life of aluminum oxide wheels
- · Broad utility; from light-to heavy-pressure applications
- · Engineered specifically to deliver fast cut rate; excellent blend of performance and price







Better choice for aluminum

# NORTON FOR ALUMINUM

- Extra-friable and self-sharpening, allowing operators faster and aggressive grinding time
- Non-loading, specially designed bond, allowing fast, free-cutting with long- lasting performance
- · Contaminant free, no need for waxes or lubricants



#### Good choice for steel and ferrous metals as well as specialty applications

# GEMINI ALUMINUM OXIDE

- Upgraded with a new premium aluminum oxide grain for 15% faster cut rate
- High-performance bond and wheel hardness are designed for fast cut and up to 60% more life and metal removed per wheel
- Good choice for grinding 400 series stainless and hard and soft carbon steel applications including heavy stock removal, weld repairs, flashing, multi-pass welding for pipe fitting, and notching



#### Good choice for steel/ferrous metal applications with low initial price

# METAL ALUMINUM OXIDE

- · Durable bond and wheel hardness are designed to provide an good mix of cut rate and life
- Good choice when low initial price is needed for small jobs or newer operators
- Metal (Aluminum Oxide) engineered for all steel/ferrous materials



			HORZOH	
		TIER:	BEST	GOOD
		TRADENAME:	NORZON PLUS	GEMINI
		SHAPE:		Туре 27
		ABRASIVE:	Ceramic Alumina/ Zirconia Alumina	Aluminum Oxide
		MATERIAL:	STAINLESS	STAINLESS
		IVIAI ENIAL.	STEEL/METAL	STEEL/METAL
SIZE (D x T x H)	MAX. RPM	STD. PKG.	PART #	PART #
1/8" (5/32") - Pipe Notcl	hing – Type 27	-		
4-1/2 x 1/8 (5/32) x 5/8-11	13,580	10		662533 <b>70272</b>
4-1/2 x 1/8 (5/32) x 7/8	13,580	25		662533 <b>70271</b>
5 x 1/8 (5/32) x 5/8-11	12,225	10		662533 <b>70273</b>
5 x 1/8 (5/32) x 7/8	12,225	25		662528 <b>42038</b>
6 x 1/8 (5/32) x 5/8-11	10,185	10		662528 <b>41193</b>
7 x 1/8 (5/32) x 5/8-11	8,600	10	662529 <b>39184</b>	662533 <b>70274</b>
9 x 1/8 (5/32) x 5/8-11	6,600	10	662530 <b>49066</b>	662533 <b>70275</b>
Pipe Notchers are to be used	d for cutting/not	ching only.		

See Type 27 .040" – 1/4" Foundry, Type 28, Type 27 Flexible, and Type 29 Blending Wheels at the end of this section.

						METAL
		TIER:	BEST	BETTER	GOOD	GOOD
		TRADENAME:	QUANTUM3	BLUEFIRE	GEMINI	METAL
		SHAPE:	Туре 27	Type 27	Туре 27	Туре 27
		ABRASIVE:		Zirconia Alumina/ Aluminum Oxide	Aluminum Oxide	Aluminum Oxide
		MATERIAL:	STAINLESS	STAINLESS	STAINLESS	STAINLESS
			STEEL/METAL	STEEL/METAL	STEEL/METAL	STEEL/METAL
SIZE (D x T x H)	MAX. RPM	STD. PKG.		PART #	PART #	PART #
1/8" – Cutting / Notch	ning / Light Gri	inding – Type 27	and the second terms of the second terms			
4 x 1/8 x 3/8	15,280	25		662528 <b>43178</b>	662528 <b>42016</b>	
4 x 1/8 x 5/8	15,280	25			662528 <b>42017</b>	662528 <b>42014</b>
4-1/2 x 1/8 x 5/8-11	13,580	10	662528 <b>39423</b>	662528 <b>43211</b>	662528 <b>43590</b>	662528 <b>43609</b>
	13,580	10		66252843191 FC/INOX/SS		
4-1/2 x 1/8 x 7/8	13,580	25	662528 <b>39424</b>	662528 <b>43212</b>	662528 <b>43591</b>	662528 <b>43611</b>
	13,580	25		662528 <b>43190</b> FC/INOX/SS		
5 x 1/8 x 5/8-11	12,225	10	662528 <b>39425</b>	662528 <b>43215</b>		662528 <b>43615</b>
5 x 1/8 x 7/8	12,225	25	662528 <b>39426</b>	662528 <b>43216</b>	662528 <b>43596</b>	662528 <b>43616</b>
	12,225	25		66252843194 FC/INOX/SS		
6 x 1/8 x 5/8-11	10,185	10	662528 <b>39427</b>	662528 <b>43199</b> FC/INOX/SS	662528 <b>33965</b>	
6 x 1/8 x 7/8	10,185	20	662528 <b>39428</b>	662528 <b>43202</b>	662528 <b>01864</b>	
	10,185	20		662528 <b>43198</b> FC/INOX/SS		
7 x 1/8 x 5/8-11	8,600	10	662528 <b>39429</b>	662528 <b>43233</b>	662529 <b>39259</b>	076607 <b>02678</b>
	8,600	10		66252843183 FC/INOX/SS		
7 x 1/8 x 7/8	8,600	20	662528 <b>39430</b>	662528 <b>43234</b>	662529 <b>39207</b>	
	8,600	25*				076607 <b>75956</b> 5-Pk
9 x 1/8 x 5/8-11	6,600	10	662528 <b>39431</b>	662528 <b>43244</b>	662530 <b>48983</b>	
	6,600	10		66252843187 FC/INOX/SS		
9 x 1/8 x 7/8	6,600	20	662528 <b>39432</b>	662528 <b>43245</b>	662530 <b>48994</b>	

\* 5-wheel Job Packs; wheels are packed 5 wheels/Pack, with 5 Job Packs/carton. Order per each wheel in standard package quantities of 25. Order in multiples of 25.

DEPRESSED CENTER WHEEL DESCRIPTION CODES						
BLANK = All Purpose	FC = Fast Cut	HD = Heavy Duty	INOX/SS = Contaminant Free			
= Aluminum	= Foundry	= Stainless	Steel / Metal			



			E	-		
				suvefire	Comercia Cara	METAL
		TIED	00		0000	000
	т		BEST QUANTUM3	BETTER BLUEFIRE	GOOD Gemini	GOOD Metal
	1			Type 27	Type 27	Type 27
		SHAPE:	Type 27	Zirconia Alumina/	Type 27	Type 27
		ABRASIVE:	Ceramic Alumina	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide
		MATERIAL:	STAINLESS	STAINLESS	STAINLESS	STAINLESS
		IVIAI LI IIAL.	STEEL/METAL	STEEL/METAL	STEEL/METAL	STEEL/METAL
SIZE (D x T x H)	MAX. RPM	STD. PKG.	PART #	PART #	PART #	PART #
1/4" – Grinding – Type		rnu.		FANI #	FANI #	
3 x 1/4 x 3/8	18,000	25	3		662528 <b>42179</b>	
4 x 1/4 x 3/8	15,280	25	662533 <b>71180</b>	662528 <b>43179</b>	662528 <b>42018</b>	
4 x 1/4 x 5/8	15,280	25	662533 <b>71181</b>	662528 <b>43177</b>	00202042010	662528 <b>42011</b>
T X 1/T X 3/0	15,280	25	00200071101	00232040177	662528 <b>42019</b>	00232042011
4-1/2 x 1/4 x 5/8-11	13,580	10	662533 <b>70793</b>	662528 <b>43213</b>	662528 <b>43593</b>	662528 <b>43605</b>
1 1/2 / 1/1/ 0/0 11	13,580	10		662528 <b>43193</b> FC/INOX/SS	662528 <b>43585</b> FC	00202010000
	13,580	40		002020401001001000	0020204000010	662528 <b>19559</b>
4-1/2 x 1/4 x 7/8	13.580	25	662533 <b>70794</b>	662528 <b>43214</b>	662528 <b>43594</b>	662528 <b>43607</b>
,=,,.	13,580	25		662528 <b>43192</b> FC/INOX/SS	662528 <b>43584</b> FC	
	13,580	25			662528 <b>42033</b> INOX/SS	
	13,580	50				662528 <b>36796</b>
5 x 1/4 x 5/8-11	12,225	10	662533 <b>70795</b>	662528 <b>43217</b>	662528 <b>43597</b>	662528 <b>43613</b>
	12,225	10		66252843197 FC/INOX/SS		
5 x 1/4 x 7/8	12,225	25	662533 <b>70796</b>	662528 <b>43218</b>	662528 <b>43598</b>	662528 <b>43614</b>
	12,225	25			662528 <b>42040</b> INOX/SS	
6 x 1/4 x 5/8-11	10,185	10	662533 <b>70797</b>	662528 <b>43224</b>	662528 <b>32390</b>	
6 x 1/4 x 7/8	10,185	20	662533 <b>70798</b>	662528 <b>43203</b>	662528 <b>01865</b>	
7 x 1/4 x 5/8-11	8,600	10	662533 <b>70799</b>	662528 <b>43235</b>	662529 <b>40147</b> FC	662529 <b>12633</b>
	8,600	10		66252843185 FC/INOX/SS	662529 <b>40148</b>	
7 x 1/4 x 7/8	8,600	20	662533 <b>70800</b>	662528 <b>43236</b>	662529 <b>40098</b>	
	8,600	25*				076607 <b>75936</b> 5-Pk
9 x 1/4 x 5/8-11	6,600	10	662533 <b>70801</b>	662528 <b>43246</b>	662530 <b>49105</b> FC	
	6,600	10			662530 <b>49104</b>	
	6,600	25*				076607 <b>75938</b> 5-Pk
9 x 1/4 x 7/8	6,600	20	662533 <b>70802</b>	662528 <b>43247</b>	662530 <b>49077</b> FC	
	6,600	20		662528 <b>43188</b> FC/INOX/SS	662530 <b>48991</b>	

\* 5-wheel Job Packs; wheels are packed 5 wheels/Pack. with 5 Job Packs/carton. Order per each wheel in standard package quantities of 25. Order in multiples of 25.

See 1/4 inch thick Type 27 Foundry and Type 28 Wheels on the next page.

			TIER:	AD MINISTRATING	BETTER
			TRADENAME:	NORTON FOR ALUMINUM	NORTON FOR ALUMINUM
				Type 27	Type 27
				Aluminum Oxide	Aluminum Oxide
			MATERIAL:	ALUMINUM	ALUMINUM
SIZE (D x T x H)	MAX. RPM	STD. PKG.		PART #	PART #
1/4" – Grinding – Type	27	const const const const			Sec. 1
4 x 1/4 x 5/8	15,280	25		662528 <b>49366</b>	<b></b>
4-1/2 x 1/4 x 7/8	13,580	25		662528 <b>49373</b>	
4-1/2 x 1/4 x 5/8-11	13,580	10		662528 <b>49374</b>	
5 x 1/4 x 7/8	12,225	25		662528 <b>49375</b>	
6 x 1/4 x 7/8	12,225	20		662528 <b>49376</b>	
7 x 1/4 x 7/8	8,600	20		662528 <b>49377</b>	
7 x 1/4 x 5/8 - 11	8,600	10		662528 <b>49378</b>	
9 x 1/4 x 5/8-11	6,600	10		662528 <b>49379</b>	-h
1/8" Cutting / Notching	g / Grinding–	Type 27			
4-1/2 x 1/8 x 7/8	13,580	25			662528 <b>49380 🥙 </b> 🍇
4-1/2 x 1/8 x 5/8-11	13,580	10			662528 <b>49381</b>



		TIER:	BEST	BEST	BEST	BETTER	GOOD
	T	RADENAME:	QUANTUM3	DIALAST	DIALAST	BLUEFIRE	GEMINI
		SHAPE:	Type 28	Type 29	Reversible	Type 28	Type 28
		ABRASIVE:	Ceramic Alumina	Diamond	Diamond	Zirconia Alumina/ Aluminum Oxide	Aluminum Oxide
		MATERIAL:	STAINLESS	STAINLESS	STAINLESS	STAINLESS	STAINLESS
			STEEL/METAL	STEEL/METAL	STEEL/METAL	STEEL/METAL	STEEL/METAL
SIZE (D x T x H)	MAX. RPM	STD. PKG.	PART #	PART #	PART #	PART #	PART #
1/4" - Grinding - Type	28						
7 x 1/4 x 5/8-11	8,600	10	662533 <b>70803</b>			662528 <b>43229</b>	662529 <b>40149</b> 🗶
7 x 1/4 x 7/8	8,600	20					662529 <b>40095</b>
9 x 1/4 x 5/8-11	6,600	10	662533 <b>70804</b>			662528 <b>43237</b>	662530 <b>49106</b>
9 x 1/4 x 7/8	6,600	20	662533 <b>70805</b>				662530 <b>49081</b>
Light Grinding – Type							A STATE OF S
4-1/2 x 5/8-11	13,600	1		662533 <b>70009</b>			W
5 x 5/8-11	12,225	1		662533 <b>70010</b>			
6 x 5/8-11	10,200	1		662533 <b>70011</b>			
7 x 5/8-11	8,600	1		662533 <b>70012</b>			
1/4" – Grinding – Reve		nding Disc					A CONTRACTOR OF THE OWNER OWNER OF THE OWNER OWNE
4-1/2 x 1/4 x 5/8-11	13,600	1			662533 <b>70019</b>		
7 x 1/4 x 5/8-11	8,600	1			662533 <b>70020</b>		

					- Substien
		TIER:	BEST	BEST	BETTER
	TR	ADENAME:	QUANTUM3	DIALAST	BLUEFIRE
		SHAPE:	Type 27	Type 27	Туре 27
		ABRASIVE:	Ceramic Alumina	Diamond	Zirconia Alumina/
			FOUNDAY	FOUNDRY	Silicon Carbide
			FOUNDRY	FOUNDRY	FOUNDRY
SIZE (D x T x H)	MAX. RPM	STD. PKG.	PART #	PART #	PART #
			ng – Type 27 🔜 📖		
4-1/2 x 1/8 x 5/8-11	13,580	10			662528 <b>43206</b>
4-1/2 x 1/8 x 7/8	13,580	25			662528 <b>43204</b>
7 x .140 x 5/8-11	8,600	1		662533 <b>70014</b>	
7 x 1/8 x 5/8-11	8,600	10			662528 <b>43232</b>
7 x 1/8 x 7/8	8,600	20			662529 <b>15526</b>
9 x .140 x 5/8-11	6,600	1		662533 <b>70015</b>	
9 x 1/8 x 5/8-11	6,600	10			662528 <b>43240</b>
9 x 1/8 x 7/8	6,600	20			66252843238
1/4" – Grinding – Ty	pe 27	na cina cina cina ci	228		
4 x 1/4 x 3/8	15,280	25			662528 <b>43181</b>
4 x 1/4 x 5/8	15,280	25			662528 <b>43180</b>
4-1/2 x 1/4 x 5/8-11	13,580	10			662528 <b>43207</b>
4-1/2 x 1/4 x 7/8	13,580	25			662528 <b>43205</b>
7 x 1/4 x 5/8-11	8,600	10			662528 <b>43231</b>
7 x 1/4 x 7/8	8,600	20			662528 <b>43230</b>
9 x 1/4 x 5/8-11	6,600	10	662533 <b>70849</b> HD		
	6,600	10			662528 <b>43261</b> HD
9 x 1/4 x 7/8	6,600	20	66253370848 HD		
	6,600	20			662528 <b>43260</b> HD
All Norton foundry whee	els are designe	d and reinfo	preed to withstand the most aggre	ssive foundry applications.	

and reinforced to withstand the most aggressive foundry app. csiyi

<b>DEPRESSED CENTER W</b>	HEEL DESCRIPTION CODES		
BLANK = All Purpose	FC = Fast Cut	HD = Heavy Duty	INOX/SS = Contaminant Free
= Aluminum	Foundry	= Stainless	Steel / Metal



## **Blending Wheels**

#### Gemini Flexible

Type 27 wheel features a unique pattern with square grooves that prevent loading and promote cooling, this Gemini Flexible grinding wheel polishes your aluminum, hard carbon steel and soft carbon steel projects effectively and efficiently without gouging. 7/8 arbor wheels are sold with a back plate included for safety.

The Gemini Type 29 blending wheel is ideal for larger blending jobs and has a raised bump surface pattern to promote cool grinding, ideal for aluminum. The shape allows for a flatter grind and higher contact area. Can also be used to blend stainless, hard, and soft carbon steel.

				$\overline{\mathbf{O}}$	O
				GOOD	GOOD
		TRA	DENAME:	GEMINI FLEXIBLE	GEMINI FLEXIBLE
			SHAPE:	Type 27	Туре 29
		A	BRASIVE:	Aluminum Oxide	Aluminum Oxide
				ALUMINUM	ALUMINUM
		N	IATERIAL:		STAINLESS
				STEEL/METAL	STEEL/METAL
SIZE (D x T x H)	MAX. RPM	STD. PKG.	GRIT	PART #	PART #
1/8", 1/4" – Blendir	ng – Type 27	and 29		THE COMPANY CONSIGNATION	
2 x 1/8 x 3/8	30,560	25	60	662528 <b>35632</b> *	
4 x 1/8 x 5/8	15,280	20	36	662435 <b>29721</b> #	
4-1/2 x 1/8 x 5/8-11	12,000	10	36		662528 <b>42203</b>
4-1/2 x 1/8 x 7/8	12,000	25	36	662528 <b>30424</b> #	662528 <b>42204</b>
5 x 1/8 x 7/8	12,225	25	36		662528 <b>42205</b>
7 x 1/8 x 5/8-11	8,600	10	36	662529 <b>39024</b>	662529 <b>17052</b>
*Norton Motal E who	ala nar dianlau	nooly E dian	lau paaka r	ar standard poskage	

\*Norton Metal, 5 wheels per display pack; 5 display packs per standard package.

# These wheels are packed 20 per box, and must be used with this specific back plate. Two back plates are included in each box.



## Depressed Center Adapter Kit

This reusable adapter kit contains everything you need to mount depressed center wheels and saucers with 7/8" center holes on to portable right angle or vertical shaft grinders. Adapter hubs are threaded for mounting on to standard 5/8"-11 NCRH spindles.

KIT NO.	WHEEL DIAMETER	WHEEL THICKNESS	PART #	STD. PKG.	
114	7" thru 9"	1/16" thru 1/4"	076607 <b>89275</b>	1	

<b>DEPRESSED CENTER W</b>	HEEL DESCRIPTION CO	DES		
BLANK = All Purpose	FC = Fast Cut	HD = Heavy Duty	INOX/SS = Contaminant Free	
Aluminum	= Foundry	Stainless	Steel / Metal	

# **Cut-off Wheels**

# no short cuts taken here SATISFY ALL YOUR CUT-OFF REQUIREMENTS

From small diameter portable cut-off wheels to large diameter foundry cut-off wheels; from portable high-speed gas saw wheels to precision toolroom and Metlab wheels, our Norton offering encompasses the broadest range of applications.





The Norton small diameter cut-off wheel line consists of Type 01/41 straight and Type 27/42 depressed center cut-off wheels from 1-1/2" to 9" diameters. These wheels come in ultra thin .035" for quick burn-free and burr-free cutting to .125" for more durable applications. All are reinforced for the demanding nature of portable cut-off.

Applications: Size Range: Thickness Range: Abrasive Grain:

Shape: Machine Used: Cutting sheet metal, cutting pipe, and metal fabrication 1-1/2" - 9" diameter .035", .040", .045", .050", .060", 1/16", .090", 3/32" and .125" Ceramic Alumina / Zirconia Alumina, Zirconia Alumina / Aluminum Oxide, Aluminum Oxide, Silicon Carbide, Diamond Type 01/41 Straight and Type 27/42 Depressed Center

**(** 



PORTABLE F CUT-OFF TOOL G

RIGHT ANGLE DRILL GRINDER

## How to Pick the Right Wheel Type

DEPRESSED CENTER WHEEL DESCRIPTION CODES					
BLANK = All Purpose	INOX/SS = Contaminant Free	LL = Long Life	1-2-3 = Cutting/Notching/Grinding		
= Aluminum	Stainless	Steel / Metal			

DESCRIPTION CODE DEFINITIONS	
BLANK = All Purpose	Where an excellent blend of cut rate and life is needed
ALU = Aluminum	Specially formulated bond for reduced loading and surface contamination while cutting aluminum and soft materials
INOX/SS = Contaminate Free	Contain <0.1% iron, sulfur or chlorine for rust-free and corrosion-free results. Will not contaminate stainless steel
LL = Long Life	Where durability is needed due to severe application, and when horsepower of the grinder allows for heavy pressure
Right = Cutting-off Only	RightCut wheels for cutting only, provide noticeably longer life and faster cut rate versus competitive wheels, and less pressure is required for first cut
1-2-3 = Cutting/Notching/Grinding	Can be used in cutting, notching and grinding applications

## Type-to-Application Recommendation Guide

Wheel Type/Thickness	Applications	
	Type 01/41 straight cut-off wheels are designed for portable cut-off tool applications. All are supplied with full fiberglass reinforcing.	Fritze
.035, .040, .060, and 1/16	Where fast cutting and low kerf loss are desired	•
125	For tough cutting and notching applications where stability is important	•
	Type 01/41 RightCut straight cut-off wheels are designed for use on right angle grinder cut-off applications. All are supplied with full fiberglass reinforcing.	90° angle
.035, 040, .045, .050, 1/16	Where fast cutting and low kerf loss are desired	•
3/32	For tough cutting and notching applications where stability is important	•
TYPE 27/42 RIGHTCUT	Type 27/42 RightCut depressed center cut-off wheels are designed for use on right angle grinder cut-off applications. Their depressed center shape provides a recess for the hub, which allows flush cutting. All are supplied with full fiberglass reinforcing.	90° angle
.040, .045, 1/16	Where fast cutting and low kerf loss are desired	•
3/32, .125	For tough cutting and notching applications where stability is important	



## Material-To-Product Recommendation Guide

	BEST	BETTER	GOOD	
	Quantum3	BlueFire	Gemini	Metal
Mild Carbon / High Tensile Steel	•	•		•
Stainless Steel / Alloys	•	•	•	
Contaminate Free*			INOX/SS	
Cast Iron	•	•	•	

\* For use in nuclear and food industry applications that require contaminant free (<0.1% iron, sulfur or chlorine)

## **Cross Reference Guides**

Type 01/41 .035" - .125" Reinforced Cut-off Wheels for Portable Cut-off Tools

TOTAL PERFORMANCE

TOTAL PERFORMANCE



**INITIAL PRICE** 

	BEST	BETTER	GOOD		
NORTON	NorZon Plus	BlueFire	Gemini Free Cut	Gemini Long Life	Metal
Bullard		ZA46T, ZA60T	TA36T	TA46T, TA60T	A36T, A60T Comp.
Camel		ZA60-TBF	A36 RBF	A60 RBF	Fast Cut RBF
DeWalt	XP extended performance	_	HP metal	_	Metal
Flexovit	Flexon Fast Cut A46, 60	_	High Perf Fast Grind A36	High Perf Fast Cut A36, 46, 60	_
Metabo		_	Original Slicer	Original Slicer LL	
Pearl		SRT, Zirconia	<u> </u>	Premium	Silver Line
Pferd		—		_	PSF-A
Sait	Saittech	—	A60S	A24R, A36T, A60T	—
Walter		_	A24 ZIP	A60 ZIP	_
Weiler	Tiger Ceramic	Tiger Zirc		Tiger	Wolverine A60T, A36T

Type 01/41 and Type 27/42 .035" - .125" Reinforced Cut-off Wheels for Right Angle Grinders



**INITIAL PRICE** 

SPECIALTY	Y	
-----------	---	--

	BEST		BETTER	GOOD			BETTER	GOOD
NORTON	Quantum3 .045"	Quantum3 1/16"	BlueFire	Gemini Free Cut	Gemini	Metal	Norton For Aluminum	Gemini INOX/SS
3M	_	Cubitron II .045	Silver	—	—	_	_	_
Bullard	—	—	ZA60T	SGA60U	TA46T, TA60T, TA60U	A46T, A60T Comp.	AL46N	—
Camel	—	_	ZA Quickie Cut	A36-S-BF	Super Quickie Cut	Quickie Cut	A46 Quickie Cut	A60-T-BF, WA60R, Quickie Cut
DeWalt	XP Ceramic 0.040	XP Ceramic 1/16", XP Ceramic 0.045	XP	—	HP	Metal	_	_
Flexovit	_	—		Razorblade A60SST	Razorblade A24T, 30V, 36T		Razorblade A30Q	_
Klingspor	—	—			A960TZ, Kronenflex edge	A46TZ	_	—
Metabo	Slicer Limited Edition .040	M-Calibur 1/16	Super Slicer	—	Slicer-Plus, Original Slicer LL	Original Slicer	—	—
Pearl	—	—	Redline Max Slimcut	—	Slimcut	Slimcut Pro-V, Silverline	—	_
Pferd	SG Elastic, SG Plus 1mm	SG Plus 1.6, SG Elastic 1.6		—	—	PS-Forte	SG-ALU	—
Sait	_	The Ultimate Ceramic Cutoff .045, Saitech	Z-tech	SAIT.M.X	Sait .045, The Ultimate Cutoff	_	A46N	XA46R
Tyrolit		Cerabond		_	_	_	_	
Walter	Zip One	—	Zip+ Xtra	A-30-ZIP	A-60-ZIP	_	A-60-ZIP-ALU	A60-SS-ZIP
Weiler	Tiger Zirc Ultra Cut 1mm, Tiger INOX UltraCut 1mm	Tiger Ceramic .045, Tiger Zirc .045, Tiger INOX .045	_	_	Tiger	Wolverine	_	_



## SAFFT

#### Dangerous Pairing: Die Grinders and Cut-off Wheels

While die grinders and cut-off tools may look similar, they are not interchangeable. Small diameter cut-off wheels can be used only on portable cut-off tools. Several crucial differences exist between the two handheld machines.

- Small diameter cut-off wheels must be used on portable cut-off tools with guards for the safety of the operator and bystanders. Also, portable cut-off tool guards prevent use of an oversized wheel.
- flanges on portable cut-off tools as described in the national safety standard for abrasive wheels, ANSI B7.1. Die grinders make use of a collet for mounting.
- These cut-off wheels must be mounted between proper All cut-off wheels must be used at or below their maximum operating speed, marked clearly on the side of the wheel. Die grinders operate above cut-off wheel speeds. Excessive speed can result in breakage and serious personal injury.



# TFCH TIP

#### Measure Your Wheel's Thickness

Why should you measure your wheel thickness? Many competitors market their wheels as .045", but they are truly thicker. Norton Quantum3 RightCut wheels are true to size so you can pick the right wheel for the job whether you need precision cutting or rugged durability. Compare our 1/16" Quantum3 with competitive 0.045" ceramic cut-off wheels and you will see the longest life and fastest cut on the market.



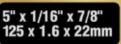
It is the user's responsibility to refer to and comply with ANSI B7.1

## Norton Quantum3 RightCut Wheels

The Norton Quantum3 RightCut is our top tier cut-off wheel, available in 0.045" and 1/16" thickness. If you want speed of cut and work on thin or hollow materials, the 0.045" will get you there with comfort. If you are cutting thicker materials and life of the wheel is important, then the 1/16" is ideal. Whatever your pick is, experience the extra-smooth cutting action, thanks to our premium ceramic grain.

## Norton Quantum3 RightCut: 0.045" versus 1/16"

How to match the wheel to the application





PRODUCT	1/16" (LONGEST LIFE)	0.045" (FAST CUTTING)
Abrasive:	Ceramic	Ceramic
Target application:	Thick metals and/or aggressive-style cutting	Thin metals and/or light-style cutting
Strengths:	Long lasting, durable, aggressive easy feel, versatile across applications and metals	Fast cutting, smooth easy feel, precise and maneuverable, reduced burrs

THE R. LEWIS CO., MICH.











Best choice for stainless steel and carbon steel applications

# QUANTUM3 CFRAMIC ALUMINA

- 100% advanced ceramic alumina grain with a special shape for comfort and performance guaranteeing 7X the life of aluminum oxide wheels and 3X the life of zirconia alumina wheels
- Unique bond system prevents premature grain release maximizing wheel life
- Available in type 01 straight and type 27 depressed center cut-off wheels from 4-1/2 inch to 6 inch diameters

Best for metal plate, pipe, tubing, cast iron, carbon and mild steel, foundry and welding applications, and ceramics

# DIALAST DIAMOND WHEELS

- A combination of high-guality diamond and advanced brazed single-layer bonding technology for extra-long life versus conventional abrasives or other vacuum-brazed diamond tools
- Retains diamond grains and wheel shape for full life with low sparks, while keeping a continuous grinding depth for exceptional wheel life; less blade changes reduces downtime and labor costs
- · Environmentally-friendly grinding for minimal dust, less clean-up and safer working conditions

Better choice for stainless steel, carbon steel, alloys and gray iron

# BLUEFIRE ZIRCONIA ALUMINA / A/O BLEND

- · A blend of the most advanced zirconia alumina and premium aluminum oxide abrasives delivers 2 to 3 times the life of aluminum oxide wheels
- Ultra-thin side reinforcing for maximum cut rate with minimum kerf loss; ideal when precise, thin cut is desired
- · Broad utility from light-to heavy-pressure applications

#### Better choice for aluminum

# NORTON FOR ALUMINUM

- Extra-friable and self-sharpening, allowing operators faster and aggressive grinding time
- Non-loading, specially designed bond, allowing fast, free-cutting with long- lasting performance
- · Contaminant free, no need for waxes or lubricants



## Good, versatile choice for steel and ferrous metals

# GEMINI ALUMINUM OXIDE

- · Quality aluminum oxide for consistent performance at an economical price
- · Designed for portable cut-off tool applications where a fast cut and minimum material loss are desired
- · Durable bond designed for fast cut while retaining excellent wheel life



#### Good choice for grinding alloys, metals, steels, and ferrous metals

# METAL ALUMINUM OXIDE

- · Quality aluminum oxide abrasive for quick cutting action
- · Resin bond provides free cutting action with long life
- · Good choice when low initial price is needed for small jobs or newer operators



	TIER:	BEST	BETTER	CEMINI CEMININI CEMINI CEMINI CEMINI CEMINI CEMINI CEMINI CEMINI CEMINI	GOOD
	TRADENAME:	NORZON PLUS	BLUEFIRE	GEMINI	METAL
	SHAPE:	Туре 01/41	Туре 01/41	Type 01/41	Туре 01/41
	ABRASIVE:	Ceramic Alumina/ Zirconia Alumina	Zirconia Alumina/ Aluminum Oxide	Aluminum Oxide	Aluminum Oxide
	MATERIAL:	STAINLESS	STAINLESS	STAINLESS	STAINLESS
	IVIAI ENIAL.	STEEL/METAL	STEEL/METAL	STEEL/METAL	STEEL/METAL
SIZE (D x T x H) MAX. RPM	STD. PKG.	PART #	PART #	PART #	PART #
.035", .040", .060", 1/16" and .125" Ty	-	-off			P
2 x .035 x 1/8 30,560	25			662434 <b>11392</b>	
2 x .035 x 1/4 30,560	25			662434 <b>11393</b>	
2 x .035 x 3/8 30,560	25			662434 <b>11394</b>	
2 x 1/16 x 1/4 30,560	25			662434 <b>11395</b>	
2 x 1/16 x 3/8 30,560	25			662434 <b>11396</b>	
2 x .125 x 1/4 30,560	25			662434 <b>11402</b>	
2 x .125 x 3/8 30,560	25			662434 <b>11403</b>	
2-1/2 x 1/16 x 1/4 30,560	25			662435 <b>10640</b>	
2-1/2 x 1/16 x 3/8 30,560	25			662435 <b>10641</b>	
3 x .035 x 1/4 25,465	25	662435 <b>10668</b>		662435 <b>10627</b>	
3 x .035 x 3/8 25,465	25	662435 <b>10669</b>	662528 <b>43174</b>	662435 <b>10628</b>	076607 <b>89451</b>
3 x 1/16 x 1/4 25,465	25	662435 <b>10670</b>		662435 <b>10645</b>	
3 x 1/16 x 3/8 25,465	25	662435 <b>10671</b>	662528 <b>43175</b>	662435 <b>10647</b>	662528 <b>35553</b>
3 x .125 x 1/4 25,465	25			662435 <b>10650</b>	
3 x .125 x 3/8 25,465	25	662435 <b>10673</b>		662435 <b>10651</b>	
4 x .035 x 1/4 19,100	25			662435 <b>10629</b>	
4 x .035 x 3/8 19,100	25	662435 <b>10675</b>	662528 <b>43173</b>	662435 <b>10630</b>	076607 <b>89453</b>
4 x 1/16 x 1/4 19,100	25			662435 <b>10654</b>	
4 x 1/16 x 3/8 19,100	25	662435 <b>10677</b>	662528 <b>43171</b>	662435 <b>10655</b>	
4 x .125 x 1/4 19,100	25			662435 <b>10658</b>	
4 x .125 x 3/8 19,100	25	662435 <b>10680</b>	662528 <b>43172</b>	662435 <b>10659</b>	





SIZE (D x T x H)

4-1/2 x .045 x 7/8

5 x .045 x 7/8

6 x .045 x 7/8

.045" Right Angle Cut-Off Type 01/41 📼

## **Drill-Mount Mandrel**

MAX. RPM STD. PKG.

25

25

25

13,580

12,225

10,185

Used for mounting 2" and 3" x 3/8" hole cut-off wheels on to a drill

DESCRIPTION	STD. PKG.	PART #	
Drill-Mount Mandrel	1	076607 <b>47769</b>	

CUT-OFF WHEEL DESCRIPTION	ON CODES
BLANK = All Purpose	INOX/SS = Conta

JE0	
INOX/SS = Contaminant Free	LL = Long Life
Steel / Metal	= Aluminum

1-2

= Stainless



			=3-3		monthre	CENTRE CE	METAL
						OF	
		TIER:	BEST	BEST	BETTER	GOOD	GOOD
	Tŀ	RADENAME:	QUANTUM3 Rightcut	DIALAST Rightcut	BLUEFIRE RIGHTCUT	GEMINI RIGHTCUT	METAL Rightcut
Dialat		SHAPE:	Type 01/41	Туре 01/41	Туре 01/41	Type 01/41	Type 01/41
RIG/III.		ABRASIVE:	Ceramic Alumina	Diamond	Zirconia Alumina/ Aluminum Oxide	Aluminum Oxide	Aluminum Oxide
		MATERIAL:	STAINLESS	STAINLESS	STAINLESS	STAINLESS	STAINLESS
			STEEL/METAL	STEEL/METAL	STEEL/METAL	STEEL/METAL	STEEL/METAL
SIZE (D x T x H)	MAX. RPM	STD. PKG.	PART #	PART #	PART #	PART #	PART #
.035", .040", .045", .0			Type 01/41 – RightC	ut Cut-off			V
4 x .040 x 5/8	15,280	25					076607 <b>01616</b>
4 x .045 x 5/8	15,280	25				662435 <b>27956</b>	
4 x 3/32 x 5/8	15,280	25				662435 <b>27955</b>	
4-1/2 x .040 x 7/8	13,580	25					076607 <b>01617</b>
	13,580	250+					662528 <b>40001</b>
4-1/2 x .045 x 7/8	13,580	25	662528 <b>38454</b>			662528 <b>23602</b>	
	13,580	25				662528 <b>41997</b> INOX/SS	
1 1 10 050 7/0	13,580	250+		000500 80010		662528 <b>41213</b>	
4-1/2 x .050 x 7/8	13,580	1	000500 <b>00455</b>	662533 <b>70016</b>	000500 40000		
4-1/2 x 1/16 x 7/8	13,580	25	662528 <b>38455</b>		662528 <b>43208</b>	00050000500	
4-1/2 x 3/32 x 7/8	13,580	25				662528 <b>23599</b>	07000704040
5 x .040 x 7/8	12,225	25 25	0000000000			0000000000	076607 <b>01618</b>
5 x .045 x 7/8	12,225 12,225	25	662528 <b>38460</b>			662528 <b>23603</b> 662528 <b>41214</b>	
5 x .050 x 7/8	12,225	1		662533 <b>70017</b>		00232041214	
5 x 1/16 x 7/8	12,225	25	662528 <b>38462</b>	00203370017	662528 <b>43209</b>		
5 x 3/32 x 7/8	12,225	25	00232030402		00202040203	662528 <b>23600</b>	
6 x .040 x 7/8	10.185	25				00202020000	076607 <b>02757</b>
6 x .045 x 7/8	10,185	25				662528 <b>23604</b>	
0 A .0 10 A 1/0	10,185	25				662528 <b>41999</b> INOX/SS	
	10,185	250+				662528 <b>41215</b>	
6 x .050 x 7/8	10,185	1		662533 <b>70018</b>			
6 x 1/16 x 7/8	10,185	25	662528 <b>38465</b>		662528 <b>43210</b>		
6 x 3/32 x 7/8	10,185	25				662528 <b>23601</b>	
7 x .045 x 7/8	8,600	25				662528 <b>32323</b>	
	8,600	20				662528 <b>42000</b> INOX/SS	
7 x 1/16 x 7/8	8,600	1		701846 <b>94055</b>			
9 x .060 x 7/8	6,600	1		701846 <b>94056</b>			

RightCut wheels are to be used for cutting only

+ Bulk packed 250 Wheels/carton; 5 inner boxes of 50 wheels each. Order in multiples of 250 wheels.



How To Convert An Angle Grinder for Cut Off Wheels **youtu.be/AMue0p1Gjqo** 

<b>CUT-OFF WHEEL DESCRIPTION</b>	CODES			
BLANK = All Purpose	INOX/SS = Contaminant Free	LL = Long Life	1-2-3 = Cutting/Notching/Grinding	
Stainless	Steel / Metal	Aluminum		



and a second

			13	suurfire		canyy h	METAL "
							P A
			90				
				Tanal of B	1992 Alt		-
<b>D</b> <sup>1</sup>		TIER:	BEST	BETTER	NORTON FOR	GOOD	GOOD
hight.		TRADENAME:	QUANTUM3	BLUEFIRE	ALUMINUM	GEMINI	METAL
		SHAPE:	Туре 27/42	Type 27/42	Type 27/42	Туре 27/42	Туре 27/42
		ABRASIVE:	Ceramic Alumina	Zirconia Alumina/ Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide
		MATERIAL:	STAINLESS	STAINLESS		STAINLESS	STAINLESS
			STEEL/METAL	STEEL/METAL	ALUMINUM	STEEL/METAL	STEEL/METAL
SIZE (D x T x H)	MAX. RP	M STD. PKG.	PART #	PART #		PART #	PART #
.040, .045, 1/16" - Ri	ghtCut Cut-	off – Type 27/4	42	<u>za</u>			PART # 076607 <b>05249</b>
4 x .045 x 5/8	15,280	25				662528 <b>42180</b>	
4-1/2 x .045 x 5/8-11	13,580	10				662528 <b>42025</b>	662528 <b>19549</b>
	13,580	10				662528 <b>41913</b> INOX/S	
4-1/2 x .045 x 7/8	13,580	25			662528 <b>49368</b>	662528 <b>42026</b>	662528 <b>43604</b>
	13,580	25				662528 <b>41912</b> INOX/S	
1.10 140 50 11	13,580	250	00050000477	000500 10000		662533 <b>70065</b> 250-Pk	
4-1/2 x 1/16 x 5/8-11	13,580	10	662528 <b>38457</b>	662528 <b>43223</b>			
4-1/2 x 1/16 x 7/8	13,580	10	00000000	662528 <b>43219</b>			
Γ.·. 0.4Γ.·.Γ/0.11	13,580	25	662528 <b>38456</b>			00000044000	
5 x .045 x 5/8-11	12,225	10 25			00050040070	662528 <b>41939</b>	662528 <b>43849</b>
5 x .045 x 7/8	12,225	25			662528 <b>49370</b>	662528 <b>42036</b> 662528 <b>41914</b> INOX/S	
	12,225 12,225	250				662533 <b>70066</b> 250-Pk	
5 x 1/16 x 7/8	12,225	25	662528 <b>38464</b>	662528 <b>43220</b>		002333 <b>70000</b> 2 <i>30-</i> 7 K	
6 x .045 x 5/8-11	10,185	10	00232030404	00232043220		662528 <b>30587</b>	
6 x .045 x 7/8	10,185	25			662528 <b>49372</b>	662528 <b>42202</b>	662528 <b>42015</b>
6 x 1/16 x 5/8-11	10,185	10	662528 <b>46246</b>		00202010012		00202012010
6 x 1/16 x 7/8	10,185	25	662528 <b>38466</b>	662528 <b>43221</b>			
7 x .045 x 5/8-11	8.600	10				662528 <b>41919</b> INOX/S	S
7 x .045 x 7/8	8,600	20				662529 <b>12626</b>	
	8,600	20				662528 <b>41918</b> INOX/S	S
9 x 1/16 x 5/8-11	6,600	10				66253019115	
RightCut wheels are to be	e used for cutt	ing only.					
3/32", .125" - Cut-off	- Type 27/4	2	-				
4-1/2 x 3/32 x 5/8-11	13,580	10				662528 <b>41903</b>	
	13,580	10				662528 <b>42027</b> INOX/S	S
4-1/2 x 3/32 x 7/8	13,580	25				662528 <b>41940</b>	
	13,580	25				662528 <b>42028</b> INOX/S	S 👢
	13,580	25				662528 <b>43582</b> 1-2-3	<i>a</i>
4-1/2 x .125 x 5/8-11	13,580	10				662528 <b>43588</b>	
4-1/2 x .125 x 7/8	13,580	25				662528 <b>43589</b>	
5 x 3/32 x 5/8-11	12,225	10				662528 <b>41904</b>	
5 x 3/32 x 7/8	12,225	25				662528 <b>42037</b> INOX/S	S
0.0/00.510.11	12,225	25				662528 <b>43587</b>	
6 x 3/32 x 5/8-11	10,185	10				662528 <b>41905</b>	
6 x 3/32 x 7/8	10,185	25				662528 <b>41906</b>	
6 x .125 x 5/8-11	10,185	10				662528 <b>41192</b>	
7 x 3/32 x 5/8-11	8,600	10				662528 <b>41907</b>	
7 x 3/32 x 7/8 9 x 3/32 x 5/8-11	8,600 6,600	20		662528 <b>42378</b>		662528 <b>41908</b>	
These wheels are to be used				00202042010			
THESE WHEEKS ALE LU DE USED	тот сишну ОШу	<i>.</i>					

These wheels are to be used for cutting only.

<b>CUT-OFF WHEEL DESCRIPTI</b>	ON CODES		
BLANK = All Purpose	INOX/SS = Contaminant Free	LL = Long Life	1-2-3 = Cutting/Notching/Grinding
= Stainless	Steel / Metal	= Aluminum	



# CUT-OFF WHEELS Chop Saw Reinforced Cut-off



A chop saw is a light, low-horsepower portable machine. Although very similar to a compound miter saw, it is designed for cutting denser materials, like metal bar, tubing or pipe. Chop saw cut-off wheels are designed specifically for this machine with finer grit, softer grades, and reinforcement layers that match the application.

#### **Applications:**

Size Range: Thickness Range: Abrasive Grain: Shape: Reinforcement Type: Machine Used:

Cutting small-diameter metal pieces, bar stock, metal pipe, tubing, decking, cable, drywall studs, and metal plate dimensioning 10" - 16" diameter 3/32" and 7/64" Zirconia Alumina / Aluminum Oxide Blend, Aluminum Oxide, and Diamond Type 01/41 Straight Side reinforced, centrally reinforced



## **Cross Reference Guide**

	TOTAL PERFO	RMANCE				INITIAL PRICE	SPEC	CIALTY	
	BETTER			GOOD	GOOD GOOD				
NORTON	BlueFire Free Cut	BlueFire Rapid Cut	BlueFire Long Life	Gemini Free Cut	Gemini Rapid Cut	Gemini Long Life	Stud Cutter	Norton Aluminum	
Astromax	737 FC	_	_	733,758	742, 764	733+, 744	_	_	
BMC	_	_	_	Westside A36P	_	_	_		
Bullard	ZA36T	_	_	TA36T A46T The Competitor	A36R The Competitor	A36R Ironmaster	A46T Studmaster	AL36R	
Camel			ZA24-S	A36-P, WA36-P		A36-S	A30-R Mr. Stud	A30-N	
Dewalt			ХР	GP, Stainless Fabrication	_	_	Stud Cutting	_	
Flexovit			_	A30R Fast Cut A30-Q Free Cut	_	A30S Long Life	A30T Drywall Stud		
Makita	_	_	_	_	General Purpose, A-93859-5	_	_	—	
Pearl	SRT36	—		A36P Premium, A36S, A36T	A30P Silver Line	_	A46S Stud Cutting	—	
Pferd			—	A 36 K SG CHOP	PSF CHOP	_	A 36 K SG- STUD		
Sait	Saitech Steel Worker	Z-tech	—	EZ-Chop	EZ-Chop Attacker	Iron Worker	Stud King	Aluminum	
Walter					A-30	A-30-HC+		A30-ALU	

## Application-to-Product Recommendation Guide

#### Wheel Type/Reinforcement

**TYPE 01/41 STRAIGHT SIDE-REINFORCED** Side-reinforced wheels have two full layers of reinforcing and are designed for a fast cut and the most aggressive applications. All Purpose, Free Cut, and Long Life are side reinforced.



TYPE 01/41 STRAIGHT CENTRALLY-REINFORCED CUT-OFF WHEEL

Centrally-reinforced wheels have a single layer of reinforcing with exposed rough sides for free-cutting, non-binding applications where minimal burr and burn are the key requirements. Rapid Cut wheels are centrally reinforced.

## How to Pick the Right Bond Type

DESCRIPTION CODE DEFINITIONS	
BLANK = All Purpose	Where an excellent blend of cut rate and life is needed
FC = Free Cut	Used when fast, burn-free cutting is desired or when cutting pieces with larger cross sections
LL = Long Life	Where durability is needed due to severe application, and when cutting parts with small cross sections
RC = Rapid Cut	Where a free cutting, non-binding wheel is needed for burn-free and burr-free cuts
STUD = High-Performance	High-performance aluminum oxide/resin bond combination designed for cleaner cuts and longer life when cutting steel studs



# CUT-OFF WHEELS Chop Saw Reinforced Cut-off



Designed for cutting steel, metal studs, stainless steel, non-ferrous materials, tile, brick, plastic and much more

# DIALAST DIAMOND

- A combination of high-quality diamond and advanced brazed single-layer bonding technology for extra-long life versus conventional abrasives or other vacuum-brazed diamond tools
- Retains diamond grains and wheel shape for full life with low sparks, while keeping a continuous grinding depth for exceptional wheel life; less blade changes reduce downtime and labor costs
- · Environmentally-friendly grinding for minimal dust, less clean-up and safer working conditions

#### Better choice for Aluminum

# NORTON FOR ALUMINUM

- Extra-friable and self-sharpening, allowing operators faster and aggressive grinding time
- Non-loading, specially designed bond, allowing fast, free-cutting with long- lasting performance
- · Contaminant free, no need for waxes or lubricants



Better choice for steel, stainless steel and all other ferrous metals

# BLUEFIRE ZIRCONIA ALUMINA / A/O BLEND

- Durable, latest generation zirconia alumina and premium aluminum oxide abrasive blend outperforms competitive chop saw zirconia wheels by 20 percent
- · Delivers twice the life and cut rate of aluminum oxide wheels on difficult to cut metals
- · High performance resin bond is designed for free cut and long life



# Good choice for all steel and ferrous metals as well as specialty applications in aluminum

# GEMINI ALUMINUM OXIDE

- Durable, versatile aluminum oxide abrasive engineered for consistent performance and economical price on chop saw cut-off machine applications
- · Abrasive and bond combination designed for smooth clean cut on low HP machines
- · Good choice for consistent performance at an economical price



## Good choice for drywall studs

# METAL ALUMINUM OXIDE

- Quality aluminum oxide abrasive designed for cutting alloys, steels and ferrous metals including 400 series stainless, soft and hard carbon steels
- · Designed with finer grit and softer grades, specifically for chop saw machines that typically have lower horsepower
- · Constructed with full fiberglass reinforcing; Stud Cutter version designed specifically for cutting steel studs



# CUT-OFF WHEELS Chop Saw Reinforced Cut-off

								And a	And a
								2	
	TIE	R: BEST	BETTER	BETTER	BETTER	GOOD	GOOD	GOOD	GOOD
	TRADENAM	E: DIALAST	BLUEFIRE	BLUEFIRE	NORTON FOR Aluminum	GEMINI	GEMINI	METAL	METAL
	SHAP	E: Type 01/41	Type 01/41	Type 01/41	Type 01/41	Type 01/41	Type 01/41	Type 01/41	Type 01/41
	ABRASIV	E: Diamond	Zirconia Alumina/ Aluminum Oxide	Zirconia Alumina/ Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Aluminum Oxid
	REINFORCIN	G:	Side	Central	Side	Side	Central	Side	Central
	MATERIA	STAINLESS	STAINLESS	STAINLESS		STAINLESS	STAINLESS	STAINLESS	STAINLESS
	IVIATENIA	L.	STEEL/METAL	STEEL/METAL	ALUMINUM	STEEL/METAL	STEEL/METAL	STEEL/METAL	STEEL/METAL
IZE I x T x H)	MAX. STD. RPM PKG.	PART #	PART #	PART #	PART #	PART #	PART #	PART #	PART #
ype 01/41 🛛	Straight Cut	-off							J.
) x 7/64 x 1	6,110 10					662531 <b>06109</b> LL			
2 x 7/64 x 1	5,095 10		662528 <b>43250</b>			662532 <b>07554</b> LL			
	5,095 5							076607 <b>89400</b>	
4 x 3/32 x 1	4,365 10					662533 <b>06627</b> FC	662533 <b>13588</b> RC	662528 <b>35554</b>	
	4,365 10					662533 <b>06626</b> LL		076607 <b>89405</b> STUD	
	4,365 5V								076607 <b>89399</b>
4 x 7/64 x 1	4,365 10			662528 <b>43254</b> RC	662528 <b>49382</b>				
	4,365 10		662528 <b>43253</b> LL						
4 x .155 x 1	5,400 1	701846 <b>94053</b>							
6 x 7/64 x 1	3,820 10					662534 <b>10198</b> LL			
	3,820 10		662528 <b>43257</b> LL						

CUT-OFF WHEEL DESCRI	PTION CODES				
BLANK = All Purpose	FC = Free Cut	LL = Long Life	RC = Rapid Cut	STUD = Stud Cutter	
Stainless	Steel / Metal	= Aluminum			









Norton high-speed cut-off abrasive wheels provide the industry's leading performance in all high-speed gas and electric-powered applications.

Applications:	Metalworking: steel, stainless, ductile, cast iron, rail steel and metal decking
	Non-Metal Building Materials: concrete, brick, masonry, asphalt aggregate, stone and schedule 40 and 80 PVC pipe
	Rescue and Demolition: steel, acrylic, fiberglass, rubber, glass, wood, concrete, brick and asphalt
Size Range:	12" – 16" diameter
Thickness Range:	1/8" and 5/32"
Abrasive Grain:	Aluminum Oxide, Silicon Carbide, Silicon Carbide / Aluminum Oxide Blend
Shape:	Type 01/41 Straight
Reinforcement:	Wheels are offered in standard two-layer reinforcement as well as three-layer reinforcement for higher-speed saws and heavy-duty applications.
Arbor:	Wheels are offered with patented universal arbor that accommodates both 20mm and all other machines with 1" arbors.
Machine Used:	



OR ELECTRIC SAW

## Material / Application-to-Product Recommendation Guide

lcon		Application
	Metal	High-performance aluminum oxide grain wheels designed for general purpose cutting of all steel and stainless parts including rebar, steel pipe, structural steel, sheet metal, cable and small to medium diameter solid pieces.
	Metal Decking	High-performance aluminum oxide abrasive combined with a thicker wheel (5/32") that stands up to the sharp edges of sheet metal and roof decking.
	Ductile/Cast Iron	A special blend of silicon carbide abrasive for cutting and aluminum oxide abrasive for life, designed to cut ductile and cast iron pipe, concrete-lined water pipes, sewer construction and heavy duty PVC.
	Rescue	For ventilation, forcible entry, rescue and demolition. A versatile abrasive formula that can be used on a wide range of materials including all types of metals and masonry.
	Concrete	Coarse grit silicon carbide abrasive provides a low initial cost solution for cutting brick, block, concrete or other masonry materials. For higher-production applications that require optimum speed of cut and product life, please see our complete selection of high-speed diamond wheels in our Norton Construction diamond product line.
	Asphalt	A special blend of extra coarse silicon carbide abrasive grains provides a low initial cost solution for cutting asphalt, green concrete, asphalt over concrete, a wide range of aggregates and abrasive materials. For higher-production applications that require optimum speed of cut and product life, please see our Norton Construction diamond blade product offering in the Construction Product section of this catalog -and the complete offering in our "Diamond, Abrasives and Equipment for the Construction Market Catalog" #7719 found on nortonabrasives.com

## **Cross Reference Guide**

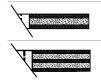
#### SPECIALTY

GOOD				
Gemini Metal	Gemini Metal Decking	Gemini Ductile	Gemini Concrete	Gemini Asphalt
A 24 R, Kompetitor Metal	A 24 T	AC 24 R, Kompetitor Ductile Iron	C 24 R, Kompetitor Concrete	C 16 T, Kompetitor Asphalt
A24R, ZA24Q,	TA24R	AC24R	C24R,	CC20R
The Competitor			The Competitor	
A24-R	A24-T	AC24-R	C24-R	C16-U
A24/30SB	A24TB	AC24SB	C30UB	C16UB
Blue XHS, Blue QMS-CM, Blue EHS	Grey QMS-CM	Green QMS-CM, Green EHS	Red XHS, Red QHS-CM, Red EHS	Black QMS-AS
SRT, Premium A36S, Silver Line A30R	_	AC30S	Premium C36S, Silver Line C24R	_
A 24 R SG	A 24 Q SG-RAIL	AC 24 Q SG	C 24 R SG	—
A24R, A30S, XFC	Brute	Ductile	C24R	Big M.A.C, XFC
A30P, A30BF	_	AC24, AC30BF	1C24, C30BF	_
Metal	—	Ductile	Concrete	Asphalt
A-24	_	_	_	_
	Gemini MetalA 24 R, Kompetitor MetalA24R, ZA24Q,The CompetitorA24-RA24/30SBBlue XHS, Blue QMS-CM, Blue EHSSRT, Premium A36S, Silver Line A30RA 24 R SGA24R, A30S, XFCA30P, A30BF Metal	Gemini MetalGemini Metal DeckingA 24 R, Kompetitor MetalA 24 TA24R, ZA24Q,TA24RThe CompetitorAA24-RA24-TA24-RA24-TA24/30SBA24TBBlue XHS, Blue QMS-CM, Blue EHSGrey QMS-CMSRT, Premium A36S, Silver Line A30R—A 24 R SGA 24 Q SG-RAILA24R, A30S, XFCBruteA30P, A30BF—Metal—	Gemini MetalGemini Metal DeckingGemini DuctileA 24 R, Kompetitor MetalA 24 TAC 24 R, Kompetitor Ductile IronA24R, ZA24Q,TA24RAC24RThe CompetitorA24-TAC24-RA24-RA24-TAC24-RA24/30SBA24TBAC24SBBlue XHS, Blue QMS-CM, Blue EHSGrey QMS-CMGreen QMS-CM, Green EHSSRT, Premium A36S, 	Gemini MetalGemini Metal DeckingGemini DuctileGemini ConcreteA 24 R, Kompetitor MetalA 24 TAC 24 R, Kompetitor Ductile IronC 24 R, Kompetitor ConcreteA 24 R, ZA24Q, The CompetitorTA24RAC24RC 24R, The CompetitorA 24-RA24-TAC24-RC 24-RA 24-RA 24-TAC24SBC 30UBBlue XHS, Blue QMS-CM, Blue EHSGrey QMS-CMGreen QMS-CM, Green EHSRed XHS, Red QHS-CM, Red EHSSRT, Premium A36S, Silver Line A30R—AC 24 Q SGC 24 R SGA 24 R SGA 24 Q SG-RAILAC 24 Q SGC 24 R SGA 24 R, A30S, XFCBruteDuctileC 24RA30P, A30BF—AC 24, AC 300BF1C 24, C 300BFMetal—DuctileC 24R



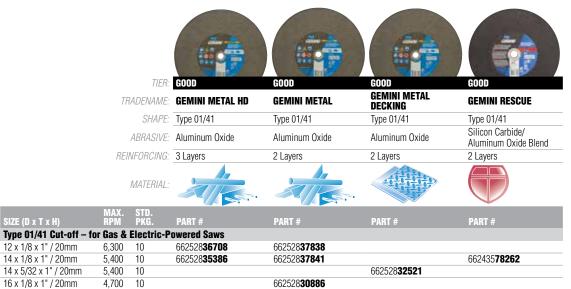
# **CUT-OFF WHEELS** High-Speed Reinforced Cut-off

## How to Pick the Right Reinforcement



Two full layers of reinforcing are offered for lower power machines, and light-to-medium applications where speed of cut is the primary selection criterion.

Three full layers of reinforcing are recommended for high-speed, high-power machines where the application is heavy-duty, and durability is the primary selection criterion.



See addtional Rail Cut wheels on page 34 for larger-volumne jobs.

TIER:	GOOD	GOOD	GOOD	GOOD	GOOD
TRADENAME:		GEMINI DUCTILE	GEMINI CONCRETE HD	GEMINI CONCRETE	GEMINI ASPHALT
SHAPE:	Type 01/41	Туре 01/41	Type 01/41	Туре 01/41	Туре 01/41
ABRASIVE:	Silicon Carbide / Aluminum Oxide Blend	Silicon Carbide / Aluminum Oxide Blend	Silicon Carbide	Silicon Carbide	Silicon Carbide
REINFORCING:	3 Layers	2 Layers	3 Layers	2 Layers	2 Layers
MATERIAL:					
STD.					
SIZE (D x T x H) MAX. RPM PKG.	PART #	PART #	PART #	PART #	PART #
Type 01/41 Cut-off – for Gas & Electric-P	owered Saws				
12 x 1/8 x 1" / 20mm 6,300 10		662528 <b>37840</b>		662528 <b>37839</b>	
14 x 1/8 x 1" / 20mm 5,400 10	662528 <b>35388</b>	662528 <b>37843</b>	662528 <b>35387</b>	662528 <b>37842</b>	701846 <b>72877</b>
16 x 1/8 x 1" / 20mm 4,700 10				701846 <b>23029</b>	



## **Universal Arbor**

Two Blade Sizes in One

Our Norton patented 1"/20mm knock-out arbor fits all gas and electric high-speed saws. A 20mm bushing is pre-mounted into the 1" molded arbor hole. The wheel, with the 20mm bushing, can be mounted directly on any 20mm arbor high-speed saw. With the bushing removed, exposing the 1" arbor hole, the wheel can be mounted on any 1" arbor high-speed saw. Combining this arbor, with heavy-duty triple reinforcing results in a higher performing, extra strong, longer lasting cutting wheel. Once the 20mm bushing is removed, it cannot be replaced.



# **CUT-OFF WHEELS** Stationary Saw Reinforced Cut-off

The Norton stationary saw reinforced cut-off wheel line consists of Type 01/41 straight 10" - 24" wheels, designed to fit on fixed-base stationary saws that are free-standing or mounted on a workbench.

#### **Applications:**

**Size Range: Thickness Range:** Abrasive Grain: Shape: **Machine Used:** 

Primary applications are cutting of all metal parts (flat stock, bars, studs, pipes, tubes, angle iron, cable), wire rope and hydraulic hose used in fabrication, construction and plant maintenance. 10" - 20" diameter 3/32", 1/8", 5/32", 3/16"

Zirconia Alumina / Aluminium Oxide Blend, Aluminum Oxide, Silicon Carbide Type 01/41 Straight



STATIONARY SAW

## **Cross Reference Guide**

	TOTAL PERFORMANC	PRICE SPECIALITY			
NORTON	BETTER	GOOD			GOOD
	BlueFire	Gemini Free Cut	Gemini Long Life	Gemini Rapid Cut*	Foundry Cut**
Abmast	Z 24 R3	A 30 R			AC 24 R3
Bullard	<u> </u>	A30-R	A30-T	A300	_
Camel	ZA24-R	A24-R, A46-T	_	_	WA24-S
lexovit	_	A30RB Multi Purpose	A30SB Long Life, A24TB Long Life	—	AC24PB Heavy Duty
/letabo		A30N, A30R	A30S, A30V	_	_
Pearl	SRT36	A30P Premium, A30Q Silver Line	A30S Premium, A36R Premium	—	_
ferd	ZA 24 Q/R SG-HD	A 24 N/P SG-HD	A 24 Q/S SG-HD		
Sait		A24N, A36R	A24R		
yrolit		A30BF			_
Valter		A-24-FC	A-24-RIP	_	

\* For Burr-Free applications, please see centrally-reinforced BlueFire Rapid Cut and Gemini Rapid Cut wheels in Chop Saw cut-off wheel section or at nortonabrasives.com \*\* For Foundry and other cut-off wheels, please refer to that section of this Norton Full Line Catalog #7362 or at nortonabrasives.com

				-	
		TIER:	BETTER	GOOD	GOOD
		TRADENAME:	BLUEFIRE	GEMINI FREE CUT	GEMINI LONG LIFE
		SHAPE:	Туре 01/41	Type 01/41	Type 01/41
		ABRASIVE:	Zirconia Alumina/	Aluminum Oxide	Aluminum Oxide
		ADNASIVE.	Aluminum Oxide		
		MATERIAL:	STAINLESS	STAINLESS	STAINLESS
			STEEL/METAL	STEEL/METAL	STEEL/METAL
SIZE (D x T x H)	MAX. RPM	STD. PKG.	PART #	PART #	PART #
Type 01/41 Straight C	ut-Off				
10 x 3/32 x 5/8	6,110	10	662528 <b>43248</b>	662531 <b>06101</b> FC	662531 <b>06102</b> LL
	6,110	5			
12 x 1/8 x 1	5,095	10	662528 <b>43249</b>		662532 <b>07548</b> LL
	5,095	5			
14 x 1/8 x 1	4,365	10	662528 <b>43251</b>	662533 <b>06609</b> FC	662533 <b>06611</b> LL
	4,365	5			
16 x 5/32 x 1	3,820	10	662528 <b>43255</b>	662534 <b>10183</b> FC	662534 <b>10184</b> LL
18 x 5/32 x 1	3,015	10		662534 <b>10185</b> FC	
20 x 5/32 x 1	2,710	5	662528 <b>43258</b> FC	690786 <b>09031</b> FC	690786 <b>09032</b> LL
	2,710	5	662528 <b>43259</b> LL		
20 x 3/16 x 1	2,710	5		690786 <b>09033</b> FC	690786 <b>09034</b> LL
CUT-OFF WHEEL DESCR	IPTION CODES				
BLANK = All Purpose		Free Cut	LL = Long Life	= Stainless	Steel / Metal



# Bond: Shape:

## **CUT-OFF WHEELS Toolroom Cut-off**

Reinforced and non-reinforced engineered cut-off wheels for cutting all types of tool steel with fixed-based cut-off machines.

Type 01/41 Straight

**Applications:** 

Size range: Grit range: Abrasive grain: Reinforced cut-off wheels are designed to resist breakage caused by severe cross-bending and are required on any operation where the work is not securely clamped. Non-Reinforced cut-off wheels are designed for use on fixed-based machines where the work is securely clamped, guarded, and where the wheel operates on a controlled cutting plane. 6" - 12" diameter 36 – 90 grit Aluminum Oxide Resinoid, Rubber, and Shellac

**Cross Reference Guide** 

	BETTER			TECH TIP
NORTON	Reinforced A60-OBNA2	Reinforced 57A364-TB25N	Non-Reinforced 57A60-M8B	Smooth side pattern – Used when a precise thickness tolerance is needed
Bates	A602-T-BF	A36-R-BF	-	<ul> <li>Rough (R) side pattern – Abrasive particles protrude from sides of wheel</li> </ul>
Buffalo	A60-R-BF2	-	-	- Hough (h) side pattern - Abrasive particles protrude from sides of wheel
Dia. Tool	A80-SP	A46-SP	-	
Radiac	A54-N6-B20	-	A54-N6-B20	•
Tyrolit	A60-QBF38A2	-	-	

## **Troubleshooting Guide**

PROBLEM	POSSIBLE CAUSES	SUGGESTED CORRECTION		
Poor cut rate	Insufficient power used	Increase feed or pressure to full power		
	Wheel too hard	Use softer grade, or thinner wheel		
	Contact area too large	Reduce contact area		
	Wheel too coarse	Use finer grit		
	Wheel side out of truth	Check spindle runout		
Non-square cuts	Work not clamped properly	Check clamp and clean to remove swarf		
	Misaligned spindle bearings	Check for bearing truth and alignment		
	Poor coolant distribution	Ensure equal volume of coolant to each wheel side		
	Wheel is too hard	Use softer acting wheel: softer grade, or finer grit		
Norkpiece burn	Insufficient feed rate	Work machine to maximum power available		
	Poor coolant flow	Increase volume and direct at cutting point		
	Wheel is too coarse	Use finer grit or more machine power		
	Wheel is too hard	Use softer grade wheel		
	Wheel is running out	Check spindle and flanges		
	Wheel speed is too slow	Ensure tight flanges and maximum safe operating speed being used		
Poor finish	Too much burr	Use finer grit, or softer grade		
	Wheel too coarse	Use finer grit		

## TECH TIP

- Wheels with a "W" reinforcement (reinforcement around the hole) are not considered to be truly reinforced.
- Clamp or fixture the workpiece for straightest cuts.
- · Run wheels at the highest possible speed marked on the wheel and make cuts as quickly as possible. Do not overspeed wheels.
- It is recommended that a cut-off machine should have 1 horsepower for every inch of wheel diameter. For less than this, we recommend using a softer specification.
- Using a harder grade wheel increases wheel life, but it also increases burn, power required and decreases cut rate.
- · Using a coarser grit wheel increases wheel life and cut rate, but it also increases burr and power required.



# CUT-OFF WHEELS Toolroom Cut-off



Better choice for cutting tool steel on fixed-based machines when work is not securely clamped

# TOOLROOM REINFORCED ALUMINUM OXIDE

- Tough, versatile aluminum oxide grain for toolroom cut-off applications
- Constructed with full diameter fiberglass reinforcement on each side of wheel, to provide greatest possible
  resistance to side pressure and bending
- OBNA2 full side reinforced, resin bond; yields maximum cut rate and minimum kerf loss; ideal when thin cut is desired
- · B25N full side reinforced, resin bond; versatile; durable, free cutting; offer greatest stiffness

		TIER.	BETTER				TIER.	BETTER	
SIZE (D x T x H)	MAX. RPM	STD. PKG.	SPEC.	PART #	SIZE (D x T x H)	MAX. RPM	STD. PKG.	SPEC.	P
Type 01/41 Strai	Type 01/41 Straight Cut-off – Reinforced					jht Cut-off –	Reinforced		
6 x .035 x 1-1/4	10,190	25	A60-OBNA2	662528 <b>35055</b>	8 x .035 x 1/2	7,640	25	A60-0BNA2	662
6 x .060 x 1/2	10,190	25	A60-OBNA2	662528 <b>35164</b>	8 x .035 x 1-1/4	7,640	25	A60-0BNA2	662
6 x .060 x 1/2	10,190	25	57A364-TB25N	662528 <b>22969</b>	8 x .060 x 1/2	7,640	25	A60-0BNA2	662
6 x .060 x 1-1/4	10,190	25	A60-OBNA2	662528 <b>35165</b>	8 x .060 x 1-1/4	7,640	25	A60-0BNA2	662
7 x .035 x 1/2	8,730	25	A60-OBNA2	662529 <b>38786</b>	8 x .060 x 1-1/4	7,640	25	57A364-TB25N	662
7 x .035 x 1-1/4	8,730	25	A60-OBNA2	662529 <b>38788</b>	10 x .060 x 5/8	6,110	25	A60-0BNA2	662
7 x .060 x 1/2	8,730	25	A60-OBNA2	662529 <b>38816</b>	10 x .060 x 1-1/4	6,110	25	A60-0BNA2	662
7 x .060 x 1-1/4	8,730	25	A60-OBNA2	662529 <b>38796</b>	12 x .060 x 1	5,095	10	A60-0BNA2	662
7 x .060 x 1-1/4	8,730	25	57A364-TB25N	662529 <b>22676</b>	12 x .075 x 1	5,095	10	A60-0BNA2	662
					12 x .075 x 1-1/4	5,095	10	A60-0BNA2	662

Better choice for cutting tool steel on fixed-based machines when the work is securely clamped



# TOOLROOM NON-REINFORCED ALUMINUM OXIDE

- Tough, durable and versatile aluminum oxide grain for toolroom cut-off applications
- · Non-reinforced, use on fixed-based machines where the work is securely clamped
- B bond (smooth sides); a mild acting resin bond for light cut-off applications
- B25 bond (smooth sides); a versatile, free-cutting, more durable resin bond; ideal for dry cutting metal in high production runs
- E7 bond (smooth sides); a shellac bond with very mild cutting action, recommended for highly critical applications where no burr, heat checks, or discoloration is permitted
- · R30 bond (smooth sides); mild acting rubber bond primarily for wet, ultra-thin cutting

		TIER:	BETTER	
SIZE (D x T x H)	MAX. RPM	STD. PKG.	SPEC.	PART #
Type 01/41 Strai	ght Cut-off –	Non-Reinfo	rced	
6 x .015 x 1-1/4	6,370	25	57A90-R0R30	662528 <b>22953</b>
6 x .020 x 1-1/4	6,370	25	57A90-R0R30	662528 <b>22954</b>
6 x .035 x 1-1/4	6,370	25	57A60-M8B	662528 <b>22958</b>
6 x .060 x 1/2	7,640	25	57A541-RB25	662528 <b>22970</b>
6 x .060 x 1-1/4	7,640	25	57A60-M8B	662528 <b>22975</b>
7 x .035 x 1-1/4	5,460	25	57A60-M8B	662529 <b>22983</b>
	5,460	25	57A60-08B	662529 <b>22986</b>
	5,460	25	57A60-Q8B	662529 <b>22987</b>
7 x .035 x 1-1/4	5,460	25	57A601-PB25	662529 <b>22988</b>
	5,460	25	57A601-RB25	662529 <b>22989</b>
7 x .035 x 1-1/4	5,185	25	57A60-0E7	662529 <b>22985</b>
7 x .035 x 1-1/4	5,460	25	23A601-PB25	662529 <b>38701</b>
7 x .050 x 1-1/4	5,460	25	23A601-PB25	662529 <b>38724</b> *
7 x .060 x 1/2	6,550	25	57A60-08B	662529 <b>22672</b>

		TIER:	BETTER	
SIZE (D x T x H)	MAX. RPM	STD. PKG.	SPEC.	PART #
Type 01/41 Straig	ht Cut-off –	rced		
7 x .060 x 1-1/4	6,550	25	57A46-M8B	662529 <b>22677</b>
	6,550	25	57A60-M8B	662529 <b>22681</b>
	6,550	25	57A60-08B	662529 <b>22684</b>
	5,185	25	57A60-0E7	662529 <b>22683</b>
7 x .090 x 1-1/4	6,550	25	57A60-M8B	662529 <b>22690</b>
7 x .125 x 1-1/4	6,550	25	57A60-M8B	662529 <b>22692</b>
8 x .035 x 1-1/4	4,775	25	57A60-N8B	662530 <b>22694</b>
8 x .060 x 1/2	5,730	25	57A60-M8B	662530 <b>22702</b>
8 x .060 x 1-1/4	5,730	25	57A60-M8B	662530 <b>22708</b>
10 x .060 x 5/8	4,585	25	57A46-Q8BW	662531 <b>22816</b>
	4,585	25	57A60-M8BW	662531 <b>22818</b>
10 x .090 x 5/8	4,585	25	57A60-M8BW	662531 <b>22824</b>

\*Exception: rough sides





# CUT-OFF WHEELS Metallurgical Non-Reinforced Cut-off

The Norton metallurgical line of Type 01/41 straight cut-off wheels was developed specifically for sectioning off metal samples; burr-free cutting, minimal burn and distortion.

## Applications:

Designed specifically for cutting off metal samples ranging from mild steel to super alloys on fixed-based machinery by scientists, engineers, and lab technicians. 9" – 13.75" diameter

Size range:

## Cross Reference Guide

		NORTO	N	BUEHLER		LECO	LECO	STRUER	S
SIZE	MATERIAL CUT	SPEC.	PART #	METABRASE PART #	BUEHLERMET II PART #	PART #	PART #	PART #	AXITOM/-5 PART #
9 x .063 x 1-1/4	Very Hard Steels (Rc 55 - 68)	ML-109	662531 <b>17874</b>	10-4110-010				60A24*	
(229mm x 1.6mm x 32mm)	Medium Steels (Rc 30 - 40)	ML-309	662531 <b>17877</b>	10-4116-010	10-5112-010	811-043-010		40A24*	
	Soft Steels (Rc 20 - 30)	ML-409	662531 <b>17828</b>	10-4120-010	10-5116-010	811-049-010		30A24*	
10 x .063 x 1-1/4	Very Hard Steels (Rc 55 - 68)	ML-110	662531 <b>17879</b>	10-4210-010		808-673	812-231	60A25•	
(254mm x 1.6mm x 32mm)	Hard Steels (Rc 40 - 55)	ML-210	662531 <b>17880</b>	10-4212-010	10-5210-010	811-059-010	810-310-010	54A25•	
	Medium Steels (Rc 30 - 40)	ML-310	662531 <b>17881</b>	10-4216-010	10-5212-010	811-067-010	810-310-010	40A25•	
	Soft Steels (Rc 20 - 30)	ML-410	662531 <b>17830</b>	10-4220-010	10-5216-010	811-073-010		30A25•	
12 x .078 x 1-1/4	Very Hard Steels (Rc 55 - 68)	ML-112	662533 <b>22151</b>	10-4410-010		808-674	811-065-010	60A30†	
(305mm x 2.0mm x 32mm)	Hard Steels (Rc 40 - 55)	ML-212	662533 <b>22152</b>	10-4412-010	10-5410-010	811-081-010	810-311-010	50A30†	
13.75 x .098 x 1-1/4	Very Hard Steels (Rc 55 - 68)	ML-114	662533 <b>22863</b>	10-4310-010		808-675	812-232	60A350	50A35
(350mm x 2.5mm x 32mm)	Hard Steels (Rc 40 - 55)	ML-214	662533 <b>22156</b>	10-4312-010	10-5310-010	809-346	811-977-010	50A350	40A35
*Discotom/Labotom • Di	scotom-5/-6/Labotom-3 † Un	itom/Disco	tom-50/-60/-65	□ Exotom/Uniton	n-2/-5/-50				



#### Best choice for wet use when you want burn-free cuts and ultra-clean samples

# METLAB 38A ALUMINUM OXIDE

- Quality aluminum oxide abrasive wheel designed specifically for burr-free cutting of soft carbon steels, tool steels, super alloys for microscopic metal analysis
- · Superior bond system generates pure cuts for sectioning off samples while minimizing wheel wear and odor
- Designed to work on Buehler®, LECO® and Struers® machinery

					TIER: BEST
SIZE (D x T x H)	MAX. RPM	STD. PKG.	PRODUCT #	APPLICATION	PART #
Type 01/41 Straight Cut-off - Non	-Reinforced				
9 x .063 x 1-1/4	4,025	10	ML-109	Very Hard Steels (Rc 55 - 68)	662531 <b>17874</b>
(229mm x 1.6mm x 32mm)	4,025	10	ML-309	Medium Steels (Rc 30 - 40)	662531 <b>17877</b>
	5,085	10	ML-409	Soft Steels (Rc 20 - 30)	662531 <b>17828</b>
10 x .063 x 1-1/4	3,500	10	ML-110	Very Hard Steels (Rc 55 - 68)	662531 <b>17879</b>
(254mm x 1.6mm x 32mm)	3,500	10	ML-210	Hard Steels (Rc 40 - 55)	662531 <b>17880</b>
	3,500	10	ML-310	Medium Steels (Rc 30 - 40)	662531 <b>17881</b>
	4,585	10	ML-410	Soft Steels (Rc 20 - 30)	662531 <b>17830</b>
12 x .078 x 1-1/4	3,820	10	ML-112	Very Hard Steels (Rc 55 - 68)	662533 <b>22151</b>
(305mm x 2.0mm x 32mm)	3,820	10	ML-212	Hard Steels (Rc 40 - 55)	662533 <b>22152</b>
13.75 x .098 x 1-1/4	2,770	10	ML-114	Very Hard Steels (Rc 55 - 68)	662533 <b>22863</b>
(350mm x 2.5mm x 32mm)	2,770	10	ML-214	Hard Steels (Rc 40 - 55)	662533 <b>22156</b>
	TIER: BET	TER			

		TIER:	BETTER	
SIZE (D x T x H)	MAX. RPM	STD. PKG.	SPEC.	PART #
Type 01/41 Straig	ght Cut-off –	Non-Reinfor	ced	
10 x 1/16 x 1-1/4	4,585	5	88A901-HB82 Metlab	662531 <b>49449</b>
12 x 1/16 x 1-1/4	3,820	5	88A901-HB82 Metlab	662532 <b>62172</b>





# CUT-OFF WHEELS Rail Reinforced Cut-off

GOOD

A30X

٠

٠

٠

RailCut

RailCut

Metal

٠

٠

٠

RailCut

FastCut

NorZon III

The Norton RailCut line is designed for high-speed fixtured hydraulic or gas-powered rail saws.

Applications: Size range: Thickness range: Grit range: Abrasive grain: Shape: Reinforcement: Speed rating: Machines Used: Fixed rail track cutting 14" and 16" diameter 1/8" 14 – 16 Zirconia Alumina / Aluminum Oxide Blend, Zirconia Alumina, and Aluminum Oxide Type 01/41 Straight Side reinforced with R (rough) sides All wheels are rated for 20,000 SFPM applications

BETTER

• •

RailCut

NorZon III



FIXTURED HYDRAULIC OR GAS-POWERED RAIL SAW

## Cross Reference Guide and Machine-to-Product Recommendation Guide

	BEST	BETTER	GOOD	GOOD		BEST	
NORTON	RailCut X	RailCut NorZon III	RailCut A30X	RailCut Metal	NORTON	RailCut X	
Bullard Abrasive	Trackmaster Pro ZA24 Q-BF (Plue)	Pro ZA24 Q-BF	Trackmaster A30 R-BF (Red)	_	HYDRAULIC SAW	•	
	(Blue)	(Blue)			GAS SAW		
DiaTool	—	—	_	RailMaster Rail Cut 27	High-Horsepower / Newer Machine	•	
Flexovit USA		_	A30-PB		Low-Horsepower /	٠	
Giesmar	AM303-R	AM303-R	NR242-Q	NR242-Q	Older Machine	·	
(lingspor	A 24 SX Special	A 24 SX Special					
Portaco	A30 R-BF	A30 R-BF		_			
Racine Kwik Kut	A24R	A24R	_				



Best choice for high-performance cutting of rails on applications where the hydraulic or gas saw is fixtured and has adequate power

# RAILCUT X ZIRCONIA ALUMINA / A/O BLEND

- Highest-performance zirconia alumina and engineered aluminum oxide abrasive blend expertly cuts a broad range of rail material
- Rough sides enable fastest cutting and longest lasting wheels
- · Achieve highest productivity with lowest total abrasive costs



#### Good choice for price-sensitive jobs with lowest initial price

# RAILCUT METAL ALUMINUM OXIDE

- Quality aluminum oxide abrasive wheels designed for jobs where low initial price is a key purchasing criterion
- · Side reinforced with rough sides; rated for 20,000 SFPM applications
- Designed for multi-purpose use; great versatility on a variety of rail materials

			6			6	<b>2</b>
		TIER:	BEST	BETTER	BETTER	GOOD	GOOD
	T	RADENAME:	RAILCUT X	RAILCUT NORZON III	RAILCUT NORZON III Fastcut	RAILCUT A30X	RAILCUT METAL
		ABRASIVE:	Zirconia Alumina/ Aluminum Oxide Blend	Zirconia Alumina	Zirconia Alumina	Aluminum Oxide	Aluminum Oxide
SIZE (D x T x H)	MAX. RPM	STD. PKG.	PART #	PART #	PART #	PART #	PART #
Type 01/41 Cut	-Off						
14 x 1/8 x 1	5,400	10	662533 <b>37716</b>	662533 <b>60493</b>	662533 <b>63694</b>	662532 <b>60462</b>	
16 x 1/8 x 1	4,800	10	662533 <b>35024</b>	662534 <b>64607</b>	662534 <b>64415</b>	662532 <b>59935</b>	662434 <b>82066</b>



Foundry cut-off wheels are designed with abrasives, bonds and reinforcement types specific to foundry machine parameters and materials. Most of the specifications are non-stock. This stock listing is designed to provide popular size and starting specifications.

Reinforced: 14" - 30" diameter; Non-reinforced: 12" - 20" diameter Size Range: **Grit Range:** 24 – 46 arit **Abrasive Grain:** Ceramic Alumina (Norton Quantum; non-stock only), Zirconia Alumina, Aluminum Oxide **Reinforcement:** Reinforced: Engineered with strengthening fabric or filaments, which make wheels resistant to cross-bending breakage. All portable cut-off, swingframe, locked-head push-through and foundry chop stroke operations require reinforced cut-off wheels. B: One or more full diameter pieces of filament molded inside each wheel. This construction leaves the abrasive exposed on the side of the wheel, improving freeness of cut. Used for fixed work operations with low probability of side pressure. N: Full diameter pieces of reinforcement on the side of the wheel. Offers greatest possible resistance to side pressure and bending. Non-Reinforced: Designed for use on fixed-base types of machines where the work is securely clamped and guarded, and where the wheel operates on a controlled cutting plane. W: Reinforcement around the center hole only. These wheels are not considered to be truly reinforced. Smooth sides: Used for precision cutting applications **Side Patterns:** Rough (R) sides: Abrasive particles protrude from sides of wheel Used wet or dry on most metals

## Material-to-Product Recommendation Guide

BEST	BETTER	GOOD	GOOD
Foundry X Quantum*	Foundry X BlueFire	Foundry X	Foundry Metal
		•	
•	•	•	•
•	•	•	•
•	•	•	•
		•	
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•

\*Foundry X Quantum wheels are non-stock, custom-made to your requirements

## Cross Reference Guide

NDRTDN

SAINT-GOBAIN

TOTAL PERFORMANCE

**INITIAL PRICE** 

	BEST	BETTER	GOOD	GOOD							
NORTON	Foundry X Quantum and B97 (Non-stock; custom-made to your exact requirements)	Foundry X BlueFire	Foundry X	Foundry Metal							
Allison	TA362 R6 8045HA, YW462 MR B2HA	TA302-T6-B6HA, A46-T6-BX5T6A, HF 1247 K – CHALLENGER	_	Economiser							
Avery	_	TA30-V680	A 3226 C7A, C11922 W071	92871H							
Buckeye	—	Steel Shark	_								
DiaTool	BV1734R 710	BV 1397-5284-C		_							
Flexovit	<u> </u>	ZAX30TB	A24PB, A30RB								
Klingspor	20A24-QBF	_									
NATAB	_	_	T 1584 HA								
Rappold	<u> </u>	6Z30U-B3F2									



Better choice on stainless steel, aerospace alloys, cast iron, and steel

# FOUNDRY X BLUEFIRE REINFORCED

- · Next generation self-sharpening zirconia alumina abrasive provides fast cuts on foundry cut-off applications
- Improved durability and heat resistance result in longer abrasive life
- · More aggressive; can withstand very demanding applications



# FOUNDRY WHEELS Foundry Cut-Off



#### Good choice on general purpose applications

# FOUNDRY X ALUMINUM OXIDE

- Durable, versatile aluminum oxide abrasive engineered for consistent performance and economical price on foundry cut-off applications
- Advanced bond technology with improved thermal stability and mechanical strength
- · Excellent value on stainless steel and exotic aerospace alloys

Good choice for price-sensitive jobs with lowest initial price



# FOUNDRY METAL ALUMINUM OXIDE

- Great versatility from multi-purpose aluminum oxide abrasive formulated specifically for typical foundry applications
- · Bond and reinforcement engineered to foundry market machine parameters and materials
- · Good choice for small jobs and quick applications where performance is not measured

Reinforce	d							
		TIER:	BETTER		GOOD		GOOD	
		TRADENAME:	FOUNDRY X BLU		FOUNDRY X		FOUNDRY METAL	
0175	<b>555</b> Y	ABRASIVE:	Zirconia Alumina,	/ Aluminum Uxide	Aluminum Oxide		Aluminum Oxide	
SIZE (D x T x H)	MAX. RPM	STD. PKG.	SPEC.	PART #	SPEC.	PART #	SPEC.	PART #
Type 01/41 Strai	ght Cut	-off – Foundry	Reinforced					
	4,365	10			U57A30-TB75N	662533 <b>45779</b>		
-	4,365	10			U57A30-VB75N	662531 <b>79191</b>		
16 x 5/32 x 1	3,820	10	NV24-TB75N	662533 <b>47676</b>	U57A30-TB75N	662533 <b>45781</b>	Side Reinforced	662434 <b>85919</b>
	3,820	10	NV24-VB75N	662531 <b>79147</b>	U57A30-VB75N	662531 <b>79148</b>		
20 x 5/32 x 1	2,710	10	NV24-TB75N	662533 <b>47683</b>	U57A30-TB75N	662533 <b>47546</b>	Side Reinforced	662434 <b>85920</b>
	2,710	10	NV24-VB75N	662531 <b>79363</b>	U57A30-VB75N	662531 <b>79364</b>		
	2,710	10	NV24-YB97N	662533 <b>47694</b>	U57A30-YB97N	662533 <b>47701</b>		
20 x 3/16 x 1	2,710	10	NV24-TB75B	662533 <b>47684</b>	U57A30-TB75B	662533 <b>47547</b>	Centrally Reinforced	662434 <b>85921</b>
	2,710	10	NV24-VB75B	662531 <b>79366</b>				
	2,710	10	NV24-YB97B	662533 <b>47699</b>	U57A30-YB97B	662533 <b>47702</b>		
24 x 7/32 x 1-3/4	2,260	10	NV24-TB75B	662533 <b>47685</b>				
	2,260	10	NV24-VB75B	662531 <b>79374</b>	U57A30-VB75B	662531 <b>79375</b>		
	2,260	10	NV24-YB97B	662533 <b>47697</b>				
30 x 1/4 x 1-3/4	1,810	10	NV24-TB75B	662533 <b>47722</b>				
	1,810	10			U57A30-YB97B	662533 <b>47721</b>		

Specifications ending in "B" are centrally reinforced; specifications ending in "N" are side reinforced.

## Non-Reinforced

							Ask your Norton representative about our custom, made-to-order Norton Foundry X Quantum ceramic alumina wheels for high alloys,
		TRADENAME:			GEMINI		_ stainless steel, and
		ABRASIVE:	Aluminum Oxide		Aluminum Oxic	le	aerospace applications.
SIZE	MAX.	STD.	0050	DADT #	0050	DADT //	
(D x T x H)	RPM	PKG.	SPEC	PART #	SPEC	PART #	
Type 01/41 Str	aight Cut	-off – Foundr	y Non-Reinforced R	-Sides			CUT-OFF WHEEL DESCRIPTION CODES
12 x 3/32 x 1	5,095	10	U57A461-PB25	662532 <b>61887</b>			AP = All Purpose
16 x 1/8 x 1	3,820	10			AP	662534 <b>22942</b>	Where a good blend of cut rate and life
20 x 1/8 x 1	2,710	10	U57A304-VB25W	690786 <b>65497</b>			is needed



For consistent, quality performance in foundries, welding shops, fabrication facilities, steel mills and shipyards, Norton portable snagging wheels maximize your productivity. Used on horizontal/straight shaft grinders or right angle portable cup grinders.

**Applications:** Removing flaws, cracks, gates, risers and parting lines, smoothing weld seams, cleaning castings, and rough beveling Type 01 Straight Wheels: 2-1/2" - 8" diameter **Size Range:** Type 06 and 11 Cup Wheels: 4" - 6" diameter Cones and Plugs: Type 16, 17, 17R, 18 and 18R **Grit Range:** 14 - 24 **Abrasive Types:** Zirconia Alumina NZ and NV; Zirconia Alumina / Silicon Carbide Blend NVC; Aluminum Oxide 57A and Metal; Aluminum Oxide / Silicon Carbide Blend 57AC, Silicon Carbide 37C and Masonry **Machine Used:** R PORTABLE **RIGHT ANGLE** PORTABLE

GRINDER

GRINDER

## Material-To-Product Recommendation Guide

NDRTDN

SAINT-GOBAIN

	BEST	BETTER	GOOD	
	NorZon Plus	BlueFire	Gemini	Metal
IRON				
Gray	◆ NZ14-R	NV16-Q	◆ 57A16-Q	•
Ductile/Malleable	◆ NZ14-R	NV16-Q	◆ 57A16-Q	•
Dirty/Scale-covered		NVC16-Q	◆ 57AC16-Q	
STEEL				
Carbon and Low Alloy	NZ14-Q	•	◆ 57A16-Q	•
Stainless and High Alloy	NZ14-P	•	◆ 57A16-Q	•
ALUMINUM, COPPER, BRASS, & BRONZE ALLOYS		NVC16-Q	57AC16-Q	
······································				

CUT-OFF TOOL

NOTE: Grade, Grit and Abrasive tuning may be necessary to obtain optimum performance

# Cross Reference Guide for Type 01, 06 and 11 Wheels

TOTAL PERFORMANCE

**INITIAL PRICE** 

	BEST	BETTER	GOOD		
NORTON	NorZon Plus	BlueFire NV	Gemini 57A/Metal	Gemini 57AC	Gemini 37C/Masonry
Bullard		ZA16PB	A16R	AC16	C16P
Camel			A	CA	С
Flexovit	ZA16PB		A16QB	AC16QB	C16PB
Gulf States	Zirconium		A16		C16
Pacific	Z, Z-GPC	_	A	CA	
Pearl	_	—	A16Q	_	C16-Q
Pferd	ZA 16 Q SG	_	A 16 Q SG	_	C 16 Q SG
Sait		Z16	A16, 20	CA16	C16
Tyrolit			A16PB		C16PB
Walter			A		С



# FOUNDRY WHEELS Portable Snagging



LOW Odor Best choice for heavy-duty stock removal on medium- and high-horsepower grinders

# NORZON PLUS ZIRCONIA ALUMINA

- Tough, durable, premium zirconia alumina grain provides 10X life and 50% faster grinding versus aluminum oxide products
- Engineered to excel on the toughest foundry snagging applications
- Best performance on a wide variety of materials; 300 and 400 series stainless, soft and hard carbon steels, tool
  steels, titanium, super alloys, soft metals, and cast, ductile and gray iron

Better choice for stock removal on high- and medium-horsepower grinders

# BLUEFIRE ZIRCONIA ALUMINA

- Friable zirconia alumina grain and durable resin bond technologies deliver sharper grain longer, for extended wheel life, higher metal removal rates, and faster, freer cutting action than standard zirconia alumina blends
- Ideal for foundry snagging, tool sharpening, portable grinding and stock removal applications on high- and medium-horsepower grinders
- Strong operator preference for these smooth-acting wheels that require less pressure and exertion, while improving productivity
- NVC zirconia alumina / silicon carbide blend is highly effective on dirty, scale-covered castings
- · Available with low odor bond to help reduce odors associated with portable grinding when used in confined spaces



# Good choice for steel and ferrous metals as well as specialty applications in aluminum and foundries

# GEMINI ALUMINUM OXIDE

- Tough, durable aluminum oxide abrasive for heavy-duty work including foundry snagging, tool sharpening, and stock removal
- · Work well with a variety of machines, horsepowers, and operations
- · Good general-purpose choice for numerous small jobs
- · Available with low odor bond to help reduce odors associated with portable grinding when used in confined spaces



#### Good choice for steel/ferrous metal applications with low initial price

# METAL ALUMINUM OXIDE

- Tough, durable aluminum oxide abrasive for heavy-duty work including foundry snagging, tool sharpening, and stock removal
- · Work well with a variety of machines, horsepowers, and operations
- Good general-purpose choice for numerous small jobs on 300 and 400 series stainless, soft and hard carbon steels, tool steels, titanium, super alloys, soft metals, and cast, ductile and gray iron

#### Good choice for masonry applications with low initial price

# MASONRY ALUMINUM OXIDE

- · Sharp silicon carbide abrasive for small-volume snagging jobs
- Delivers rapid stock removal in small areas on a portable cup grinder
- Versatile; good starting specification where initial price is a primary purchasing consideration, especially nonferrous and masonry



# FOUNDRY WHEELS Portable Snagging

	70400		BEST NORZON P		BETTER		GOOD		GOOD METAL/MASON	
		NAME:	Type 01 and		BLUEFIRE Type 01, 06, an	d 11	GEMINI Type 01 and 11		Type 11	RI
	ABR	ASIVE:		rconia Alumina	Zirconia Alumina Zirconia Alumina Silicon Carbide	a NV a/	Aluminum Oxide Silicon Carbide Aluminum Oxide Silicon Carbide 5	37C, /	Metal – Aluminu Masonry – Silico	
SIZE (D x T x H)	MAX. RPM	STD. PKG.	SPEC	PART #	SPEC	PART #	SPEC	PART #	SPEC	PART #
Type 01 Straight										
2-1/2 x 1/2 x 3/8	21,700	20					57A24-R	662435 <b>22381</b>		
3 x 1/4 x 3/8	20,370	25			NV20-T	662533 <b>43872</b> *	57A24-T	662435 <b>28831</b>		
3 x 3/8 x 3/8	18,080	10					57A24-R	662435 <b>22415</b>		
3 x 1/2 x 3/8	18,080	10					57A24-P	662435 <b>22417</b>		
4 x 1/4 x 3/8	15,280	10			NV20-T	662533 <b>44098</b>	57A24-R	662435 <b>22221</b>		
6 x 1 x 5/8	8,000	5			NV14-R	662531 <b>98589</b>	57A16-QS	662528 <b>09563</b>		
S Webs	8,000	5			NZ III 14-Q	662528 <b>38075</b>				
	8,000	5			NZ III 14-R	662528 <b>37961</b>				
8 x 3/4 x 5/8 S Webs	6,000	10			NV14-S	662533 <b>44347</b>				
8 x 1 x 5/8 S Webs	6,000 6,000	5 5	NZ IV 16-0 NZ IV 16-Q	662530 <b>30778</b> 662530 <b>44532</b>	NV16-Q	662531 <b>98590</b>				
	6,000	10			NV14-R	662533 <b>44355</b>				
	6,000	10			NV14-T	662533 <b>44365</b>				
	6,000	10			NVC16-Q	662531 <b>98592</b>				
Type O6 Straight Cup										
6 x 2 x 5/8-11 Rim 2" Back 3/4"	6,000	5			NZ III 16-R	662528 <b>38577</b>				
Type 11 Flaring Cup		Δ								
4/3 x 2 x 5/8-11 Rim 3/4" Back 3/4"	9,070	10	NZ IV 16-Q	662435 <b>30761</b>	NV16-Q	662531 <b>98583</b>	57A16-Q	662435 <b>10512</b>	Masonry C16-Q	076607 <b>89431</b>
5/3-3/4 x 2 x 5/8-11	7,260	5			NV16-Q	662531 <b>46918</b>	57A16-Q	662528 <b>09598</b>	Metal 16-Q	076607 <b>89430</b>
Rim 1" Back 3/4"	7,260	5			4NZ16-Q RB	690786 <b>40233</b>	57AC16-Q RB	690786 <b>40234</b>		
6/4-3/4 x 2 x 5/8-11	6,000	5			NV16-Q	662531 <b>46925</b>	57A16-Q	662528 <b>25201</b>		
Rim 1" Back 3/4"	6,000	5			NZ III 16-Q	662528 <b>38568</b>				
6/4-3/4 x 2 x 5/8-11	6,000	5	NZ IV 16-P	662528 <b>30765</b>	NV14-R	662533 <b>44371</b>	37C16-P	662528 <b>09609</b>		
Rim 1-1/2" Back 3/4"	6,000	5			NV16-Q	662531 <b>98584</b>	57A16-Q	662528 <b>09618</b>		
	6,000	5			NVC16-Q	662531 <b>46922</b>	57AC16-Q	662528 <b>09608</b>		
	6,000	5			4NZ16-Q RB	690786 <b>40484</b>				
							57AC16-Q RB	690786 <b>40485</b>		
Type 11 Flaring Cup w	vith Steel Ba	ack	/HR							
4/3 x 2 x 5/8-11 Rim 3/4" Back 3/4"	9,070	10			NV16-Q	662531 <b>46917</b>				
5/3-13/16 x 2 x 5/8-11 Rim 1" Back 3/4"	7,260	10			NV16-Q	662531 <b>46920</b>				
6/4-13/16 x 2 x 5/8-11	6,000	5			NV14-R	662533 <b>44373</b>	57A16-Q	662528 <b>09599</b>		
Rim 1-1/2" Back 3/4"	6,000	5			NV16-Q	662531 <b>98586</b>	57AC16-Q	66252809600		
	6,000	5			NVC16-Q	662531 <b>46929</b>	57AC16-Q RB	690786 <b>40486</b>		
	6,000	5			4NZ16-Q RB	690786 <b>40487</b>				
* Std Dkg E0	,									

\* Std.Pkg. = 50

RB = Low odor bond. Note: Ti formulation optimized for grinding Titanium

# TECH TIP

Norton BlueFire and Gemini Type 11 cup wheels now available in new RB low odor bond to help reduce odors associated with portable grinding when used in confined spaces.

# FOUNDRY WHEELS Portable Snagging



			Page 1					10.00	ALC: NO	A Long
			BEST		BETTER		GOOD		GOOD	
			NORZON PLUS		BLUEFIRE		GEMINI		METAL	
	ABR.	ASIVE: Std.	Zirconia Alumina	1	Zirconia Alumin	na/Aluminum Oxide	Aluminum Oxide	)	Aluminum Oxid	e
SIZE (D x T x H)	RPM		SPEC	PART #	SPEC	PART #	SPEC	PART #	SPEC	PART #
Type 16 Cones 🔳 🔊										
1 x 3 x 3/8-24 (ME 107019)	36,290	10			NV20-S	662533 <b>44376</b>	57A24-R	614636 <b>22342</b>	Metal 24	662533 <b>49752</b>
1-1/2 x 2-1/2 x 3/8-24 (ME 44436)	24,190	10					57A24-R	614636 <b>22349</b>	Metal 24	662533 <b>49754</b>
1-1/2 x 2-1/2 x 5/8-11 ME 171651	24,190	10							Metal 20	690786 <b>40046</b>
1-1/2 x 3 x 3/8-24 (ME 139029)	24,190	10			NV20-S	662533 <b>44377</b>				
1-1/2 x 3 x 3/8-24 (ME 171652)	24,190	10							Metal 20	690786 <b>40215</b>
1-1/2 x 3 x 5/8-11 (ME 70535)	24,190	10	NZ IV 20-R	614636 <b>44231</b>	NV20-S	662533 <b>44379</b>	57A24-R	614636 <b>22190</b>	Metal 24	662533 <b>49757</b>
1-3/4 x 3 x 3/8-24 (ME49226)	20,735	10					57A24-R	614636 <b>14503</b>	Metal 24	662533 <b>49840</b>
1-3/4 x 3 x 5/8-11 (ME 33432)	20,740	10					57A24-R	614636 <b>22195</b>	Metal 24	662533 <b>49841</b>
2 x 3 x 3/8-24 ME 157287	18,145	10							Metal 24	662534 <b>76413</b>
2 x 3 x 5/8-11 (ME 28229)	18,145	10	NZ IV 20-R	614636 <b>44232</b>	NV20-S	662533 <b>44381</b>	57A24-R	614636 <b>22218</b>	Metal 24	662533 <b>49846</b>
2-3/4 x 3-1/2 x 5/8-11 (ME 18265)	13,195	10			NV20-S	662533 <b>44383</b>	57A24-R	614636 <b>22387</b>	Metal 24	662533 <b>49855</b>
3 x 3 x 5/8-11 (ME70537)	12,100	10							Metal 24	662434 <b>96885</b>
Type 17 Cones, Square							57404 D	01 400 000 0 0	Malal 04	000500 40750
1-1/2 / 1/2 x 3 x 3/8-24 1-1/2 / 1/2 x 3 x 5/8-11	24,190 24,190	10 10					57A24-R	614636 <b>22194</b>	Metal 24 Metal 20	662533 <b>49753</b> 690786 <b>40224</b>
2 / 1/2 x 3 x 5/8-11	18,145	10					57A24-R	614636 <b>15722</b>	Metal 24	662533 <b>49845</b>
Type 17R Cones, Roun	,						0///ETT		Middle 1	002000 100 10
2 / 3/4 x 3 x 5/8-11 (ME 151373)	18,145				NV20-S	662533 <b>44384</b>				
Type 18 Plugs, Square	-	2								
1-1/2 x 2-1/2 x 3/8-24	24,190	10					57A24-R	614636 <b>22217</b>	Metal 24	662533 <b>49755</b>
1-1/2 x 2-1/2 x 5/8-11	24,190	10	NZ IV 20-R	614636 <b>44224</b>	NV20-S	662533 <b>44385</b>	57A24-R	614636 <b>22351</b>	Metal 20	690786 <b>40226</b>
1-1/2 x 3 x 5/8-11	24,190	10		0140004400	NV20-S	662533 <b>44386</b>	57A24-R	614636 <b>22191</b>	Metal 24	662533 <b>49838</b>
2 x 3 x 5/8-11	18,145 18,145	10 10	NZ IV 20-R	614636 <b>44234</b>	NV20-S NV24-S	662533 <b>44387</b> 662533 <b>44391</b>	57A24-R	614636 <b>22219</b>	Metal 24	662533 <b>49847</b>
2 x 4 x 5/8-11	18,145	10			11724-0	00200077001	57A24-R	614636 <b>22366</b>	Metal 24	662533 <b>49850</b>
Type 18R Plugs, Roun	.,									50200010000
1-1/2 x 2-1/2 x 3/8-24	24,190	10					57A24-R	690786 <b>40230</b>	Metal 20	690786 <b>40229</b>
1-1/2 x 2-1/2 x 5/8-11	24,190	10							Metal 20	690786 <b>40227</b>
1-1/2 x 3 x 3/8-24	24,190	10					57A24-R	614636 <b>22192</b>	Metal 24	662533 <b>49756</b>
1-1/2 x 3 x 5/8-11	24,190	10							Metal 24	662434 <b>95628</b>
2 x 3 x 5/8-11 3 x 3 x 5/8-11	18,145 12,095	10 10			NV20-S	662533 <b>44389</b>	57A24-R	614636 <b>22220</b>	Metal 24 Metal 20	662533 <b>49849</b> 690786 <b>40231</b>

#### **Core Files**

These files consist of coarse grit silicon carbide abrasive in a hard grade, resin-bonded to a reinforcing rod. Half-round in shape, they are a frequent choice for easy cleaning of rough castings.



		TIER:	GOOD								
		ABRASIVE:	Silicon Carbi	de							
SIZE (T x W x L)	STD. PKG.		SPEC.	PART #							
Stock Resinoid Core Files – Silicon Carbide											
1/2 x 1 x 10	5		37C24-SB	614636 <b>10314</b>							





# FOUNDRY WHEELS Floorstand and Swingframe Snagging

Norton snagging wheels maximize your productivity in foundries, welding shops, fabrication facilities, steel mills, and ship yards.

Applications:

Size Range: Abrasive Grain: Shape: Reinforcement: Removing unwanted metal on castings, removing flaws and cracks, removing gates, risers and parting lines 24" and 30" diameters in stock; other diameters available as made-to-order Zirconia Alumina, Zirconia Alumina/Silicon Carbide blend, Aluminum Oxide Type 01 Straight

Strong fiberglass webbing and steel rings for maximum strength

## Floorstand Snagging Wheel Material-to-Product Recommendation Guide

	BEST		BETTER	GOOD				
	4ZF1434- R5B38S	4ZF1434- Q5B38S	4NZ1434- R5B38S	4NZ1434- Q5B38S	ZI/25-R	ZI/26-Q	Charger	Gemini All Purpose
IRON								
Gray	•				•	•	Long Life	•
Ductile/Malleable		•			•	•	Long Life	•
STEEL								
Carbon and Low Alloy			•				Free Cut	•
Stainless and High Alloy				•			Free Cut	•

Note: Grade, Grit and Abrasive tuning may be necessary to obtain optimum performance

## Swingframe Snagging Wheel Material-to-Product Recommendation Guide

BEST					GOOD
4ZF1234-R5B38S	4ZF1434-R5B38S	NZC142-R5B38S	ZI/25-R	ZI/26-Q	Gemini All Purpose
•			•	•	•
•			•	•	•
	•				•
					•
		•			
		•			

Note: Grade, Grit and Abrasive tuning may be necessary to obtain optimum performance

#### **Troubleshooting Guide**

PROBLEM	POSSIBLE CAUSES	SUGGESTED CORRECTION
Poor stock removal	Insufficient pressure applied	Increase pressure to use all available power
	Wheel too coarse or hard	Use finer grit and/or softer grade wheel
	Inadequate abrasive	Try NorZon, 4ZF, or ZI/25 specification
Grinding costs too high	Wheel acting too soft	Use harder and/or coarser wheel
	Low performance specification	Try NorZon or ZI products
Wheel loading or glazing	Grade too hard	Try softer grade
	Grit too coarse	Try finer grit
	Dirty, scale-covered parts	Try NZC wheels
Wheels "dusty"	Wheel too soft	Try harder grade
Wheel doesn't hold corner or	Wheel too coarse	Use finer grit and/or 2 grit combination
wheel spalling	Wheel too soft	Use harder grade
Burning the workpiece	Wheel too hard	Use softer grade
	Wheel glazed or loaded	Dress the wheel face
	Grinding pressure too low	Increase grinding force
	Grinding pressure too high	Reduce grinding force
Surface finish too rough	Wheel too coarse	Try finer grit or try ZI/26 specification
	Wheel speed too slow	Try higher speed machine (Do not exceed maximum operating speed of wheel)
	Worn machine bearings	Rebuild machine
Vibration	Wheel worn out of round	Try truing the wheel
	Faulty flanges	Check flanges for flatness and burrs (see ANSI B7.1)
	Bent machine spindle	Check spindle run-out
	Worn machine bearings	Rebuild machine
Wheel stalls or slows	Grinding force too high	Reduce pressure or contact area
	Wheel too hard	Use softer grade wheel
	Machine power too low	Replace machine with higher power grinder



Best choice for demanding applications

# 4ZF, 4NZ, ZI, AND NZC ZIRCONIA ALUMINA

- · Zirconia alumina abrasive engineered for high-pressure, heavy duty, snagging operations including foundry snagging and stock removal
- · These wheels have high-speed steel rings with fine centers and reinforcing webs for added safety
- 4ZF zirconia alumina grain for exceptional wheel life; engineered for high-pressure, heavy-duty, snagging operations, particularly on iron
- 4NZ zirconia alumina grain for sharpness and an exceptionally high cut rate; developed for low- to medium-pressure operations, especially on steel and steel castings; the most operator-friendly wheels
- ZI zirconia alumina grain stays sharper, longer, making it the choice for iron castings: ZI/25 for tough metal removal, ZI/26 for finer surface finish
- NZC zirconia alumina and silicon carbide blend is ideal for dirty, scale-covered castings

Better choice for strong performance to price ratio

# CHARGER ZIRCONIA ALUMINA

- · Strong, free-cutting aluminum oxide abrasive for foundry snagging and stock removal
- · These wheels have high-speed steel rings with fine centers and reinforcing webs for added safety
- · Good, general-purpose choice for heavy-duty stock removal on low- to medium-horsepower machines

#### Good choice for numerous small jobs

# 5ZF ZIRCONIA ALUMINA AND GEMINI ALUMINUM OXIDE

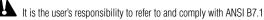
- · These wheels have high-speed steel rings with fine centers and reinforcing webs for added safety
- · Ideal for lower horsepower machines or low-pressure applications
- 5ZF Versatile, good quality zirconia alumina abrasive for foundry snagging and stock removal
- · Gemini versatile aluminum oxide formulation works well with a variety of machines, horsepowers, and operations

		TIER:	BEST		BETTER		GOOD	
	7	RADENAMES:	4ZF, 4NZ, ZI, NZC		CHARGER		5ZF / GEMINI	
SIZE (D x T x H)	MAX. RPM	STD. PKG.	SPEC.	PART #	SPEC.	PART #	SPEC.	PART #
Type 01 Straight								
24 x 3 x 12	1,990	1	4ZF1234-R5B38S	690831 <b>66310</b>			5ZF14-QS	690831 <b>66858</b>
HS Steel Rings with Fine Centers, S Webs	1,990	1					Gemini All Purp.	690831 <b>67173</b>
30 x 2 x 12	1,595	1	4NZ1634-Q5B38S	692104 <b>21412</b>	Charger Free Cut	692104 <b>21417</b>	5ZF14-R	692104 <b>67105</b>
IS Steel Rings with	1,595	1	4ZF1434-R5B38S	692104 <b>66458</b>	Charger Long Life	692104 <b>21418</b>	Gemini All Purp.	692104 <b>17463</b>
ine Centers, S Webs	1,595	1	ZI/25-R	662531 <b>19636</b>			· · · · ·	
	1,595	1	ZI/26-Q	662531 <b>19638</b>				
	1,595	1	NZC142-R5B38S	692104 <b>21414</b>				

For your safety: all floorstand and swingframe wheels have strong fine centers, steel rings and high-strength fiberglass reinforcement construction.

# TECH TIP

- Always ensure proper mounting of floorstand and swingframe wheels by mounting with arrow down as marked on wheel
- Always use safety guard
- Always run wheel for 1 minute before grinding
- For optimum performance, ensure adequate air pressure and air volume when using pneumatic machines
- · Use constant surface foot per minute machines for highest efficiency
- · Do not overdress the wheel face
- Avoid loading or glazing by changing the contact angle
- Use pressure assist whenever possible to obtain maximum cut rate



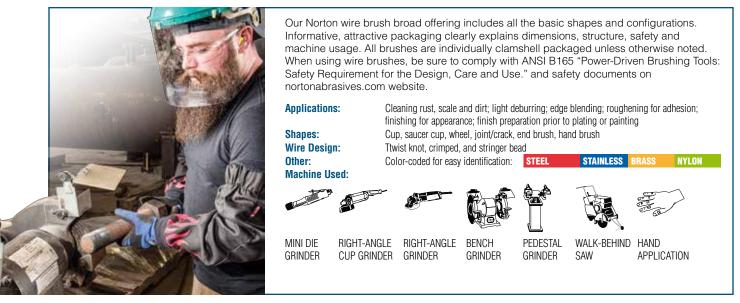
# Wire Brushes

# get wired FOR SUCCESS

Our broad wire brush offering includes the shapes, wire configurations and filament materials you'll need for heavy- to light-duty brushing applications.

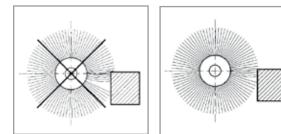


# WIRE BRUSHES Wire Brush Basics



# Why Use Wire Brushes vs. Other Brushes, Coated Abrasive, and Surface-Cleaning Products

Norton Wire brushes remove rust and oxidations, paint, slag, weld spatter and other unwanted surface contaminants, without removing any base material. Other products can remove base material along with the surface contaminant. Our flexible wire brushes are able to clean hard-to-reach places and conform to irregular surfaces, which more rigid products cannot do.











Stringer Bead Twist Knot

Let the tip of the wire brush do the work – operate the brush with the lightest pressure. If heavy pressure is used, wires will be overstressed, resulting in a wiping action, which, if continued, creates wire fatigue and will shorten brush life. Reversing the rotation periodically sharpens the wire tips for faster cutting action and longer life. Use finest suitable wire size.



# TECH TIP

# When to Use Crimped Wire vs. Standard Twist Knot vs. Stringer Bead Twist Knot Brushes

#### Crimped Wire Brushes

Crimped wire brushes' individual filaments are supported only by each other – creating extra flexibility.

Ideal for work on irregular surfaces, finer surface finishing, and light- to medium-duty contaminant removal applications.

#### Standard Twist Knot Wire Brushes

Ensuring longer life, making them the choice for more aggressive applications requiring higher-impact action, and a rougher surface finish.

Standard twist knot brushes are made with straight wire filaments that are twisted together to make more rigid rope- or cable-like pieces.

#### Stringer Bead Twist Knot Wire Brushes

Stringer bead twist knots (vs. standard twist knots) are more tightly twisted to the end of the knot, creating a narrower face and highest-impact action.

The choice for tough weld scale cleaning, removing the bead scale that occurs at the initial joining of two sections of pipe, root and hot weld pass cleaning, and the most aggressive brushing applications.



## Wire Diameter

Choose the appropriate wire brush wire diameter for the job

Very fine to fine wire for light-duty applications

Very fine to fine wit	o loi ligiti	unity application	0115				icavy-uuly	applications		
Wire	Coarse		Medium to	o Coarse	Medium		Fine		Very Fine	
DIAMETER IN INCHES	.032	.020	.020	.015	.012	.0104	.010	.008	.006	.005
DIAMETER IN MM	.80	.50	.50	.37	.30	.26	.25	.20	.15	.13

# TECH TIP

#### Trim Length

Choose the appropriate trim length for the job. "Trim Length" equals the amount of usable filament:

- Longer trim lengths are more flexible, making them the choice for irregular surfaces
- Shorter trim lengths are fast acting and more rigid, so better for more severe applications

# <u>TECH TIP</u>

#### Filament Do's and Don'ts

Excessive pressure bends and could break brush filaments. Instead of increasing the pressure applied, consider:

fire

- A more aggressive brush:
- Increasing wire diameter
- Shorter trim length
- Different brush type, e.g. twist knot versus crimped wire

Medium to coarse wire for heavy\_duty applications

· Increasing RPM without exceeding the MAX RPMs marked on the brush

# Slick Packaging

A good looking product on and off the shelf. Norton BlueFire wire brushes come in a sturdy, clear clamshell package protecting the wire brush until it's ready for use. Educational information is prominently displayed for ease of selection in three languages. The new packaging will be a great addition to the merchandising POP display signage.

# Instructional Videos



#### Wire Brushes Playlist

𝓎 nortonsga.us/wgazw

To learn which wire style is the best choice for your job and see what makes Norton Wire Brushes the ultimate power tool accessories.



Better choice for deburring, removing rust, paint, corrosion and weld spatter from metal surfaces

# **BLUEFIRE WIRE BRUSHES**

- · Perfect for removing rust, scale, paint, and dirt from metal and other surface
- · Available in a variety of brush types and sizes for large flat areas to small, tight spaces
- · Durable design provides a uniform finish while offering the longest life



# Good choice for removing rust oxidation, paint, slag and weld spatter without removing base material

# **GEMINI WIRE BRUSHES**

- · Ideal low-impact solution for refining surfaces without removing any base material
- Flexible design for cleaning hard-to-reach places and conforming to irregular surfaces, which more rigid products cannot do

Economically priced yet solid-performing to complement your projects perfectly while bringing real savings to the bottom line



# WIRE BRUSHES Wire Cup Brushes



Deburring; roughing; cleaning rust, scale, paint and oxidation; cleaning corners, recesses, and other hard-to-reach areas and removing concrete and large surfaces

# WIRE CUP BRUSHES

- Used on right angle cup grinders
- Twist Knot style for heavy-duty applications
- · Crimped cup for light- to medium-duty applications

# Twist Knot Wire Saucer Cup Brushes

• Saucer cup brushes are ideal for reaching into and cleaning corners and hard-to-reach areas where a standard cup brush cannot.

			TIER:	BETTER	BETTER
			TRADENAME:	BLUEFIRE	BLUEFIRE
			WIRE TYPE:	STEEL	STAINLESS
SIZE	TRIM LENGTH	MAX. RPM	STD. PKG.	PART #	PART #
Twist Knot Wire Saucer	Cup Brushes - Single	Row - with Th	readed Nut		
4 x 0.020 x 5/8-11	7/8	15,000	5	662528 <b>33483</b>	
5 x 0.020 x 5/8-11	1-1/8	12,500	10	662528 <b>35585</b>	66252835586

# Twist Knot Wire Cup Brushes

100

- Their more rigid structure allows efficient, high-impact cutting and cleaning on more demanding applications.
- · Single row construction limits flaring of the brush on corners and angles

Carl	Y			intes	ines		Constant of	min	There
	-		TIER:	BETTER	BETTER	BETTER	BETTER	GOOD	GOOD
			TRADENAME:	BLUEFIRE	BLUEFIRE	BLUEFIRE	BLUEFIRE	GEMINI	GEMINI
			WIRE TYPE:	STEEL	STAINLESS	STEEL	STEEL	STEEL	STAINLESS
SIZE	TRIM LENGTH	MAX. RPM	STD. PKG.	PART #					
Twist Knot Wire Cup Brushes -	Single Row – v	vith Threade	d Nut						
2-3/4 x 0.014 x 5/8-11	7/8	14,000	5						662528 <b>38871</b>
2-3/4 x 0.014 x 5/8-11	1	14,000	5					662528 <b>39109</b>	
2-3/4 x 0.020 x 5/8-11	3/4	15,000	5	699366 <b>53336</b>	699366 <b>53340</b>				
2-3/4 x 0.020 x 5/8-11	1	14,000	10					662528 <b>39033</b>	662528 <b>38812</b>
3 x 0.020 x 5/8-11	7/8	14,000	5					662528 <b>38835</b>	662528 <b>39127</b>
3 x 0.020 x M10	7/8	14,000	5					662528 <b>39075</b>	
3-1/2 x 0.020 x 5/8-11	7/8	13,000	5					662528 <b>38813</b>	
3-1/2 x 0.020 x 5/8-11	1-3/8	13,000	5					662528 <b>38868</b>	
4 x 0.020 x 5/8-11	1-1/8	9,000	10					662528 <b>39103</b>	
4 x 0.020 x 5/8-11 with bridle	1-1/16	10,200	5	699366 <b>53345</b>	662528 <b>33947</b>				
4 x 0.023 x 5/8-11	1-1/4	9,000	5					662528 <b>39090</b>	
6 x 0.020 x 5/8-11	1-3/8	6,000	5	699366 <b>05965</b>	662533 <b>71115</b>			662528 <b>39104</b>	
6 x 0.023 x 5/8-11	1-3/8	6,000	5					662528 <b>39091</b>	
6 x 0.035 x 5/8-11	1-3/8	6,000	5	699366 <b>02003</b>					
<b>Twist Knot Wire Cup Brushes -</b>				tective Guard					
2-3/4 x 0.020 x 5/8-11	3/4	15,000	5			662528 <b>33492</b>			
4 x 0.020 x 5/8-11	1-1/8	10,200	5			662528 <b>33496</b>			
5 x 0.020 x 5/8-11	1-1/8	6,500	5			662528 <b>33497</b>			
<b>Twist Knot Wire Cup Brushes -</b>			ed Nut						
6 x 0.020 x 5/8-11	1-3/8	6,000	5				699366 <b>53346</b>		



-

020



# WIRE BRUSHES Wire Cup Brushes

# Crimped Wire Cup Brushes

For light- to medium-duty brushing applications on flat or irregular surfaces, and bevel buffing where added flexibility is needed; fast-cutting and flexible, with heavy wire fill

- Machine for cups with threaded nuts: right angle cup grinder
- · Machine for stem mounted cups: straight in-line grinder, pencil grinder



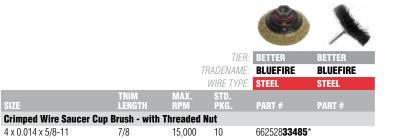
			TIER	BETTER
		TF	RADENAME	BLUEFIRE
			WIRE TYPE	STEEL
	TRIM	MAX.	STD.	
SIZE	LENGTH	RPM	PKG.	PART #
High Performance Cable - with Threaded Nut and			S	
3 x (12 x 0.009) x 5/8-11	7/8	15,000	5	662528 <b>33493</b>
4 x (12 x 0.009) x 5/8-11	1-3/16	9,000	5	662528 <b>33494</b>



			WIRE TYPE:	STEEL	STAINLESS	STEEL
SIZE	TRIM Length	MAX. RPM	STD. PKG.	PART #	PART #	PART #
<b>Crimped Wire Cup Brush</b>	es – with Thr	readed Nut				
2-3/4 x 0.014 x 5/8-11	1	14,000	5			662528 <b>38856</b>
2-3/4 x 0.020 x 3/8-24	1	14,000	5			662528 <b>39080</b>
3 x 0.014 x 5/8-11	13/16	14,000	5			662528 <b>39076</b>
3 x 0.014 x 5/8-11	7/8	15,000	5	699366 <b>53341</b>	662528 <b>36362</b>	
3 x 0.014 x 5/8-11	1	14,000	10			662528 <b>39034</b>
4 x 0.014 x 5/8-11	1-1/8	9,000	10			662528 <b>39121</b>
4 x 0.014 x 5/8-11	1-3/16	10,200	5	699366 <b>53347</b>		
4 x 0.020 x 5/8-11	1-3/16	10,200	1	699573 <b>70103</b>		
4 x 0.020 x 5/8-11	1-3/16	10,200	5		662528 <b>43844</b>	
5 x 0.014 x 5/8-11	1-3/8	8,000	5			662528 <b>39105</b>
6 x 0.014 x 5/8-11	1-1/8	6,600	5	699366 <b>53348</b>		
6 x 0.020 x 5/8-11	1-1/8	6,600	5	699366 <b>53349</b>		

TRADENAME: BLUEFIRE





1

1

\* Brass-coated carbon steel filaments



				-	and the second	C.
			TIER:	GOOD	GOOD	GOOD
			TRADENAME:	GEMINI	GEMINI	GEMINI
			WIRE TYPE:	STEEL	STAINLESS	BRASS
SIZE	TRIM Length	MAX. RPM	STD. PKG.	PART #	PART #	PART #
Crimped Wire Cup Brus	shes - with Ste	m				
5/8 x 0.005 x 1/8	1/4	37,000	100			662528 <b>39087</b>
1-3/4 x 0.012 x 1/4	3/4	13,000	12	662528 <b>39028</b>		
2 x 0.010 x 1/4	5/8	10,500	12		662528 <b>38859</b>	
2-1/4 x 0.014 x 1/4	5/8	4,500	10	662528 <b>38860</b>		



BLUEFIRE

GEMINI



# WIRE BRUSHES Wire Wheel Brushes





Applications range from the toughest, more aggressive surface cleaning applications, including removing weld scale, spatter, extra-heavy rust and corrosion, cleaning pipe joints, or surface roughening to light- to medium- duty surface cleaning and contaminant removal

# WIRE WHEEL BRUSHES

- · Available in Standard Twist Knot, Stringer Bead Twist Knot, and Crimped
- · See specific machines for each wire wheel below

# Standard Twist Knot Wire Wheel Brushes

Our twist knot wire design provides added rigidity for extra cutting and cleaning power, and a rougher surface finish.

- Wheel brushes with threaded nuts perform well on more aggressive applications requiring high-impact action: tough
  welding and metal fabrication applications, including removing weld scale, spatter, extra-heavy rust.
- These stem-mounted wheel brushes are used for small-to medium-duty jobs requiring some flexibility and lighter brushing action for corrosion, or surface roughing applications. These brushes are used on straight shaft, die, pencil grinders, drills and right angle grinders.

South States	///			HER.	BEITER	BEITER	BEITER	GUUD	GUUD
and the season of the season o	15 m		TRA	DENAME:	BLUEFIRE	BLUEFIRE	BLUEFIRE	GEMINI	GEMINI
			W	IRE TYPE:	STEEL	STAINLESS	PIPELINE	STEEL	STAINLESS
0175	FACE	TRIM	MAX.	STD.	DADT //	D407 //	DADT //	D4D7 //	DADT #
SIZE	WIDTH	LENGTH	RPM	PKG.	PART #				
Standard Twist Knot Wire V	Vheel Brushes	– with Thre	eaded Nut						
4 x 0.014 x 5/8-11	1/2	3/4	20,000	6	699573 <b>70137</b>				
4 x 0.014 x 5/8-11	1/2	7/8	20,000	10				662528 <b>39052</b>	
4 x 0.020 x 5/8-11	1/2	3/4	20,000	5	662528 <b>38300</b>				
4 x 0.020 x 5/8-11	1/2	3/4	20,000	6		699573 <b>70138</b>			
4 x 0.020 x 5/8-11	1/2	7/8	20,000	5				662528 <b>39078</b>	662528 <b>39020</b>
4 x 0.020 x 5/8-11	1/2	7/8	20,000	10				662528 <b>39035</b>	
4 x 0.020 x 5/8-11	9/16	7/8	20,000	10				662528 <b>39019</b>	
4-1/2 x 0.020 x 5/8-11	1/2	1	20,000	5	699366 <b>06275</b>	699366 <b>53333</b>			
4-1/2 x 0.020 x 5/8-11	1/2	1	20,000	6	699366 <b>53331</b>				
4-1/2 x 0.020 x 5/8-11	1/2	1	20,000	6			662528 <b>40466</b>		
5 x 0.020 x 5/8-11	1/2	1	12,500	5	662528 <b>33487</b>	662528 <b>33488</b>			
6 x 0.020 x 5/8-11	1/2	1-3/8	12,500	5	699366 <b>53352</b>				
6 x 0.020 x 5/8-11	5/8	1-1/4	9.000	5				662528 <b>39107</b>	
Standard Twist Knot Wire V	Vheel Brushes	– with Arbo	nr Hole						
3 x 0.014 x 3/8	3/8	5/8	25,000	1				662528 <b>39021</b>	
4 x 0.014 x 5/8	5/16	7/8	20,000	5				662528 <b>39011</b>	
4 x 0.014 x 5/8	1/2	3/4	20,000	6	699573 <b>70136</b>				
6 x 0.014 x 5/8	1/2	1-1/2	9,000	5				662528 <b>39014</b>	
0 / 0.0 / 0,0	1/2	/ ⊑	0,000					00202000011	



				TIER:	GOOD
			7	RADENAME:	GEMINI
				WIRE TYPE:	STEEL
SIZE	FACE WIDTH	TRIM LENGTH	MAX. RPM	STD. PKG.	PART #
<b>Standard Twist Knot</b>	Wire Wheel Br	ushes - with St	em		
3 x 0.014 x 1/4	1/4	5/8	25,000	12	662528 <b>39015</b>
3-1/4 x 0.014 x 1/4	3/8	5/8	25,000	10	662528 <b>39031</b>
4 x 0.014 x 1/4	1/2	7/8	25,000	8	662528 <b>39032</b>



# WIRE BRUSHES Wire Wheel Brushes

1224-



## Stringer Bead Twist Knot Wire Wheel Brushes

The choice for toughest weld scale cleaning; removing the bead scale that occurs at the initial joining of two sections of pipe; root, and hot weld pass cleaning, and the most aggressive brushing applications. Stringer Bead Twist Knot Wire Wheel Brushes are best used on right angle grinders for difficult jobs.

		E								AND A	NOF
15				TIER:	BETTER	BETTER	BETTER	BETTER	BETTER	GOOD	GOOD
	1110	100	TRAF	ENAME:	BLUEFIRE	BLUEFIRE	BLUEFIRE	BLUEFIRE	BLUEFIRE	GEMINI	GEMINI
- 0		Van.		RE TYPE:	STEEL	STEEL	STEEL	STAINLESS	STAINLESS	STEEL	STAINLESS
	and would dout		V V 11	OTHER:	UTLL	Pipeline	Heavy-Duty	OTAMELOO	Pipeline	01222	OTAINEE00
	FACE	TRIM	MAX.	STD.		Tipolillo	Houvy Duty		ripolitio		
SIZE	WIDTH	LENGTH		PKG.	PART #	PART #	PART #	PART #	PART #	PART #	PART #
<b>Stringer Bead Knot Wi</b>	ire Wheel	Brushes -	– with Th	readed	Nut						
4 x 0.020 x 5/8-11	3/16	7/8	20,000	5	699366 <b>06277</b>			699366 <b>06278</b>			
4 x 0.020 x 5/8-11	3/16	7/8	20,000	6		66252840467*			66252842233*		
4 x 0.020 x 5/8-11	3/16	7/8	20,000	10	662533 <b>70022</b> *					662528 <b>39036</b>	662528 <b>39039</b>
4 x 0.020 x 5/8-11	1/4	7/8	20,000	5						662528 <b>38997</b>	
4 x 0.020 x 5/8-11	1/4	7/8	20,000	10							
4 x 0.020 x 5/8-11	1/2	7/8	20,000	10						662528 <b>39130</b>	
4 x 0.020 x 5/8-11	1/2	1	20,000	10						662528 <b>39106</b>	
4 x 0.020 x M10	3/16	7/8	20,000	6				699573 <b>70144</b>			
4 x 0.020 x M10	3/16	7/8	20,000	10							
4-1/2 x 0.020 x 5/8-11	3/16	3/16	15,000	5						662528 <b>39111</b>	
4-1/2 x 0.020 x 5/8-11	3/16	1-1/8	12,500	6		662528 <b>42299</b> *	662528 <b>44886</b>				
5 x 0.020 x 5/8-11	3/16	7/8	12,500	10	662528 <b>33490</b> *			662528 <b>33491</b> *			
5 x 0.020 x 5/8-11	1/2	7/8	12,500	5						662528 <b>39133</b>	
6 x 0.020 x 5/8-11	3/16	1-3/8	12,500	10		662528 <b>40469</b> *		699366 <b>53351</b>			
6-7/8 x 0.020 x 5/8-11	3/16	1-1/8	9,000	10		662528 <b>40468</b> *	662528 <b>43919</b> *				
9 x 0.020 x 5/8-11	3/16	2-1/8	6,000	6	662528 <b>37993</b>						
Joint Crack Cleaning											
12 x 0.035 x 1-DP	3/8	3-1/4	4,500	2	699366 <b>06280</b>						
*Dully Declard Hom											

\*Bulk Packed Item



#### **Radial Wheel**

Nylon Radial Wheel Brushes are best used for deburring, surface and light cleaning, adding an edge radius on ferrous and non-ferrous parts. The long trim length is ideal when used on intricate or irregular parts.

• Machine: Bench and Pedestal, Automated CNC, Inline Grinders

				TIER:	GOOD
				TRADENAME:	GEMINI
				WIRE TYPE:	NYLON
SIZE	FACE WIDTH	TRIM LENGTH	MAX. RPM	STD. PKG.	PART #
<b>Radial Wheel with Arbor Hole</b>					
3 x 3/8 x 5/8	3/8	15/16	15,000	12	662528 <b>38842</b>

## **Crimped Wire Wheel Brushes**

Stem-mounted wheel brushes are used on straight shaft, die, and pencil grinders, and drills. Wheel brushes with arbor holes are used on bench and pedestal grinders. Their extra flexibility and lower impact makes these brushes an excellent choice for cleaning irregular surfaces and finer surface finishing, and light to medium duty surface contaminant removal applications. May be used individually or stacked on a shaft.

- · Narrow-faced brushes are ideal for general-purpose brushing of uneven or difficult-to-reach surfaces.
- · Medium-faced brushes clean larger surface areas and have longer life



Crimped Wire with Threaded Nut – Narrow Face – Steel

ionger me.						0	0
					TIER:	BETTER	GOOD
					TRADENAME:	BLUEFIRE	GEMINI
					WIRE TYPE:	STEEL	STEEL
	FACE	TRIM	MAX.				
SIZE	WIDTH	LENGTH	RPM	STD. PKG.		PART #	PART #
<b>Crimped Wire Wheels B</b>	Brushes	with Threa	ded Nut –	<b>Narrow Fa</b>	ce		
4 x 0.014 x 5/8-11	7/16	7/8	15,000	10			662528 <b>39001</b>
<b>Crimped Wire Wheels B</b>	Brushes	with Threa	ded Nut –	Medium Fa	ace		
4-1/2 x 0.014 x 5/8-11		1	13,000	6		662533 <b>70278</b>	



# WIRE BRUSHES Wire Wheel Brushes

				TIER:	BETTER	GOOD	GOOD
			TRAL	DENAME:	BLUEFIRE	GEMINI	GEMINI
			WI	RE TYPE:	STEEL	STEEL	STAINLESS
SIZE	FACE WIDTH	TRIM Length	MAX. RPM	STD. PKG.	PART #	PART #	PART #
<b>Crimped Wire Wheels</b>	s Brushes	with Arbo	r Hole – N	arrow Fa	ice		
2 x 0.014 x 1/2	3/8	1/2	20,000	12		662528 <b>39023</b>	
3 x 0.005 x 1/2	1/4	1	20,000	20			662528 <b>38960</b>
3 x 0.014 x 1/2	5/8	1	20,000	10		662528 <b>39024</b>	
6 x 0.014 x 1/2-2	3/4	1-1/8	6,500	5	699366 <b>53306</b>		
8 x 0.014 x 5/8	3/4	1-9/16	4,500	5		662528 <b>39099</b>	
8 x 0.014 x 5/8	3/4	1-5/8	4,000	1	699573 <b>70117</b>	0005000000	
8 x 0.014 x 5/8	3/4	2-1/16	6,000	5		662528 <b>39089</b>	
8 x 0.014 x 1-1/4	5/8	1-1/2	4,000	5		662528 <b>38978</b>	
<b>Crimped Wire Wheels</b>	s Brushes						
6 x 0.014 x 1/2-2	1	1-1/8	6,500	5	699366 <b>53324</b>		
8 x 0.014 x 1/2-2	1-1/16	1-5/8	4,500	5	699366 <b>53326</b>		
8 x 0.014 x 5/8	1	1-9/16	4,000	5		662528 <b>39100</b>	
8 x 0.014 x 2		1-3/8	4,500	5		662528 <b>39025</b>	
10 x 0.014 x 3/4	1-9/16	2-1/2	3,600	1		662528 <b>39102</b>	
<u>12 x 0.012 x 2</u>	2	2	3,600	1	699573 <b>70135</b>		
12 x 0.012 x 2	2	3-1/4	3,600	1		662528 <b>39006</b>	



Crimped WIre with Arbor hole - Narrow Face - Steel



1020N	

Crimped WIre with Stem

						State of the		The State of the S	<b>N</b>
				TIER:	BETTER	BETTER	GOOD	GOOD	GOOD
			TRADE	NAME:	BLUEFIRE	BLUEFIRE	GEMINI	GEMINI	GEMINI
			WIRE	TYPE:	STEEL	STAINLESS	STEEL	STAINLESS	BRASS
	FACE	TRIM	MAX.	STD.					
SIZE	WIDTH	LENGTH	RPM	PKG.	PART #	PART #	PART #	PART #	PART #
<b>Crimped Wire Whe</b>	els Brus	hes with	Narrow Fa	ace - v	vith Stem				
1 x 0.005 x 1/8	1/8	5/16	37,000	100					662528 <b>39085</b>
1-1/2 x 0.008 x 1/4	1/4	1/4	25,000	20			662528 <b>38962</b>		
1-1/2 x 0.014 x 1/4	1/4	1/4	25,000	20			662528 <b>38963</b>		
2 x 0.006 x 1/4	3/8	1/2	20,000	20			662528 <b>39029</b>		
2 x 0.008 x 1/4	3/8	7/16	25,000	20			662528 <b>38964</b>		
2 x 0.0118 x 1/4	3/8	1/2	20,000	20			662528 <b>39030</b>		
2 x 0.014 x 1/4	3/8	7/16	25,000	12	699573 <b>70123</b>				
2-1/2 x 0.008 x 1/4	7/16	11/16	25,000	10			662528 <b>38967</b>		
2-1/2 x 0.014 x 1/4	5/8	5/8	25,000	12	699573 <b>70126</b>				
3 x 0.008 x 1/4	7/16	3/4	25,000	10			662528 <b>38969</b>		
3 x 0.008 x 1/4	7/16	3/4	25,000	12				662528 <b>38972</b>	
3 x 0.0118 x 1/4	5/8	5/8	25,000	12	699573 <b>70132</b>				
3 x 0.014 x 1/4	7/16	3/4	25,000	12				662528 <b>38973</b>	
<u>3 x 0.014 x 1/4</u>	1/2	1	20,000	20				662528 <b>39048</b>	
3 x 0.014 x 1/4	5/8	5/8	25,000	12	699573 <b>70130</b>	699573 <b>70131</b>			
3 x 0.020 x 1/4	3/8	1	20,000	12			662528 <b>39096</b>		
4 x 0.014 x 1/4	1/2	1	25,000	12			662528 <b>38974</b>		





Clean and deburr recessed areas or inside diameters of tubes and pipes to proper surface finish; rubber and plastic flash removal; paint and rust removal, and mold and tool polishing

# END BRUSHES

- Used on CNC, Robotic, die grinders, and drill presses
- Twist knot wire end brushes for more aggressive cutting
- · Crimped wire end brushes for lighter brushing action and contoured surfaces



## Twist Knot Wire End Brush

Their added wire rigidity makes these brushes the choice for more aggressive cutting.

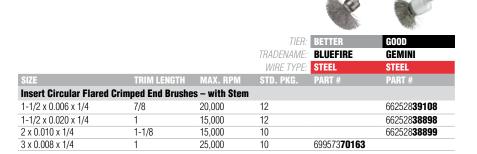
					Contraction of the second		
			TIER:	BETTER	BETTER	GOOD	GOOD
. All	on ta		TRADENAME:	BLUEFIRE	BLUEFIRE	GEMINI	GEMINI
			WIRE TYPE:	STEEL	STAINLESS	STEEL	STAINLESS
SIZE	TRIM LENGTH	MAX. RPM	STD. PKG.	PART #	PART #	PART #	PART #
wist Knot Wire End	Brushes – with Stem						
1/2 x 0.006 x 1/4	1-1/8	22,000	20			662528 <b>38876</b>	
1/2 x 0.014 x 1/4	1-1/8	22,000	20			662528 <b>38877</b>	
3/4 x 0.014 x 1/8	7/8	22,000	20			662528 <b>39056</b>	
8/4 x 0.014 x 1/4	7/8	25,000	10		699573 <b>70165</b>		
8/4 x 0.014 x 1/4	7/8	22,000	20			662528 <b>38879</b>	
3/4 x 0.020 x 1/4	7/8	25,000	10	699366 <b>53316</b> *			
8/4 x 0.020 x 1/4	7/8	22,000	20			662528 <b>39057</b>	
8/4 x 0.020 x 1/4	1	22,000	20			662528 <b>39116</b>	662528 <b>39118</b>
3/4 x 0.020 x 1/4	1-1/8	22,000	20			662528 <b>38878</b>	
x 0.006 x 1/4	1-1/8	22,000	20				662528 <b>38885</b>
x 0.010 x 1/4	1-1/8	22,000	25				662528 <b>38886</b>
x 0.014 x 1/4	7/8	25,000	10	699366 <b>06279</b> *	699573 <b>70167</b>		
x 0.014 x 1/4	1	22,000	20			662528 <b>38882</b>	662528 <b>38887</b>
x 0.020 x 1/4	7/8	25,000	10	699366 <b>53310</b> *			
x 0.020 x 1/4	1	22,000	20				662528 <b>39119</b>
1 x 0.020 x 1/4	1	22,000	25			662528 <b>39117</b>	

\* Bulk Packed Item



## Insert Circular Flared Crimped Wire End Brush

The flared end configuration facilitates interior side cleaning and will not harm the bottom of the hole.





# WIRE BRUSHES End Brushes



# **Crimped Wire End Brushes**

Designed to generate lighter brushing action and reach into contoured surfaces.

	of the first service of the service			a second	P.	a contraction of the second	C.St
			TIE	R: BETTER	BETTER	GOOD	GOOD
			TRADENAN	E: BLUEFIRE	BLUEFIRE	GEMINI	GEMINI
			WIRE TYP	E: STEEL	STAINLESS	STEEL	STAINLESS
SIZE	TRIM LENGTH	MAX. RPM	STD. PKG.	PART #	PART #	PART #	PART #
<b>Crimped Wire End Brushe</b>	s – with Stem						
1/4 x 0.005 x 1/8	7/16	37,000	12				662528 <b>39086</b>
1/2 x 0.005 x 1/4	1	25.000	20				662528 <b>38902</b>
1/2 x 0.006 x 1/4	3/8	25,000	20			662528 <b>39040</b>	
1/2 x 0.006 x 1/4	1	25,000	20			662528 <b>38889</b>	662528 <b>39043</b>
1/2 x 0.010 x 1/4	1	25,000	20			662528 <b>38890</b>	
1/2 x 0.014 x 1/4	1	25,000	20				662528 <b>38888</b>
1/2 x 0.020 x 1/4	1	25,000	20			662528 <b>38891</b>	
3/4 x 0.006 x 1/4	1	25,000	10		699366 <b>06145</b> *		
3/4 x 0.010 x 1/4	3/8	22,000	20			662528 <b>39053</b>	
3/4 x 0.014 x 1/4	1	25,000	10	699366 <b>53317</b> *			
3/4 x 0.020 x 1/4	7/8	22,000	20			662528 <b>39112</b>	
3/4 x 0.020 x 1/4	1	25,000	10	699573 <b>70152</b>			
3/4 x 0.020 x 1/4	1	22,000	20			662528 <b>38892</b>	
1 x 0.005 x 1/4	1	22,000	20				662528 <b>38896</b>
1 x 0.006 x 1/4	1	22,000	25			662528 <b>39045</b>	662528 <b>38838</b>
1 x 0.006 x 1/4	1-3/16	25,000	10	699573 <b>70154</b>	699573 <b>70155</b>		
1 x 0.010 x 1/4	1	22,000	20				662528 <b>38897</b>
1 x 0.010 x 1/4	1	22,000	25				662528 <b>39055</b>
1 x 0.0104 x 1/4	1-3/16	25,000	10		699573 <b>70157</b>		
1 x 0.014 x 1/4	3/4	20,000	20			662528 <b>39094</b>	
1 x 0.014 x 1/4	1	22,000	20			662528 <b>39046</b>	
1 x 0.014 x 1/4	1-3/16	25,000	10	699573 <b>70158</b>			
1 x 0.020 x 1/4	7/8	22,000	20			662528 <b>39095</b>	
1 x 0.020 x 1/4 * Bulk Packed Item	1-3/16	25,000	10	699366 <b>53309</b> *			

Bulk Packed Item





# WIRE BRUSHES Tube Brushes



Cleaning, polishing, reaming, finishing and removing debris, burrs, rust, residues, and surface contaminants inside cylindrical items, including tubes, pipes, bottles, smooth-sided and threaded holes, and other industrial components

# TUBE BRUSHES

- Use manually or fastened to portable or fixed machines (including drills, drill presses, and CNC machines)
- Available in single and double stem providing firm support when working internally
- A wide selection of shapes and filament variations to achieve the best results on many different applications



## Single Stem, Single Spiral Tube Brush – with Eye Loop

These spiral brushes have a single layer of filament twisted around a stem wire to create additional strength and higher density fill brushes. This spiral configuration ensures consistent and constant abrasive contact with the tube. Formed eye loop at the end of the stem for convenient hand use.

		TIER:	GOOD	GOOD	GOOD
	TR/-	DENAME:	GEMINI	GEMINI	GEMINI
	И	IRE TYPE:	STEEL	STAINLESS	BRASS
SIZE	TRIM Length	STD. PKG.	PART #	PART #	PART #
Single Stem, Single Sp	oiral Tube Bru	sh – witl	n Eye Loop		
3/16 x 0.004 x 0.094	5/64	12	662528 <b>38913</b>		
3/16 x 0.003 x 0.094	1-1/2	12	662528 <b>38822</b>		
1/4 x 0.004 x 0.115	5/64	12	662528 <b>38914</b>		
3/8 x 0.004 x 0.125	2	12			662528 <b>38826</b>
3/8 x 0.004 x 0.132	1/8	12	662528 <b>38916</b>		
3/8 x 0.006 x 0.168	1-1/2	12		662528 <b>38946</b>	



## Double Stem, Single Spiral Tube Brush – with Stem

These brushes have two stem wires. This results in a brush with high strength and one with consistent and constant abrasive contact with the tube.

			Mo Haven
		TIER	GOOD
	TR	ADENAME.	GEMINI
	ļ	VIRE TYPE.	NYLON
SIZE	TRIM Length	STD. PKG.	PART #
Double Stem, Single Sp	iral Tube Br	ush – witl	n Stem
3/4 x 0.040 x 0.238	3/8	12	662528 <b>38850</b>



# WIRE BRUSHES Tube Brushes



#### Power Burr, Single Spiral Tube Brush – with Stem

Power burr brushes are used to remove burrs resulting from previous operations. They are designed to remove burrs without creating secondary burrs or leaving sharp edges.



## Double Stem, Double Spiral Tube Brush – with Stem

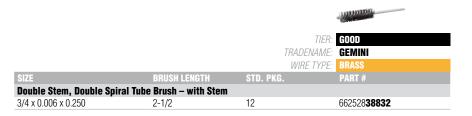
Brush filaments are twisted between two stem wires with two layers of filament bristles. Each layer is perpendicular to the other with a single stem wire in each of the brush's four sections. This configuration ensures consistent and constant abrasive contact with the tube.



## Single Spiral Nylon Hand Tube Brush – with Eye Loop

These brushes are made with larger stem wires to give them the strength and rigidity needed for manual cleaning applications.

			- Adda	- det
		TIEF	GOOD	GOOD
		TRADENAME	GEMINI	GEMINI
		WIRE TYPE	STEEL	STAINLESS
SIZE	TRIM LENGTH	STD. PKG.	PART #	PART #
<b>Power Burr Single Spiral</b>	Tube Brushes – with Stem			
1/4 x 0.004 x 0.125	1	12	662528 <b>39061</b>	662528 <b>39081</b>
3/8 x 0.004 x 0.125	1	12	662528 <b>39062</b>	662528 <b>39050</b>
3/8 x 0.005 x 0.125	9/64	12	662528 <b>38910</b>	
1/2 x 0.005 x 0.188	1	12	662528 <b>39063</b>	662528 <b>39051</b>
5/8 x 0.005 x 0.188	1	12	662528 <b>39064</b>	
3/4 x 0.006 x 0.219	1	12	662528 <b>39065</b>	
1 x 0.005 x 0.125	15/32	12	662528 <b>38912</b>	
1 x 0.005 x 0.250	1	12	662528 <b>39066</b>	662528 <b>39083</b>



			- Water and a second
			TIER: GOOD
		TRADEI	VAME: GEMINI
		WIRE	TYPE: NYLON
SIZE	TRIM LENGTH	STD. PKG.	PART #
<b>Single Spiral Nylon Hand Tu</b>	ıbe Brush – with Eye Loop		
1/2 x 0.008 x 0.094	3	12	662528 <b>38939</b>
1/2 x 0.010 x 0.125	3	12	662528 <b>38820</b>
1 x 0.010 x 0.156	25/64	12	662528 <b>38941</b>
1 x 0.022 x 0.156	2-1/2	12	662528 <b>38817</b>
1-1/4 x 0.010 x 0.219	1/2	12	662528 <b>38943</b>
2 x 0.010 x 0.219	1/2	12	662528 <b>38944</b>



# WIRE BRUSHES Tube and Hand Brushes



## Flue Double Spiral Tube Brushes – with 1/4" x 2" NPT Pipe Nipple with Stem

These aggressive brushes are designed specifically for efficient pipe and boiler cleaning.

			TIER: GOOD
		TRADEN	AME: GEMINI
		WIRE	TYPE: STEEL
SIZE	TRIM LENGTH	STD. PKG.	PART #
Flue Double Spiral Tube B	rushes – with 1/4" x 2" NP	T Pipe Nipple – with S	Stem
1 x 0.010 x 0.313	25/64	12	662528 <b>38932</b>
1-3/4 x 0.012 x 0.313	1/2	12	662528 <b>38934</b>



## Side-Action Tube Crimped Wire Tube Brushes – with Stem

Their dense side filament configuration creates increased bristle rigidity with minimal flexing, to aggressively clean the tube without changing its geometry or surface finish.

			TIER: GOOD
		TRADEI	VAME: GEMINI
		WIRE	TYPE: STEEL
SIZE	TRIM ENGTH	STD. PKG.	PART #
Side-Action (Burrite) Crit	nped Wire Tube Brush – w	vith Stem	
1/4 x 0.003 x 0.094	5/64	12	662528 <b>38908</b>

## Hand Brushes

Hand brushes come in a variety of handle and filament shapes and styles for most hand scratching applications. They are favored by many in removing scale, surface coatings, or removing weld debris.



#### For steel/stainless

# HAND BRUSHES

- Long handle and shoe handle brushes are made with a high-carbon, brass-coated steel; stainless steel is made with a 302 stainless.
- Plastic ergonomic handle scratch brush with curved face to access hard-to-reach places. Crimped wire for longer life. Wires are wrapped up and around the metal post so they never come out.
- · Narrow brush allows access into tight areas and slots.

					P.m.	P-111	and a second	
				TUTUMANA	and the second second	and the second second	and the second s	CONTRACT
			TIER	BETTER	BETTER	BETTER	BETTER	BETTER
			TRADENAME	BLUEFIRE	BLUEFIRE	BLUEFIRE	BLUEFIRE	BLUEFIRE
			WIRE TYPE	STAINLESS	STEEL	STAINLESS	STEEL	STAINLESS
SIZE	HANDLE Type	TRIM Length	STD. PKG.	PART #	PART #	PART #	PART #	PART #
Hand Scra	tch Brushes – With Handl	e						
3 x 19	Long Handle	1-3/16	12	662528 <b>33950</b>				
4 x 16	Shoe Handle	1-3/16	12		662528 <b>33949</b>	662528 <b>33951</b>		
5 x 10	Plastic Handle	1-1/8	24				662528 <b>33954</b>	
3 x 7	Inspection Brush	1/2	36					662528 <b>33952</b>



# NYLON BRUSHES Nylon Brushes



When maximum conformability is needed, tough, Norton nylon brushes' flexible nylon filaments embedded with abrasive grain provide exceptional finishing and polishing and eliminate the need for costly and inconsistent hand deburring applications.

Norton nylon brushes are precision-engineered with the highest quality abrasive grains for those markets with the strictest requirements – for easy integration into today's automated machinery, CNC machining centers, transfer lines, robotic cells, and other highly-specialized machinery, as well as hand tools.

Applications:	Deburring, cleaning, finishing, and polishing
Brush Configurations:	Radial wheel brushes, narrow face wheel brushes, disc brushes, end brushes, and twisted brushes
Markets:	Aerospace/aircraft, automotive, construction/utility products, medical, metal finishing, woodworking
Abrasive Grain:	Ceramic Alumina, Silicon Carbide

## Why Choose Nylon Abrasive Brushes?

- Abrasive grain cutting points are increased as the grain is exposed and cut equally when pressure is applied to the side or tip of the filament
- Uniform distribution of grain throughout the filaments allows cutting and finishing performance levels to remain consistent throughout the life of the brush – making Norton abrasive brushes ideal for automated applications
- Heat- and stress-resistant filaments prolong brush life and allow for superior conformability to irregular surface shapes
- The grain impregnated filaments act as a flexible file to deburr and radius edge profiles with precision, without gouging or affecting the overall geometry of a part
- The filaments bend at various angles to fit contours, creating a less prominent, more uniform surface finish in comparison to wire wheels or coated abrasive products
- Brush conformability allows usage on variety of complex part shapes without the need for ultra-precise programming and fixturing that is required with other deburring and finishing tools

Currently, all Norton Blaze ceramic alumina nylon abrasive brushes are custom-made to your exact requirements. Your Norton representative would be pleased to review availability, quotations, and lead-times with you.



Coated & Non-Woven Abrasives

# the brightest product solutions from **A TOTAL SPECTRUM OF INNOVATION**

For everything from heavy-to-medium stock removal, to fine finishing, to light blending and polishing, abrasive products are available in many shapes, abrasive grains, specialty coatings and backing configurations to meet many application needs.



# COATED & NON-WOVEN ABRASIVES Coated Abrasive Basics

## **Coated Abrasives**

A coated abrasive product is made up of three basic raw materials: an abrasive grain, the backing onto which the abrasive is applied, and an adhesive bond.

# Abrasive Types

#### Emery (6)

Emery is a dark gray, round-shaped grain which tends to polish rather than abrade a work surface.

For polishing and cleaning metal only

#### Garnet (5)

Garnet is reddish brown in color. This natural abrasive is medium hard and relatively sharp, but not as durable as synthetic abrasives.

- For use on wood only
- Particularly good for soft woods such as pine
- · Produces an excellent finish

#### Silicon Carbide (4)

Silicon carbide is the hardest and sharpest of the manufactured abrasives. Because of its extreme sharpness, this bluish-black abrasive grain permits fast stock removal and cool cut.

- Cast iron
- Non-ferrous metals, i.e. brass, aluminum and bronze
- Non-metallics, i.e. glass, rubber, plastic and stone
- Final finish on wood and stainless steel
- · Abrasive planing particleboard

## Light Brown Aluminum Oxide (2)

Light brown aluminum oxide is a tough, yet sharp synthetic abrasive characterized by cool cut, long life and the ability to break down under pressure, producing new cutting edges.

- Production wood sanding
- Non-ferrous metal finishing









## Brown Aluminum Oxide (2, 7)

Brown aluminum oxide is a tough, durable, synthetic abrasive characterized by the long life and wear resistance of its cutting edges. It offers enormous penetrating strength, even at high speeds.

- Ferrous metals
- Aluminum
- Hardwood

#### Heat-treated Aluminum Oxide (2)

Heat-treated aluminum oxide is a tough but cool cutting abrasive which gives both long life and freeness of cut on a wide range of materials.

- Ferrous metals
- Wood sanding

#### Zirconia Alumina (8)

Zirconia alumina is an ultra-tough, synthetic abrasive which provides a free, cool cut for high stock removal applications. It is tougher and sharper than aluminum oxide. It has a micro-crystalline structure which allows for controlled breakdown and self-sharpening.

- Heavy-duty snagging and grinding of all ferrous and non-ferrous metals
- · Abrasive planing of wood, plywood and particleboard
- Grinding fiberglass, rubber and plastics

#### Ceramic Alumina (9)

The sub-micron structure of ceramic alumina allows each grain to continually expose sharp cutting points, resulting in a cooler cutting action and an extended life.

· All ferrous/non-ferrous metals, carbon steel and exotic alloys













## **Backing Types**

Backings are the base for the abrasive minerals and, combined with the adhesive bond, support and anchor the abrasive mineral. The backings used in the manufacture of coated abrasives are:

#### Paper

Due to the fine surface of paper, a consistent finish is produced. Paper weights include *A*, *B*, *C*, *D*, *E* and *F* weights with *A* being the lightest and most flexible and *F* being the heaviest and least flexible. *A*, *B*, *C* and *D* weight papers are used for hand sanding and light mechanical operations in the form of sheets, PSA (pressure sensitive adhesive) and hook and loop discs and sheet rolls. *E* and *F* weight papers are primarily used for more aggressive mechanical operations in the form of belts and discs.

#### Cloth

Cloth backings used for coated abrasives are identified by weight. Cloth backings are filled or "finished" with a variety of materials (glues or resins) to create various backing characteristics, most notably flexibility. Several cloth types are used: cotton, polyester, polyester/nylon and polyester/cotton blends, and rayon.

There are three basic weights of cloth: J-weight or "jeans" is the lightest and most flexible. X-weight or "drills" is a heavier cloth that ranges in flexibility, strength and durability and is used on the broadest range of applications. Y-weight is a heavyweight drills cloth used on heavy-duty, high stock removal operations.

#### Fiber

Vulcanized fiber (cotton fibers which are chemically treated and then pressed under temperature and pressure to form a very durable backing) is used exclusively as the backing for resin fiber discs.

#### Film

Polyester film backing comes in 3 mil. and 5 mil. thicknesses, which have high strength and surface smoothness. They are used primarily in disc and roll applications requiring consistent surface finish, including powertrain applications.

#### Foam

Primarily used as backing for sponges, finer grit finishing discs, and buffing and polishing pads for cleaning and moist finishing applications.

#### Mesh

Mesh matrix backing comprised of thousands of tiny holes allowing for maximum dust extraction.

# COATED & NON-WOVEN ABRASIVES Coated Abrasive Basics

## **Bond Types**

An adhesive bond system is required to secure the abrasive mineral to the backing. All coated abrasive products are made with a two stage bonding process, the *make coat* and the *size coat*.

The *make coat* is the first layer of bond applied to the backing. The make coat provides the adhesive base between the abrasive mineral and the backing.

The *size coat* is the second coat, which is applied over the abrasive mineral and make coat to anchor the abrasive mineral and provide the desired physical strength of the finished product.

*Glue, urea resin*, and *phenolic resin* are the three basic bonding agents most commonly used. There are many size coat and make coat combinations, such as *glue over glue*, *urea over glue*, and *resin over resin*. *Glue over glue* is the most flexible bond while *resin over resin* bond is moisture-resistant, harder, less flexible, heat-resistant and has superior grain retention.

# **Coating Types**

There are two types of abrasive coatings used in the manufacturing of coated abrasives: *open coat* and *closed coat*.

**Closed** Coat

longest product life.

With a closed coat, the entire surface

most typical coating, permitting the

greatest degree of stock removal and

CLOSED COAT

is covered with abrasive grain, with no voids between the particles. This is the

Open Coat

With an open coat, 50% to 75% of the surface is covered by abrasive grain. There are evenly spaced voids between the particles of grain, helping reduce the effect of loading caused by wood dust or metal particles.



(1/3 LESS GRAIN THAN CLOSED)

## Super Size Coating

The Super Size coat is an optional final coat and grinding aid applied over the size coat to help maintain low grinding temperatures and prevent loading.

# How to Read a Coated Abrasive Specification

The Norton coated abrasive marking system includes both a generic and a technical marking, which identifies the actual components which make up the product. The markings identify the tradename, abrasive type, bond, backing, and any special features. An example would be: Norton Blaze R980P.

	Rg			
Backing / Bond	Principal Abrasive	Coating	Random	Modifier
A = Lightweight Paper (A-D wts.)	1 = Aluminum Oxide	Odd = Open Coat	Designates different	Additional description, often
excluding Waterproof F = Fiber H = Heavy Paper / Resin Bond (E and F wts.) K = Cloth / Glue Bond (J and X wts.) M = Mesh PB = B-wt. Paper with Resin Bond and Latex Q = Various (e.g. Screen-Bak, Film, and Foam) R = Cloth / Resin Bond (H, J, X and Y wts.) T = Waterproof Paper (A, C wts.) U = Lightweight Waterproof Paper/ NORaX Engineered Abrasive Resin Bond	<ul> <li>2 = Aluminum Oxide</li> <li>3 = Layered Aluminum Oxide</li> <li>4 = Silicon Carbide</li> <li>5 = Garnet</li> <li>6 = Crocus &amp; Emery</li> <li>7 = Aluminum Oxide</li> <li>8 = Zirconia Alumina</li> <li>9 = Norton SG Ceramic Alumina</li> </ul>	Even = Close Coat	products within the same product group.	indicative of a product upgrade i.e. "P" = Plus



## Coated Abrasive Grit Comparison Chart

AVERAGE Particle size	GRADING SYST	EMS (OTHER THAN	I EMERY)	EMERY
IN MICRONS	ANSI	FEPA	JIS	PRODUCTS
5.0	-	-	-	-
6.0	-	-	3000	-
6.5	1200	-	2500	4/0
8.4 8.5	_	P2500	2000	
9.2	1000	_	-	3/0
10.3	_	P2000	_	-
10.5	_	-	1500	_
12.2	800	_	1200	-
12.6	-	P1500	-	-
15.0	-	-	-	-
15.3	-	P1200	1000	-
16.0	600	-	-	2/0
18.3	-	P1000	800	-
19.7 20.0	500	_	-	0
20.0	_	 P800	_	_
23.6	400	-	600	_
25.0	-	_	_	_
25.75	_	P600	_	_
28.8	360	-	500	-
30.0	-	P500	-	-
35.0	-	P400	400	-
36.0	320	-	-	-
40.0	-	-	360	-
40.5	-	P360	_	-
44.0	280	_	-	1
45.0	_	– P320	320	
50.0	_	-	-	_
52.5	_	P280	280	_
53.5	240	-	_	_
55.0	-	_	_	_
58.5	-	P240	-	-
60.0	_	-	240	-
64.0	-	-		2
65.0	-	P220	220	-
66.0	220	-	-	
78.0	180	P180	180	-
79.0 93.0	150	-	 150	3
95.0	-	_	-	FINE
97.0	_	 P150	_	
116.0	120	_	120	_
127.0	-	P120	100	-
136.0	-	-	-	MEDIUM
141.0	100	-		-
156.0	-	P100	-	_
189.0	-	-	-	COARSE
192.0	80	-	80	
197.0	_	P80	_	
260.0 268.0	-	P60 -	- 60	_
326.0	60	 P50	50	
341.0	-	-	-	EX. COARSE
351.0	50	_	_	-
412.0	_	P40	40	_
428.0	40	-	-	-
524.0	-	P36	-	-
535.0	36	-	36	-
622.0	_	P30	_	_
638.0	30	-	30	-
715.0	24	-	-	-
740.0	-	P24	24	_
905.0	20	- D20	- 20	
984.0 1320.0	- 16	P20	20 16	_
1320.0	-	– P16	-	_
1764.0	_	P12	_	_
1842.0	12	-	_	_
.012.0				

## **Coated Abrasive Storage**

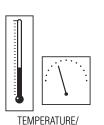
Stored under proper conditions, coated abrasives will retain their efficiency and usefulness over long periods. Improper or inadequate storage can introduce problems of weakened bond, curl, brittleness, and breakage.

Temperature and humidity are the two most important climatic factors influencing coated abrasive performance. Backings and adhesives are sensitive to climatic changes and will gain or lose moisture according to the relative humidity of their surroundings.

Excessive humidity may cause a softening of some types of adhesive bonds so that the product quickly fills and clogs, or loses its grain during use. Excessive dryness may cause brittleness, reduced flexibility, and distortion of product shapes.

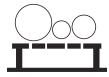
As moisture in the coated abrasive product increases or decreases, dimensional changes can occur. When the backing changes more than the adhesive bond, it causes cupping. High and low humidity can cause concave and convex cupping respectively.

The newer synthetic-backed belts are not affected by moisture. Broad temperature swings will not permanently harm these products either, but cold temperatures will cause a "cold set" condition. Consequently, these products should be allowed to come to room temperature before use.



HUMIDITY





STORE BELTS PROPERLY

STORE BULK ROLLS FLAT



KEEP AWAY FROM HEAT/COLD SOURCES

#### Storage Facilities

The ideal storage (stock) room for coated abrasives would be one in which all the walls are inside partitions, rather than the outside walls of the building.

PRECONDITION

**BEFORE USE** 

- Constant levels of humidity and temperature should be maintained. Stockroom temperature should be 60-degrees to 80-degrees F and relative humidity between 35 and 50%.
- Cartons should be kept away from damp or cold walls and floors, where they might absorb moisture.
- Store coated abrasives away from heat sources steam heated radiators, steam pipes, hot air inlets, heat ducts, or rooms near furnaces or ovens.
- Keep products in original packages. These packages facilitate handling and can be stacked in the most practical and convenient manner.
- Bulk rolls should not be allowed to stand on edge after they have been unpacked. Store flat on shelves or pallets.
- Narrow belts which have been removed from the carton should be rolled up and stored on edge on a clean shelf. Belts may be draped over a large cylinder, such as a gallon can, brake drum, or flanged hanger of the type used for a garden hose. Never hang a belt from a nail – the backing will crease and the abrasive belt might crack.
   Wide belts should be hung over a tube of at least 4" diameter. Center the belt joint over the tube and add a light weight (such as old packaging tubes) to the bottom loop of the belt to aid in removing set. Condition for 24 hours prior to use.
- For maximum product efficiency, precondition coated abrasive products in a chamber of controlled temperature and humidity before use.



## Introduction

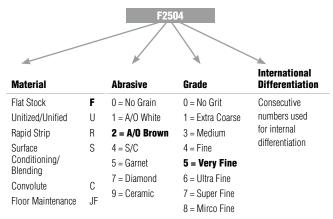
Most Norton Bear-Tex products consist of a non-woven web of nylon fibers impregnated throughout with abrasive grain and bonded with synthetic resins. This design produces a cushioned, three-dimensional material that is extremely pliable and long lasting. The uniform dispersion of abrasive throughout the web provides a continuous supply of new grain as the old grain and fibers wear away during use.

Norton Bear-Tex products, with their open mesh construction, are waterproof, washable, resilient, conformable, non-loading, non-conductive, non-metallic and non-rusting. Non-woven wheels are easily pre-formed to conform to special-shaped work pieces.

Since non-woven products are designed for use where stock removal is not required, they begin where other abrasives leave off. The relatively non-aggressive nature of nylon and grit inherent in the material makes it ideal as a finishing tool. While 60 to 80 grits are considered intermediate sizes in other products, they are considered coarse for non-woven items.

Used wet or dry, Norton Bear-Tex non-woven products offer the following advantages: controlled cut (with little or no stock removal) allows for increased productivity, consistent, uniform finish, ability to automate operations, minimized smearing and reduced operator training. These advantages make our non-woven products an excellent alternative to bristle brushes, set-up wheels, greaseless compounds and steel wool.

# Product Identification System



# COATED & NON-WOVEN ABRASIVES Non-Woven Basics

## Abrasives

Ceramic alumina, silicon carbide and aluminum oxide abrasives are offered. Ceramic alumina cuts the fastest and is the most cost effective on large-volume applications. Silicon carbide is sharper, cuts faster than aluminum oxide, and produces finer scratch patterns on most surfaces. Aluminum oxide is more durable and tends to last longer. It causes less discoloration on aluminum, and is more aggressive on certain applications such as hardened steel parts. Norton Bear-Tex hand pads are also available in a non-abrasive material.

#### Grits

Grit refers to the size of the abrasive grain impregnated into the nylon web. The coarser the grit, the more aggressive the cut, the rougher the finish. The finer the grit, the less aggressive the cut and the resulting surface finish will be finer, if all other conditions are equal.

GRIT DESIGNATIONS	GRIT SIZE
Extra Coarse (XC)	50
Coarse (C)	60 - 80
Medium (M)	100 – 150
Fine (F)	180 - 220
Very Fine (VF)	240 - 360
Super Fine (SF)	400
Ultra Fine (UF)	600
Micro Fine (MF)	800 - 1200

#### **Densities**

The product "density" refers to the number of fibers which have been compressed into the nylon web material. Under identical conditions, harder density wheels cut faster, last longer and produce finer finishes than softer density wheels. Softer density wheels offer greater conformability and have less tendency to load or burn the work piece.

## **Fiber Sizing**

Several nylon fiber sizes are used in the manufacture of Norton Bear-Tex and Merit web material because the fiber size is a significant factor in the coating process, as each produces distinct cutting characteristics.

## **Bonding Agents**

Waterproof resins are used in the manufacture of Norton Bear-Tex and Merit web material to bond the nylon fibers together and to firmly anchor the abrasive grains throughout the web.





## Getting the Most Out of Norton Bear-Tex Wheels

Maximum wheel life and best surface conditioning results can be achieved by closely adhering to the following recommendations.

#### 1) Wheel Direction

Convolute, interleaf flap wheels, and conventional flap wheels must always run in the direction indicated by the arrow printed on the side of each wheel. Unified wheels can be run in either direction.

#### 2) Wheel Speed

Wheel speed is an important factor in that it affects product finish, rate of cut, and wheel life. In general, fast wheel speeds give harder action and a finer finish; whereas, slower speeds give a softer action and a coarser finish for the same wheel density.

The following are recommended operating speeds for the most common applications.

APPLICATION	RECOMMENDED SPEED
Cleaning and upgrading of surface conditions	2200 to 6000 SFPM
Cut-buffing on metal surfaces	6500 to 8000 SFPM
Deburring	5500 to 8000 SFPM
Decorative finishing	500 to 3000 SFPM
Imparting decorative finishes	900 to 3000 SFPM
Oxide removal	3500 to 6500 SEPM

Testing might show that a slower or faster speed is desirable for specific operations. Never exceed the maximum RPM rating of the wheel.

#### 3) Pressure

Light to medium pressure is recommended for most operations. Flap wheels require much lighter pressure to perform properly than other non-woven wheels; unified wheels can withstand much higher pressures in order to perform deburring jobs. In all cases, avoid excessive pressure which might result in wheel deformation and damage to the work surface.

#### 4) Feed Speed

Low feed speed reduces the number of workpieces completed, while producing a shorter scratch pattern. Slow feed speed allows for longer dwell time and permits more work to be done on each piece. Conversely, a fast feed speed increases the number of workpieces completed, while producing a longer scratch pattern.

#### 5) Oscillation

Oscillation may be used to break up scratch lines and produce a more uniform finish. Additionally, an increase in cut might be experienced.

A general starting point for oscillation is 3/8" amplitude at 200 cycles per minute.

#### 6) Lubricants

Lubricants, such as water, water soluble oil, and straight oil, will decrease the heat generated while running, improve the luster, and reduce the surface finish. The higher the viscosity of the lubricant, the lower the surface finish (RMS value) produced.

# Factors in Wheel Choice

This chart provides a relative comparison of other Norton Bear-Tex wheel variables. It can serve as a useful guide in choosing the most suitable product for a given application. However, as many other factors affect wheel performance, this chart can only be general in nature. The most cost-effective results can always be obtained by wheel testing on the application.

1	1 Wheel Conformability	MOST CONFORMABLE (SOFT) LEAST CONFORMABLE (							
		Flap Wheels	Clean & Finish	Metal Finishing	Rapid Finish GP 7 Density	Rapid Finish GP 8 & 9 Density	Series 4000		
2	Wheel Openness	OPEN MESH					CLOSED MESH		
			Clean & Finish	Metal Finishing	Rapid Finish GP 7 Density	Rapid Finish GP 8 & 9 Density	Series 4000		
3	Wheel	MOST AGRES	SIVE				LEAST AGGRESSIVE		
	Aggressiveness		Metal Finishing		Clean & Finish	Rapid Finish GP	Flap Wheels		
4	Finishing Action	COARSER					FINER		
			Metal Finishing	Clean & Finish	Series 4000	Rapid Finish GP Series 4000	Flap Wheels		
5	Pressure for	LIGHTER					HIGHER		
	Best Results		Flap Wheels	Clean & Finish	Metal Finishing Rapid Finish GP 7 Density	Rapid Finish GP 8 & 9 Density	Series 4000		

\* On steel surfaces, silicon carbide wheels will produce a brighter finish than aluminum oxide wheels.

## Surface Finish Variables

Changes in any one of many factors can affect the surface finish on the work piece. This chart shows the effect on surface finish by changes in single factors of product specifications. Arrows have been used to signify the trend direction. The arrow length does not signify that the effect of each factor is equal.

Variable Factor	Rough Finish High RMS Reading	Smooth Surface Lower RMS Reading
1 Grit Size	Coarse <	► Very Fine
2 Wheel Grade	Soft <	► Hard
3 Wheel Speed	Slow \prec	► Fast
4 Feed Speed	Faster (Long Scratch) <	Slower (Short Scratch)
5 Oscillation	No Oscillation \prec	► Oscillation
6 Lubricants	Dry 🗸 🔶 Water \prec	Soluble Oil  Straight Oil
and Compounds		Compounds





## Conventional Finishing Methods Versus Norton Bear-Tex Non-Woven Products

The following chart outlines the advantages achievable when using our products as alternatives to other cleaning, blending, deburring and finishing methods. These products are listed in the sequence of normal preference for the application stated. However, because of the numerous variables, only testing can ensure selection of the most cost-effective product.

CONVENTIONAL FINISHING METHOD Bristle Brushes	KEY APPLICATION Cleaning	NORTON PRODUCT ALTERNATIVES Rapid Strip Convolute Wheels Rapid Prep Discs Rapid Prep Flap Discs	ADVANTAGES OF NORTON/MERIT PRODUCT VERSUS ALTERNATE FINISHING METHODS Superior cleaning performance Higher productivity No slurry or compound required More consistent finish Eliminate compound dust
Greaseless Compounds	Finishing	Flap Wheels Convolute Wheels Unified Wheels Rapid Prep Discs Rapid Prep Flap Discs	Reduced maintenance No compound, instant set-up Elimination of compound dust More uniform finish More consistent work rate
Set-up Wheels			No break-in time required More consistent cut More uniform finish Maintain geometry Safer, no flying wheel pieces
Steel Wool	Cleaning	Rolls Discs Hand Pads	Faster, longer life Less pressure required Non-rusting, cleaner Safer, no splinters

## **Conventional Finishing Method**



## Norton Bear-Tex Non-Woven Finishing Method









The strongest of coated abrasive discs with resin-over-resin construction on heavy-duty fiber backing. Designed for applications ranging from heavy stock removal to surface blending. Used with back-up pads on portable angle grinders.

4" x 5/8" hole, 4-1/2" - 9-1/8" x 7/8" and 5/8"-11 hole

Ceramic Alumina, Zirconia Alumina Blend, and Aluminum Oxide

Conventional, Speed-Change hubs (5/8"-11), and AVOS technology

Stock removal, edge chamfering, weld blending, deburring/deflashing, rust removal,

#### **Applications:**

Size Range: Grit Range: Abrasive Grain: Product Options: Accessories: Machines Used:



RIGHT ANGLE VE GRINDER PO

cleaning and finishing

16 - 120

VERTICAL SHAFT PORTABLE GRINDER

How To Select The Correct Abrasive To Blend a Weld nortonsga.us/5sdjv

Material-to-Product Recommendation Guide

	BEST			BETTER	GOOD
	BlazeX F970	BlazeX F980	Blaze F980	BlueFire F826P	Metal F240
Stainless Steel / Titanium / Super Alloys*		•	•	•	•
Mild Carbon Steel / Welds	•			•	•
Ferrous Metals / Cast Iron	•			•	•
Brass / Bronze / Aluminum					•
*Nickel/Cobalt Based – Hastelloy, Inconel, Waspalloy					

## Application/Grit Recommendation Guide

COARSER (GRINDING)

FINER (FINISHING)

16	24	30	36	40	50	60	80	100	120
Stock Removal	1								
		Edge Chamfering							
			Weld Blending						
				Deburring/Deflas	hing				
						Rust Removal			
							Cleaning and Fini	shing	

# Cross Reference Guide

TOTAL PERFORMANCE

	4			
	BEST		BETTER	GOOD
NORTON	BlazeX F970	BlazeX F980, Blaze F980	BlueFire F826P	Metal F240
3M	782C, 982C, 988C	785C, 787C, 985C, 987C	501C	
Camel		Ceramic	Zirconia	
Flexovit	CG	CG+	ZA	_
GemTex	PMD, Gem Supreme	PMD Supreme, PMD Supreme Plus	Zee-Type, Zee Supreme, Gem Supreme	А-Туре
Hermes		CR456	RB414X, RB414X Procut	RB314
Klingspor	FS964 ACT	FS966	CS565, CS570	CS561
Metabo	CER	CER	ZA	A/0
Mirka		<u> </u>	Blue, Gold	Red
Pearl	Red Line	—	FZ	Silver Line
Pferd	CO-PMD	CO Cool	Z, Z Cool	A
United Abrasives/Sait	7S, 7A-S, 7-11	9S, 9-11	3Z, Z, AZX	A/0, 2A
SIA	4515, 4580	4515, 4560,	4815, 4819	4919, 4961
Standard	Ceramic	Ceramic Pro	Zirconia	A/0
VSM	XF760	AF890, AF799, XF885, XF870, XF850	ZF713, ZF714, ZF844	KF708
Walter	Walter Coolcut XX	Walter Coolcut XX	Walter Topcut	
Weiler		Tiger Ceramic	Tiger Zirc, Wolverine Zirc	Wolverine A/O





Best choice for carbon steel and other soft-to-grind materials

# BLAZEX F970 CERAMIC ALUMINA

- Improved ceramic alumina micro-fracturing grain constantly exposes sharper grain edges to significantly increase cut rate and life over competitive blended/low-ratio ceramic alumina discs
- · Heavier fiber backing for additional strength and tear resistance
- · Non-supersized design for cool cutting and long life on carbon steel and other soft-to-grind materials



#### Best choice for coarse grit beveling, blending, deburring, and stock removal

# BLAZEX F980 CERAMIC ALUMINA

- Improved ceramic alumina micro-fracturing grain constantly exposes sharper grain edges to significantly increase cut rate and life over competitive blended/low-ratio ceramic alumina discs
- Strong fiber backing for strength and tear resistance
- · Supersized design for stainless steel and hard-to-grind materials



#### Best choice for stainless steel, titanium, and super alloys

# BLAZE F980 CERAMIC ALUMINA

- 100% ceramic alumina micro-fracturing grain constantly exposes sharper grain edges to significantly increase cut rate and life over competitive blended/low-ratio ceramic alumina discs
- Self-lubricating grinding aid treatment delivers the coolest cut on stainless steel, high alloy steels, super alloys, titanium, and other difficult-to-grind materials
- · Heavier fiber backing for additional strength and tear resistance



Better choice for stainless, super alloys, steel, cast iron and high-pressure applications

# BLUEFIRE F826P ZIRCONIA ALUMINA

- High-performance zirconia alumina abrasive blend provides 15% faster cut and longer life with less power draw than conventional zirconia discs
- · Advanced resin bond technology with enhanced grain adhesion for extended life
- · Heavier fiber backing for additional strength and tear resistance



Good choice for small jobs, applications where performance is not measured, and price-sensitive operations

# METAL F240 ALUMINUM OXIDE

- Versatile, multi-purpose aluminum oxide abrasive provides consistent performance on numerous materials and small jobs
- Full resin bond for strength and durability
- · Heavier fiber backing for additional strength and tear resistance; low initial price

NORTON
SAINT-GOBAIN

				Sec. Sec. Sec. Sec. Sec. Sec. Sec. Sec.			and the second
							CARE TAND
			and the second				
		TIED.	BEST	BEST	BEST	BETTER	GOOD
		TRADENAME:	BLAZEX F970	BLAZEX F980	BLAZE F980	BLUEFIRE F826P	METAL F240
		ABRASIVE:		Ceramic Alumina	Ceramic Alumina	Zirconia Alumina Blend	Aluminum Oxide
		OTHER:		Supersize	Supersize	Zircoma Aldinina Dicha	Aluminum Oxide
ZE (D x H)	GRIT	STD. PKG.	PART #	PART #	PART #	PART #	PART #
1/2 x 7/8	24	25			699573 <b>98000</b>	662611 <b>38457</b>	666233 <b>53309</b>
1/2 / 1/0	36	25	699573 <b>70193</b>	780727 <b>43400</b>		662611 <b>38456</b>	666233 <b>53306</b>
	36	50 V				666233 <b>77276</b>	0002000000
	50	25	699573 <b>70194</b>		699573 <b>98002</b>	662611 <b>38454</b>	666233 <b>53310</b>
	60	25	699573 <b>70195</b>		69957398003	662611 <b>38453</b>	666233 <b>53311</b>
	80	25	699573 <b>70196</b>		699573 <b>98004</b>	662611 <b>38452</b>	666233 <b>53312</b>
	100	25				00201100102	666233 <b>53313</b>
	120	25			662544 <b>25332</b>		666233 <b>53314</b>
x 7/8	16	25			00201120002		055395 <b>10684</b>
,-	24	25			699573 <b>98005</b>	662611 <b>38563</b>	666233 <b>57276</b>
	36	25	699573 <b>70197</b>	780727 <b>43401</b>		662611 <b>38562</b>	666233 <b>57277</b>
	36	50 V				666233 <b>77283</b>	
	50	25	699573 <b>70198</b>		699573 <b>98007</b>	662611 <b>38561</b>	666233 <b>57278</b>
	60	25	699573 <b>70199</b>		699573 <b>98008</b>	662611 <b>38601</b>	666233 <b>57279</b>
	80	25	699573 <b>70200</b>		699573 <b>98009</b>	662611 <b>38600</b>	666233 <b>57280</b>
	100	25					666233 <b>57281</b>
	120	25			662544 <b>09084</b>		666233 <b>57282</b>
x 7/8	24	25			662611 <b>60033</b>		
x 7/8	16	25					055395 <b>10693</b>
	24	25			699573 <b>98010</b>	662611 <b>38594</b>	666233 <b>57283</b>
	36	25	699573 <b>70201</b>	780727 <b>43402</b>		662611 <b>38593</b>	666233 <b>57284</b>
	50	25	699573 <b>70202</b>		699573 <b>98012</b>	662611 <b>38592</b>	666233 <b>57285</b>
	60	25	699573 <b>70203</b>		699573 <b>98013</b>	662611 <b>38591</b>	666233 <b>57286</b>
	80	25	699573 <b>70204</b>		699573 <b>98014</b>	662611 <b>38590</b>	666233 <b>57287</b>
	100	25					666233 <b>57288</b>
	120	25			662544 <b>11528</b>		666233 <b>57289</b>
-1/8 x 7/8	24	25			699573 <b>98015</b>	662611 <b>38584</b>	05539510702
	36	25		699573 <b>98016</b>		662611 <b>38583</b>	055395 <b>10701</b>
	50	25			699573 <b>98017</b>	662611 <b>38582</b>	
	60	25					055395 <b>10699</b>

Note: Fiber discs must be used with back-up pads shown on the last page of this section. V = Vendible Package. Ideal for vending machines and small jobs. 10 discs/package, 5 packages per standard carton. Order in multiples of 50.

B = Bulk & Baled. Baling Units also available on Page 68.

## **AVOS Fiber Discs**

- · Patented, see-through design allows interrupted cut which reduces heat up to 30% over standard discs
- The scooped holes create air flow to pull swarf away from grinding zone; cool cutting and extended product life
- 15° back-up pad for full utilization of discs no gouging
- Quick, tool-free, twist-on and -off Speed-Lok fasteners





		TIER:	BEST	BEST	BETTER
		TRADENAME:	BLAZEX F980	BLAZE F980	<b>BLUEFIRE F826P</b>
		ABRASIVE:	Ceramic Alumina	Ceramic Alumina	Zirconia Alumina Blend
SIZE	GRIT	STD. PKG.	PART #	PART #	PART #
4-1/2 Speed-Lok	24	10		662544 <b>68389</b>	662611 <b>29718</b>
(3 hole)	36	10	662544 <b>68390</b>		662611 <b>29719</b>
	50	10		662544 <b>68391</b>	662611 <b>29720</b>
	60	10		662544 <b>68392</b>	662611 <b>29721</b>
	80	10		662544 <b>68393</b>	662611 <b>29722</b>
5 Speed-Lok	24	10		662544 <b>68385</b>	662611 <b>26556</b>
(3 hole)	36	10	662544 <b>68386</b>		662611 <b>26557</b>
	50	10		662544 <b>68387</b>	662611 <b>26558</b>
	60	10		662544 <b>68388</b>	662611 <b>26559</b>
	80	10			662611 <b>26560</b>
7 Speed-Lok	24	10		662544 <b>68381</b>	662611 <b>37454</b>
(6 hole)	36	10	662544 <b>68382</b>		662611 <b>37455</b>
	50	10		662544 <b>68383</b>	662611 <b>37456</b>
	60	10		662544 <b>68384</b>	
	80	10			662611 <b>37458</b>

ed with AVUS Speed-Lok back-up pads, see acc



## Speed-Change Fiber Discs

These fiber discs feature Norton quick, tool-free, twist-on and -off Speed-Change fasteners. Discs lock to standard back-up pads with a unique nut design and are easily removed, increasing your productivity with more time to grind.

			0	0		۲
		TIER:	BEST	BEST	BEST	BETTER
		TRADENAME:	BLAZEX F970	BLAZEX F980	BLAZE F980	BLUEFIRE F826P
		ABRASIVE:	Ceramic Alumina	Ceramic Alumina	Ceramic Alumina	Zirconia Alumina Blend
		OTHER:		Supersize	Supersize	
SIZE (D x H)	GRIT	STD. PKG.	PART #	PART #	PART #	PART #
4-1/2 x 5/8-11	24	25			662610 <b>23269</b>	
	36	25	699573 <b>70205</b>	780727 <b>43403</b>		
	50	25	699573 <b>70206</b>			
	60	25	699573 <b>70207</b>		662610 <b>42247</b>	
	80	25	699573 <b>70208</b>		666233 <b>28529</b>	
5 x 5/8-11	24	25			662544 <b>25336</b>	662611 <b>38797</b>
	36	25	699573 <b>70209</b>	780727 <b>43404</b>		662611 <b>38796</b>
	50	25	699573 <b>70210</b>			
	60	25	699573 <b>70211</b>		662611 <b>85803</b>	
	80	25	699573 <b>70212</b>		666233 <b>16697</b>	
7 x 5/8-11	24	25			699573 <b>49782</b>	662611 <b>38819</b>
	36	25	699573 <b>70213</b>	780727 <b>43405</b>		662611 <b>38818</b>
	50	25	699573 <b>70214</b>			662611 <b>38817</b>
	60	25	699573 <b>70215</b>		662610 <b>42249</b>	662611 <b>38816</b>
	80	25	699573 <b>70216</b>		662544 <b>74373</b>	

Note: Speed Change fiber discs must always be used with smooth face back-up pads, see next page for details.



Better Choice for grinding concrete, marble, granite and other natural stone with ease

# FASTCUT SILICON CARBIDE

- · Sharp, fast-cutting silicon carbide abrasive quickly penetrates and removes any coatings
- · Engineered specifically with cooling ridges to remain free-cutting, minimize loading, and maximize life
- Rigid fiber backing helps to aggressively grind concrete, marble, granite and other stone works
- · Ideal for demanding right angle grinding at comfortable lower angles

			**	
		TIER:	BETTER	BETTER
		TRADENAME:	FASTCUT	FASTCUT
		ABRASIVE:	Silicone Carbide	Silicone Carbide
		TYPE:	27	29
SIZE	GRIT	STD. PKG.	PART #	
4-1/2 x 7/8	16	25	662611 <b>99054</b>	
7 x 7/8	16	25	662544 <b>37691</b>	662611 <b>99052</b>
Mate: Heaville	Vantan Ain	Cooled book .		

Note: Use with Norton Air-Cooled back-up pad for best performance.

## Efficiently Grind Softer Materials Where Loading is a Problem

Extra coarse, sharp, silicon carbide abrasive and cooling ridges make fast work of all your masonry, concrete, marble, and granite surface preparation and stock removal jobs – without loading. Quickly penetrates and removes any coating, such as adhesive, paint, acrylic, mastic, etc.



# COATED & NON-WOVEN ABRASIVES Fiber Disc Accessories

## Fiber Disc Accessories



- Fiber Disc Baling Unit
- Places 100 discs on a spindle between two plates
- Locks down with a pinch screw
- Maintains the shape of the discs by maintaining pressure to minimize curl
- User-friendly and reusable



Air-Cooled Standard Back-up Pad Slotted hub design and curved ribs draw heat away from the grinding zone, reducing disc loading and increasing life. All pads have a 5/8"-11 threaded

female hub for mounting. We also offer

a no-nose pad for shorter-shafted right

angle grinders.



Smooth Face Speed-Change Back-up Pad Molded rubber back-up pads with a smooth face.

- Hard density pads are for aggressive cutting action
- Medium density pads are for all-purpose applications



#### AVOS Fiber Disc Back-up Pad

- Patented, see-through design allows interrupted cut which reduces heat up to 30% over standard discs
- The scooped holes create air flow to pull swarf away from grinding zone
- 15° back-up pad for full utilization of discs – no gouging
- Quick, tool-free, twist-on and -off
  Speed-Lok fasteners

			·
DESCRIPTION	MAX. RPM	STD. PKG.	PART #
Fiber Disc Baling Unit			
7" or below	—	1	776960 <b>01066</b>
Rubber Back-up Pads			
Air-Cooled Standard for 7/8 Hole Fiber	r and Non-Woven Discs		
4" Medium	12,000	5	636425 <b>04918</b>
4-1/2" Medium	11,000	5	636425 <b>02122</b>
5" Medium	10,000	5	636425 <b>43421</b>
7" Hard	8,600	5	636425 <b>43425</b>
7" Medium	8,600	5	636425 <b>43422</b>
9" Hard	6,600	5	636425 <b>43426</b>
9" Medium	6,600	5	636425 <b>43423</b>
Note: Retainer nuts are not included with bad	ck-up pads. These must be ordered separately.		
Air-Cooled No-Nose	· · ·		
4-1/2" Medium	11,000	5	636425 <b>04872</b>
5" Medium	10,000	5	636425 <b>03000</b>
<b>Smooth Face for Fiber and Non-Wover</b>	n Speed-Change Discs		
4-1/2" Medium	20,000	5	662544 <b>92277</b>
5" Medium	12,000	5	636425 <b>43235</b>
7" Hard	8,600	5	636425 <b>43240</b>
7" Medium	8,600	5	636425 <b>43245</b>
7" Soft	8,600	5	636425 <b>43250</b>
9" Medium	7,000	5	636425 <b>43270</b>
AVOS Speed-Lok Back-up Pads			
<b>AVOS Triangular Speed-Lok Back-up P</b>	Pads		
4-1/2" x 5/8-11	13,000	5	636425 <b>02985</b>
5" x 3/8-24 Pistol Grip*	20,000	5	636425 <b>03029</b>
5" x 5/8-11	13,000	5	636425 <b>02517</b>
5" x 5/8-11 Thicker	13,000	5	636425 <b>03663</b>
5" x 7/16-20 Pistol Grip*	20,000	5	636425 <b>03030</b>
*Use on air pneumatic and high-speed pisto	l grip sanders		
<b>AVOS Round Speed-Lok Back-up Pads</b>			
7" x 5/8-11 Hard	8,600	5	636425 <b>04873</b>
Tools			
#103 Retainer Nut	_	10	636425 <b>43463</b>
Spanner Wrench	_	5	636425 <b>43005</b>
66NS Short Retainer Nut		10	636425 <b>43461</b>

All fiber disc back-up pads are packed in individual boxes within the shipping carton. Each box can be used in a vending machine.







# Flap discs are versatile grinding and finishing tools having four main components: abrasive flaps, flap density (how the flaps are stacked), backing plate shape (flat or conical), backing plate material (fiberglass or plastic). All flap discs have flaps that are overlapped and glued to the backing plate. The flaps wear during use, exposing new abrasive grain. The different variations of the components above provide a variety of application choices ranging from heavy stock removal to blending to finishing. Flap discs are designed for portable grinder applications and can be the preferred choice over depressed center wheels or fiber discs.

#### **Applications:**

#### Size Range:

Grit Range: Abrasive Grain: Abrasive Flaps: Flap Disc Shape: Abrasive Flap Density: Backing Plate Material: Machine Used: Grinding, stock removal, edge chamfering/beveling, weld blending, deburring/deflashing, rust removal, blending, cleaning and finishing 4" : 5/8" hole 4-1/2" - 7" : 5/8"-11 discard mount, 7/8" hole, and 2" - 3" quick-change 24 - 120 Ceramic Alumina, Zirconia Alumina Polyester, Cotton/Poly Blend Type 27 Flat and Type 29 Conical Standard or high Fiberglass and plastic RIGHT ANGLE

GRINDER

# Flap Disc Shapes



GRIND AT FLATTER ANGLES: 0° – 15°

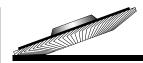
# Type 27 Flat – The Best Choice for Finishing • Used primarily on flat surfaces

Excellent for heavy-duty applications and

The best choice for blending and smooth finishing

**Standard Density** 

rapid stock removal



GRIND AT STEEPER ANGLES: 15° – 25°

#### Type 29 Conical – *The Best Choice for Aggressive Stock Removal*

- Conical flap discs have angled flaps and may be used on both contoured and edge work
- The angle provides greater surface contact for stock removal on flat surfaces
- The best choice when speed and stock removal are primary considerations

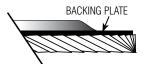
#### High Density

 Ideal when working on uneven or curved surfaces, as well as finer grit blending

# **Backing Plate Materials**

Abrasive Flap Densities

All flap discs are a combination of abrasive flaps adhered to a rigid backing plate. It is the backing plate that provides stability during operation. There are two main materials used: fiberglass and plastic. The fiberglass backing plate, along with the flap shape, helps to absorb vibration and is consumed during use with no smearing. Fiberglass is the most popular material because of its high strength and light weight. The plastic backing plate offers some additional conformability and is trimmable.



# Why Choose Flap Discs?

Flap discs replace both grinding wheels and fiber discs. The same flap disc can be used for applications ranging from stock removal to blending.



# Flap Discs vs. Grinding Wheels Faster stock removal

- Smoother finish, no gouging
- Cooler cutting, less glazing
- Lightweight, easier to control
- Less vibration, less operator fatigue
- Reduced noise





Flap Discs vs. Fiber Discs

- 20X longer life, reduced abrasive cost
- · Fewer disc changes, reduced labor cost
- More consistent finish
- No back-up pad required
- · Easier storage, no curling
- Reduced loading
  - Use flap discs one grit size coarser than fiber discs, except in 36 grit



## Material-to-Product Recommendation Guide

	BEST	BETTER	GOOD	
	Blaze R980P	BlueFire R860	Metal R828	Gemini R766
TYPE 29 FOR STOCK REMOVAL				
Stainless Steel / Titanium / Super Alloys	•	•	•	•
Mild Carbon Steel / Welds		•	•	•
Ferrous Metals / Cast Iron		•	•	•
Brass / Bronze / Aluminum		•		
<b>TYPE 27 FOR BLENDING AND FINISHING</b>				
Stainless Steel / Titanium / Super Alloys	•	•	•	•
Mild Carbon Steel / Welds		•	•	•
Ferrous Metals / Cast Iron		•	•	•
Brass / Bronze / Aluminum		•	•	•

## Application/Grit Recommendation Guide

COARSER (	(GRINDING)						FINER (FINISHING)
24	36	40	50	60	80	100	120
Heavy Stock I	Removal						
	Edge Chamfer	ring/Beveling					
	Weld Blending	g					
			Deburring/Deflashing				
				Rust Removal/Blendir	ng		
					Cleaning and Finishin	g	
	,						

STANDARD DENSITY

## **Cross Reference Guide**

TOTAL PERFORMANCE

	BEST	BETTER	GOOD			
NORTON	Blaze R980P	BlueFire R860	Metal R828	Gemini R766		
3M	747D, 947D, 967A, 969F	546D, 566A, 577F	_	_		
Camel	Ceramic Pro	ZA Pro	ZA	A Pro		
CGW/Pasco	Ceramic	Zirconia		A/0		
DeWalt	XP Ceramic	HP Zirconia	FlexVolt	Zirconia		
Flexovit	Zircotex Ceramic	Zircotex, Zirocomax,Tornado				
Garryson	CeramIQ	Zirc+	A/0	Zirconium		
GemTex	Ceramic Flaptec	Zirconia Flaptec		A/O Flaptec		
Hermes	_	FL390	Webrax-AN 701	RB48024YX, RB48624YX		
Klingspor	SMT656	SMT624, SMT626, SMT627, SMT630		SMT627		
Metabo	Flexiamant Super Ceramic	Flexianmant Zirconia, Novoflex		_		
Mirka				Blue		
Pearl	Redline Maxidics, Stainlessmax Maxidics	Zirconia Maxidisc, Silver Line Zirconia	Silver Line A/O	A/O Maxidisc		
Pferd	Polifan Z-SG, Polifan SG-CO	Polifan SG Zirkon, Polifan SG ZA, SGP, PSF Zirc	Polifan PSF A/O	Polifan SG A, A-Cool		
United Abrasives/Sait	Encore Ceramic, Ovation Ceramic	Ovation, Saitlam U	Encore	Ovation Attacker		
SIA		_		2824 SIAFlap		
Standard	Ceramic Pro, Ceramic	Zirconia HP, Zirconia AP		Zirconia GP		
Tyrolit	Cerabond Ceramic, Premium Ceramic	Fastcut, Premium Longlife	Basic, Standard	Premium A/O		
VSM (Lehigh Valley)	Ceramic	Zirconia	_	A/0		
Walter	Enduro-Flex Turbo	Enduro-Flex, Enduro-Flex Stainless	Flexsteel	Enduro-Flex Alu.		
Weiler	Tiger Ceramic, Tiger X, Tiger Saber Tooth	Tiger Paw, Wolverine	Tiger	Tiger Premium		

INITIAL PRICE

HIGH DENSITY





#### Best/highest productivity for stainless steel, titanium, and super alloys

# BLAZE R980P CERAMIC ALUMINA

- Premium ceramic alumina abrasive grain lasts 50% 200% longer than many flap discs on stainless steel, cobalt, chrome, inconel, titanium and other hard-to-grind materials
- Y-weight polyester flaps with a supersize grinding aid significantly improve life, grain retention, and fray resistance while providing a cool, noticeably fast cut rate
- High-strength fiberglass back on Type 29 and Type 27 High Density is durable, lightweight, and absorbs vibration; flexible plastic backing plate on Type 27 Quick Trim allows for trimmability of the plate

#### Better choice for mild carbon steel, and welds

# BLUEFIRE R860 ZIRCONIA ALUMINA

- High performance zirconia alumina abrasive for aggressive cut and long life, with up to 30% longer life than
  competitive zirconia alumina products
- · Polyester/cotton flaps with semi-open coat provide improved durability and reduces loading on aluminum
- High-strength fiberglass back on Type 29 and Type 27 High Density is durable, lightweight, and absorbs vibration; flexible plastic backing plate on Type 27 Quick Trim allows for trimmability of the plate
- · Vendible 2-disc package is ideal for vending machines, small jobs, or carrying to a job site

#### Good consistent performance with low initial price

# METAL R828 ZIRCONIA ALUMINA

- Durable zirconia grain provides good cut rate and life with consistent finish
- · Fiberglass/resin backing plates with high strength, light weight, ability to absorb vibration, and operator comfort
- · Good choice for coarse grit blending, deburring, and stock removal

#### Good choice for carbon steel and aluminum applications

# GEMINI R766 ALUMINUM OXIDE

- Alternating zirconia alumina and aluminum oxide flaps provide higher performance than aluminum oxide while retaining an economical price
- Polyester/cotton flaps are the best choice when speed of job completion and stock removal are primary considerations
- Type 27 Flat with quick trim, flexible plastic backing plate or high-density fiberglass back



Proprietary new grain shape and chemistry for faster cutting and longer life on a wide range of materials.





					VENDIBL		
				BEST	BETTER	GOOD	GOOD
				BLAZE R980P	BLUEFIRE R860	METAL R828	METAL R828
			SHAPE: FLAP DENSITY:	Type 29 Conical Standard	Type 29 Conical Standard	Type 29 Conical Standard	Type 29 Conical High
				Ceramic Alumina	Zirconia Alumina	Zirconia Alumina	Zirconia Alumina
		B	ACKING PLATE:	Fiberalass	Fiberglass	Fiberglass	Fiberglass
				Supersize			
SIZE (D x H)	GRIT	MAX. RP	M STD. PKG.		PART #	PART #	PART #
ype 29 Conical							
1 x 5/8	36	15,300	10		666233 <b>99049</b>		
	40	15,300	10		666233 <b>99050</b>		
	60	15,300	10		666233 <b>99051</b>		
	80	15,300	10		666233 <b>99052</b>		
4-1/2 x 5/8-11	36	13,300	10	662611 <b>83490</b>	662544 <b>61165</b>	662544 <b>19991</b>	
	36	13,300	10 V		666233 <b>41104</b> 2-Pack		
	40	13,300	10	662611 <b>83491</b>	662544 <b>61167</b>	662544 <b>19994</b>	662611 <b>32535</b>
	60 60	13,300 13,300	10 10 V	662611 <b>83492</b>	662544 <b>61170</b>	662544 <b>19996</b>	662611 <b>32536</b>
	80	13,300	10 V	00001100400	666233 <b>41105</b> 2-Pack	00054440007	00001100507
	80	13,300	10 V	662611 <b>83493</b>	662544 <b>61173</b>	662544 <b>19997</b>	662611 <b>32537</b>
	120	13,300	10 10		666233 <b>41106</b> 2-Pack	666233 <b>99174</b>	
1-1/2 x 7/8	24	13,300	10		666233 <b>99204</b>	00023399174	
+= 1/2 X 7/0	36	13,300	10	662611 <b>83486</b>	662544 <b>61155</b>	662544 <b>19963</b>	
	36	13,300	10 V	00201103400	666233 <b>41107</b> 2-Pack	00234413303	
	40	13,300	10 10	662611 <b>83487</b>	662544 <b>61161</b>	662544 <b>19978</b>	662611 <b>32538</b>
	60	13,300	10	662611 <b>83488</b>	66254461163	662544 <b>19984</b>	662611 <b>32539</b>
	60	13,300	10 V	00201100400	666233 <b>41108</b> 2-Pack	00204413304	00201102303
	80	13,300	10	662611 <b>83489</b>	662544 <b>61164</b>	662544 <b>19987</b>	662611 <b>32540</b>
	80	13,300	10 V	00201100100	666233 <b>41109</b> 2-Pack	00201110001	00201102010
	120	13,300	10			666233 <b>99175</b>	
5 x 5/8-11	36	12,000	10		666233 <b>99189</b>		
	40	12,000	10		666233 <b>99190</b>		
	60	12,000	10		666233 <b>99191</b>		
	80	12,000	10		666233 <b>99192</b>		
	120	12,000	10				
5 x 7/8	24	12,000	10		666233 <b>99206</b>		
	36	12,000	10	662611 <b>90001</b>	662544 <b>61174</b>	662544 <b>19998</b>	
	40	12,000	10	662611 <b>90002</b>	662544 <b>61176</b>	662544 <b>20001</b>	
	60	12,000	10	662611 <b>90003</b>	662544 <b>61177</b>	662544 <b>20002</b>	
	80	12,000	10		662544 <b>61178</b>	662544 <b>20003</b>	
	120	12,000	10				
6 x 5/8-11	40	10,200	10			662544 <b>91779</b>	
	60	10,200	10			662544 <b>91780</b>	
2 4 7/0	80	10,200	10 10		0000000000	662544 <b>91781</b>	
6 x 7/8	24 36	10,200	10		66623399066		
	40	10,200	10		666233 <b>99298</b> 666233 <b>99193</b>	662544 <b>91776</b>	
	60	10,200	10		666233 <b>99193</b>	662544 <b>91777</b>	
	80	10,200	10		666233 <b>99195</b>	662544 <b>91778</b>	
′ x 5/8-11	36	8,600	10	662611 <b>83498</b>	662544 <b>61188</b>	662544 <b>20009</b>	
	40	8,600	10	662611 <b>83499</b>	662544 <b>61190</b>	662544 <b>20010</b>	
	60	8,600	10	662611 <b>83500</b>	662544 <b>61192</b>	662544 <b>20012</b>	
	80	8,600	10	662611 <b>83501</b>	662544 <b>61193</b>	662544 <b>20013</b>	
	120	8,600	10		30201101100		
′ x 7/8	24	8,600	10		666233 <b>99196</b>		
.,-	36	8,600	10	662611 <b>83494</b>	662544 <b>61180</b>		
	40	8,600	10	662611 <b>83495</b>	662544 <b>61183</b>	662544 <b>20006</b>	
	60	8,600	10	662611 <b>83496</b>	662544 <b>61185</b>		
	00						

V = Vendible package. 2 discs/pack; 5 packs/carton. Order in multiples of 10.



NORTON	
SAINT-GOBAIN	

FL           BAC           IZE (D x H)         GRIT         MAI           1/2 x 5/8-11         36         13,3           -1/2 x 5/8-11         36         13,3           60         13,3         60         13,3           60         13,3         60         13,3           120         13,3         60         13,3           60         13,3         60         13,3           120         13,3         60         13,3           60         13,3         60         13,3           120         13,3         60         13,3           60         13,3         60         13,3           120         13,3         60         13,3           120         13,3         60         13,3           130         13,3         60         13,3           130         13,3         60         13,3           130         13,3         60         13,3           130         13,3         60         13,3           130         13,3         60         12,0           130         140         12,0         12,0           120	TRADEN, Sh FLAP DEN ABRA: ACKING PL OT AAX. S PM F 3,300 1 3,300 1	BA	TIER: BEST TRADENAME: BLAZE R980 SHAPE: Type 27 Flat FLAP DENSITY Standard		BETTER	BETTER	Cherrite Cherry	No. of the second second
FL           BAC           IZE (D x H)         GRIT         MAI           1/2 x 5/8-11         36         13,3           -1/2 x 5/8-11         36         13,3           60         13,3         60         13,3           60         13,3         60         13,3           120         13,3         60         13,3           60         13,3         60         13,3           120         13,3         60         13,3           60         13,3         60         13,3           120         13,3         60         13,3           60         13,3         60         13,3           120         13,3         60         13,3           120         13,3         60         13,3           130         13,3         60         13,3           130         13,3         60         13,3           130         13,3         60         13,3           130         13,3         60         13,3           130         13,3         60         12,0           130         140         12,0         12,0           120	TRADEN, Sh FLAP DEN ABRAS ACKING PL OT MAX. S PM 5 3,300 1 3,300 1	BA	TRADENAME: BLAZE R980 SHAPE: Type 27 Flat	P BLAZE R980P			0000	GOOD
IZE (D x H)         GRIT         MAI           -1/2 x 5/8-11         36         13,3           -1/2 x 7/8         36         12,0           -1/2 12,0         12,0         12,0           x 5/8-11         40         10,2           -1/2 120         12,0         12,0           -1/2 120         12,0         12,0	SH FLAP DEN ABRAS ACKING PL 07 AAX. S IPM F 3,300 1 3,300 1	BA	SHAPE: Type 27 Flat		BLUEFIRE R860	BLUEFIRE R860	GOOD Gemini R766	GEMINI R766
ZE (D x H)         GRIT         MAD           (pe 27 Flat         36         13,3           1/2 x 5/8-11         36         13,3           60         13,3         60           60         13,3         60         13,3           1/2 x 7/8         36         13,3           1/2 x 7/8         36         13,3           1/2 x 7/8         36         13,3           0         13,3         60         13,3           1/2 x 7/8         36         12,0         13,3           1/2 x 7/8         36         12,0         13,3           0         13,3         60         13,3           1/2 x 7/8         36         12,0           1/2 x 7/8         36         12,0           0         12,0         12,0           x 5/8-11         36         12,0           0         12,0         12,0           x 7/8         40         10,2           80         10,2         80           80         10,2         80           80         10,2         80         10,2           80         10,2         80         10,2           8	FLAP DEN ABRAS ACKING PL 07 AAX. S PM F 3,300 1 3,300 1	BA		Type 27 Flat	Type 27 Flat	Type 27 Flat	Type 27 Flat	Type 27 Flat
ZE (D x H)         GRIT         MAD           rpe 27 Flat         36         13,3           1/2 x 5/8-11         36         13,3           60         13,3         60           60         13,3         60           1/2 x 7/8         36         13,3           60         13,3         60           60         13,3         60           120         13,3         60           60         12,0         13,3           120         13,3         60           120         12,0         12,0           80         12,0         12,0           80         12,0         12,0           80         12,0         12,0           80         12,0         12,0           80         12,0         12,0           80         10,2         80           80         10,2         80           80         10,2         80           80         10,2         80           80 <td>ABRA: DACKING PL OT NAX. S IPM F 3,300 1 3,300 1</td> <td>BA</td> <td>I DENOTITI Otunuulu</td> <td>High</td> <td>Standard</td> <td>High</td> <td>Standard</td> <td>High</td>	ABRA: DACKING PL OT NAX. S IPM F 3,300 1 3,300 1	BA	I DENOTITI Otunuulu	High	Standard	High	Standard	High
ZE (D x H) pe 27 Flat 1/2 x 5/8-11 1/2 x 5/8-11 2 x 5/8-11 2 x 5/8-11 2 x 5/8-11 2 x 5/8-11 2 x 7/8 2 x 5/8-11 2 x 7/8 2 x 5/8-11 2 x 7/8 2 x 5/8-11 3 x 6 2 x 7/8 2 x 7/8 3 x 6 2 x 7/8 3 x 6 2 x 7/8 3 x 6 2 x 7/8 3 x 6 2 x 7/8 3 x	ACKING PL 07 NAX. S PM F 3,300 1 3,300 1	M	ABRASIVE: Ceramic Alun		Zirconia Alumina	Zirconia Alumina	Zirconia Alumina	Zirconia Alumina
ZE (D x H) GRIT RPA rpe 27 Flat 1/2 x 5/8-11 1/2 x 5/8-11 1/2 x 5/8-11 1/2 x 7/8 1/2 x 7/8 x 5/8-11 x 5/8-11 x 5/8-11 x 5/8-11 40 120 133 60 133 60 133 80 120 120 120 120 120 120 120 12	AAX. S IPM F 3,300 1 3,300 1	M/	ACKING PLATE: Quick Trim Pl		Quick Trim Plastic	Fiberglass	Quick Trim Plastic	Fiberglass
ZE (D x H)         GRIT         RPA           rpe 27 Flat         36         13,3           1/2 x 5/8-11         36         13,3           36         13,3         60           36         13,3         60         13,3           60         13,3         60         13,3           1/2 x 5/8-11         36         13,3         80         13,3           1/2 x 7/8         36         13,3         80         13,3           1/2 x 7/8         36         13,3         80         13,3           1/2 x 7/8         36         12,0         13,3           80         13,3         80         13,3           1/2 x 7/8         36         12,0           40         12,0         60         12,0           x 5/8-11         36         12,0         80         12,0           x 5/8-11         40         10,2         60         10,2           80         10,2         80         10,2         80         10,2           x 7/8         40         10,2         60         10,2         80         10,2           80         10,2         80         10,2         80	3,300 1 3,300 1	M/	OTHER: Supersize	Supersize				0
Pe 27 Flat         36         13,3           1/2 x 5/8-11         36         13,3           36         13,3         60         13,3           60         13,3         60         13,3           60         13,3         120         13,3           1/2 x 7/8         36         13,3         120         13,3           1/2 x 7/8         36         13,3         60         13,3           1/2 x 7/8         36         13,3         120         13,3           1/2 x 7/8         36         13,3         60         13,3           60         13,3         120         13,3         120         13,3           120         13,3         120         13,3         120         13,3           60         13,3         120         12,0         12,0         12,0         12,0         12,0         12,0         12,0         12,0         12,0         12,0         12,0         12,0         12,0         12,0         12,0         12,0         12,0         12,0         13,2         13,3         12,0         12,0         12,0         12,0         13,3         12,0         12,0         12,0         12,0         12,0	3,300 1 3,300 1	1.	NAX. STD. IPM PKG. PART #					
1/2 x 5/8-11         36         13,3           36         13,3           36         13,3           40         13,3           60         13,3           60         13,3           80         13,3           120         13,3           120         13,3           40         13,3           60         13,3           120         13,3           40         13,3           60         13,3           80         13,3           120         13,3           80         13,3           120         13,3           80         13,3           80         13,3           120         12,0           60         12,0           60         12,0           80         12,0           80         12,0           80         12,0           80         12,0           80         10,2           60         10,2           60         10,2           80         10,2           80         10,2           80         10,2     <	3,300 1 3,300 1		<u> </u>	PART #	PART #	PART #	PART #	PART #
36         13,3           40         13,3           60         13,3           60         13,3           60         13,3           60         13,3           1/2 x 7/8         36         13,3           1/2 x 7/8         36         13,3           60         13,3         60         13,3           1/2 x 7/8         36         13,3           60         13,3         60         13,3           120         13,3         120         13,3           120         13,3         120         13,3           120         13,3         120         13,3           120         12,0         12,0         12,0           60         12,0         12,0         12,0           120         12,0         12,0         12,0           120         12,0         12,0         12,0           120         12,0         12,0         12,0           120         12,0         12,0         12,0           120         12,0         12,0         12,0           120         12,0         12,0         12,0           120         10,2	3,300 1	10		662544 <b>99894</b>	6660000126		666233 <b>99125</b>	
40         13,3           60         13,3           60         13,3           60         13,3           80         13,3           120         13,3           120         13,3           40         13,3           60         13,3           40         13,3           60         13,3           80         13,3           80         13,3           80         13,3           80         13,3           80         13,3           120         13,3           120         13,3           120         13,3           120         12,0           40         12,0           60         12,0           40         12,0           40         12,0           40         12,0           40         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80 </td <td></td> <td></td> <td></td> <td>002344<b>33034</b></td> <td>666233<b>99136</b> 666233<b>41086</b> 2-Pk</td> <td></td> <td>00023399129</td> <td></td>				002344 <b>33034</b>	666233 <b>99136</b> 666233 <b>41086</b> 2-Pk		00023399129	
60         13,3           60         13,3           80         13,3           120         13,3           120         13,3           40         13,3           60         13,3           40         13,3           60         13,3           80         13,3           80         13,3           80         13,3           80         13,3           80         13,3           80         12,0           120         13,3           120         13,3           120         13,3           120         12,0           40         12,0           120         12,0           120         12,0           120         12,0           120         12,0           120         12,0           120         12,0           120         12,0           120         12,0           120         12,0           120         10,2           80         10,2           80         10,2           80         10,2	0.000 1			<b>7</b> 662610 <b>98290</b>	666233 <b>99137</b>	776960 <b>90086</b>	666233 <b>99000</b>	
60         13,3           80         13,3           120         13,3           120         13,3           40         13,3           60         13,3           60         13,3           60         13,3           80         13,3           80         13,3           120         13,3           120         13,3           60         12,0           40         12,0           60         12,0           60         12,0           60         12,0           60         12,0           60         12,0           60         12,0           60         12,0           60         12,0           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80 <td></td> <td></td> <td></td> <td></td> <td>666233<b>99138</b></td> <td>776960<b>90087</b></td> <td>666233<b>99001</b></td> <td>666233<b>99060</b></td>					666233 <b>99138</b>	776960 <b>90087</b>	666233 <b>99001</b>	666233 <b>99060</b>
80         13,3           120         13,3           120         13,3           40         13,3           60         13,3           80         13,3           60         13,3           80         13,3           120         13,3           80         13,3           120         13,3           120         13,3           120         13,3           120         13,3           120         13,3           120         12,0           40         12,0           60         12,0           60         12,0           60         12,0           80         12,0           60         12,0           60         12,0           60         12,0           60         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           8				00201030403	666233 <b>41087</b> 2-Pk	11030030001	00020033001	000200333000
120         13,3           1/2 x 7/8         36         13,3           40         13,3         60         13,3           60         13,3         60         13,3           120         13,3         120         13,3           120         13,3         120         13,3           120         13,3         120         13,3           120         13,3         120         13,3           120         12,0         40         12,0           40         12,0         60         12,0           60         12,0         12,0         12,0           60         12,0         12,0         12,0           60         12,0         12,0         12,0           60         10,2         80         10,2           80         10,2         80         10,2           60         10,2         80         10,2           61         10,2         80         10,2           62         10,2         80         10,2           63         10,2         80         10,2           64         10,2         80         10,2           65/8	- ,			<b>9</b> 662610 <b>96436</b>	666233 <b>99139</b>	776960 <b>90088</b>	666233 <b>99002</b>	
1/2 x 7/8         36         13,3           40         13,3           60         13,3           80         13,3           120         13,3           120         13,3           120         13,3           60         12,3           40         12,0           40         12,0           60         12,0           60         12,0           60         12,0           40         12,0           40         12,0           60         12,0           60         12,0           60         12,0           40         12,0           60         12,0           80         12,0           80         12,0           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2					0002000000	110000000000	66623399003	
40         13,3           60         13,3           60         13,3           80         13,3           120         13,3           120         13,3           120         13,3           120         13,3           120         13,3           120         13,3           120         13,3           120         12,0           60         12,0           80         12,0           40         12,0           60         12,0           80         12,0           60         12,0           80         12,0           60         10,2           60         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80					666233 <b>99140</b>	776960 <b>90081</b>		
60         13,3           80         13,3           120         13,3           120         13,3           120         13,3           120         12,0           40         12,0           60         12,0           80         12,0           60         12,0           80         12,0           120         12,0           40         12,0           40         12,0           60         12,0           60         12,0           60         12,0           60         12,0           80         12,0           80         10,2           60         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           120         12,0           40         10,2           60         10,2           80         10,2           60         10,2           80 </td <td></td> <td></td> <td></td> <td></td> <td>66623399141</td> <td>776960<b>90082</b></td> <td></td> <td></td>					66623399141	776960 <b>90082</b>		
120         13,3           120         13,3           120         12,0           40         12,0           60         12,0           80         12,0           120         12,0           120         12,0           120         12,0           40         12,0           120         12,0           40         12,0           60         12,0           120         12,0           120         12,0           120         12,0           120         12,0           120         12,0           120         12,0           120         12,0           120         12,0           120         12,0           120         12,0           120         10,2           80         10,2           80         10,2           120         10,2           120         10,2           120         10,2           120         10,2           120         10,2           120         10,2           120         10,2 <t< td=""><td></td><td></td><td></td><td></td><td>666233<b>99142</b></td><td>776960<b>90083</b></td><td></td><td></td></t<>					666233 <b>99142</b>	776960 <b>90083</b>		
36         12,0           40         12,0           60         12,0           80         12,0           120         12,0           120         12,0           40         12,0           120         12,0           60         12,0           60         12,0           60         12,0           80         12,0           80         12,0           80         12,0           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80	3,300 1	13	3,300 10 662544 <b>0025</b>	5 662610 <b>20634</b>	666233 <b>99143</b>	77696090084		
40         12,0           60         12,0           80         12,0           120         12,0           120         12,0           40         12,0           120         12,0           60         12,0           60         12,0           80         12,0           80         12,0           120         12,0           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         60           80         60           80         60           80				6		77696090085		
60         12,0           80         12,0           120         12,0           120         12,0           40         12,0           60         12,0           60         12,0           60         12,0           60         12,0           80         12,0           80         12,0           120         12,0           80         10,2           60         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         60           60         8,60           60	2,000 1	12	2,000 10		666233 <b>99144</b>		666233 <b>99127</b>	
80         12,0           120         12,0           120         12,0           36         12,0           40         12,0           60         12,0           80         12,0           80         12,0           80         12,0           80         12,0           120         12,0           60         10,2           60         10,2           80         10,2           60         10,2           80         10,2           80         10,2           60         10,2           80         10,2           80         10,2           60         10,2           80         10,2           60         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         80,60           60         8,60           60 <td></td> <td></td> <td></td> <td></td> <td>666233<b>99145</b></td> <td></td> <td>666233<b>99128</b></td> <td></td>					666233 <b>99145</b>		666233 <b>99128</b>	
120         12,0           120         12,0           40         12,0           60         12,0           80         12,0           120         12,0           120         12,0           120         12,0           120         12,0           120         12,0           60         10,2           60         10,2           80         80           80         80           80	,				666233 <b>99146</b>		666233 <b>99130</b>	
x 7/8         36         12,0           40         12,0         60         12,0           60         12,0         12,0         12,0           120         12,0         12,0         12,0           x 5/8-11         40         10,2         60         10,2           80         10,2         60         10,2         60         10,2           80         10,2         80         10,2         80         10,2           80         10,2         80         10,2         80         10,2           80         10,2         80         10,2         80         10,2           80         10,2         80         10,2         80         10,2           80         10,2         80         10,2<				3	666233 <b>99147</b>		666233 <b>99131</b>	
40         12,0           60         12,0           80         12,0           120         12,0           120         12,0           60         10,2           60         10,2           80         10,2           60         10,2           80         80           80         80           80         80           60					0000000110		666233 <b>99132</b>	
x 5/8-11 x 5/8-					666233 <b>99148</b>			
80         12,0           120         12,0           120         12,0           60         10,2           80					666233 <b>99149</b>			666233 <b>99212</b>
120         12,0           120         12,0           60         10,2           80         10,2           80         10,2           80         10,2           80         10,2           80         10,2           120         10,2					666233 <b>99150</b> 666233 <b>99151</b>			666233 <b>99213</b>
5/8-11         40         10,2           60         10,2         80         10,2           80         10,2         60         10,2           60         10,2         80         10,2           80         10,2         80         10,2           120         10,2         10,2         10,2           5/8-11         36         8,60         40         8,60           60         8,60         60         8,60         60         8,60					00023399131			
60         10,2           80         10,2           60         10,2           60         10,2           80         10,2           80         10,2           80         10,2           120         10,2           45/8-11         36         8,60           60         8,60         60								666233 <b>99219</b>
80         10,2           80         10,2           60         10,2           80         10,2           120         10,2           120         10,2           40         10,2           120         10,2           40         8,60           40         8,60           60         8,60								666233 <b>99220</b>
x 7/8 40 10,2 60 10,2 80 10,2 120 10,2 120 10,2 x 5/8-11 36 8,60 40 8,60 60 8,60								666233 <b>99221</b>
60 10,2 80 10,2 120 10,2 < 5/8-11 36 8,60 40 8,60 60 8,60		10	0,200 10 662611 <b>3212</b>		666233 <b>99152</b>			666233 <b>99216</b>
80 10,2 120 10,2 5/8-11 36 8,60 40 8,60 60 8,60		10	0,200 10 662611 <b>3212</b>		66623399153			666233 <b>99217</b>
x 5/8-11 40 60 40 60 8,60 60 8,60 10,2 10,2 8,60 40 8,60 8,	0,000 1	10	0,200 10 662611 <b>3212</b>	5	666233 <b>99154</b>			
40 8,60 60 8,60	υ,∠∪∪ I	) 10	0,200 10					
60 8,60					666233 <b>99155</b>			
	0,200 1 ,600 1				666233 <b>99156</b>	776960 <b>90092</b>		
80 8,60	0,200 1 ,600 1 ,600 1				666233 <b>99157</b>	776960 <b>90093</b>	666233 <b>99017</b>	
	0,200 1 ,600 1 ,600 1 ,600 1				666233 <b>99158</b>	776960 <b>90094</b>	666233 <b>99018</b>	
	0,200 1 ,600 1 ,600 1 ,600 1 ,600 1						666233 <b>99019</b>	
1	0,200 1 ,600 1 ,600 1 ,600 1 ,600 1 ,600 1	- , .	,		666233 <b>99159</b>	7700000000		
,	0,200 1 ,600 1 ,600 1 ,600 1 ,600 1 ,600 1 ,600 1 ,600 1	y (			666233 <b>99160</b>	776960 <b>90089</b>		
60 8,60 80 8,60	0,200 1 ,600 1 ,600 1 ,600 1 ,600 1 ,600 1 ,600 1 ,600 1				666233 <b>99161</b> 666233 <b>99162</b>	776960 <b>90090</b>		





Packaged for retail / walk-in selling / small jobs

# BLUEFIRE R860 ZIRCONIA ALUMINA

- Zirconia alumina abrasive for aggressive cut and long life
- · Individual hang cards provides product selling points; ships in merchandise display case of small quantities
- Available wire rack (with header card) allows merchandising of 4-1/2" product three ways: hung on pegboard, mounted on an upright, or placed on a shelf/counter

TIER: BETTER TRADENAME: BLUEFIRE R860 SHAPE: Type 29 FLAP DENSITY: Standard ABRASIVE: Zirconia Alumina BACKING PLATE: Fiberglass SIZE (D x H) PART # 40 13,300 07660703211 4-1/2 x 5/8-11 5 60 13,300 07660703212 5 13.300 80 5 07660703213 7 x 5/8-11 07660703206 60 8,600 5 Wire Rack 07660704157 1

WIRE RACK (WITH HEADER CARD) ALLOWS MERCHANDISING OF 4-1/2" PRODUCT THREE WAYS: HUNG ON PEGBOARD, MOUNTED ON AN UPRIGHT, OR PLACED ON A SHELF/COUNTER



See Portable Tools and Specialties section for mini flap discs.



# **COATED & NON-WOVEN ABRASIVES** Non-Woven Discs



Non-woven discs have three components: strong synthetic fiber mesh and quality abrasives, bonded together by a smear-resistant adhesive. Rapid Strip discs have an open web construction that enables aggressive cutting action while maintaining a cool, non-loading surface. Rapid Blend discs have a unitized construction with varying weave - from open to tighter - for deburring and finishing. Rapid Prep discs have a more open weave that excels in surface preparation and cleaning. Each product provides excellent cutting action while improving surface finish.

#### **Applications:**

Size Range: **Grit Range: Abrasive Grain:** Machine Used:

Medium-to-light material removal, deburring, blending, cleaning, finishing, and polishing 4" - 7"

Extra Coarse, Coarse, Medium, Fine, Very Fine Ceramic Alumina, Silicon Carbide, Engineered Aluminum Oxide, Aluminum Oxide





VERTICAL SHAFT



PORTABLE GRINDER

DIE GRINDER

### Material/Application-To-Product Recommendation Guide

Stripping Discs	BEST	BETTER	Deburring, Blending,	BEST	BETTER		
	Blaze Rapid Strip Ceramic	Rapid Strip Silicon Carbide	Finishing Discs	Vortex Rapid Blend	Vortex Rapid Prep	Rapid Blend	Rapid Prep
Removing scale and coarse welding marks	◆ XC	◆ XC	Removing weld marks and weld spatter	◆ C		◆ C	
Removing coatings, epoxy/glue, paint and other clogging material	◆ XC	◆ XC	Stainless steel deburring and cleaning	◆ C		◆ C	
			Removing small flashings and	◆ C		◆ C	
Removing rust, oxidation, corrosion and residue	◆ XC	◆ XC	parting lines Surface preparation before coatings/plating		◆ C		◆ C
Removing parting lines and seams on	◆ XC	XC    XC	Light cleaning		◆ F		<b>♦</b> F
			Cleaning and prepping welds		◆ M		◆ M
fiberglass parts			Removing blemishes after		◆ M		◆ M
Removing paint/graffiti from concrete/stone	◆ XC	◆ XC	welding stainless Blending and finishing all metal parts			♦ VF	
			Creating decorative finishes on stainless steel	◆ VF		♦ VF	
			Final finishing and polishing	◆ VF		♦ VF	
			Final finishing/polishing where high conformability is needed				◆ VF

XC - Extra Coarse, C - Coarse, M - Medium, F - Fine, VF - Very Fine

### Application/Product Recommendation Guide

MOST AGGRESSIVE / LEAST CONFORMABLE

LEAST AGGRESSIVE / MOST CONFORMABLE

Depressed Center Discs	Blaze Rapid Strip	Vortex Rapid Blend A/O Med.	Rapid Blend A/O Medium	Rapid Blend S/C Fine	
		Rapid Blend A/O Coarse			
Discs With Back-Up Pad		Vortex Rapid Prep	Rapid Prep A/O Medium	Rapid Prep A/O Fine	Rapid Prep Very Fine
		Rapid Prep A/O Coarse			
Scale Removal	First Choice				
Stock Removal	First Choice	Second Choice			
Heavy Deburring	Second Choice	First Choice			
Light Deburring		First Choice	Second Choice		
Light Finishing		Second Choice	First Choice		
Blending			First Choice	Second Choice	
Finishing			Second Choice	First Choice	
Polishing				First Choice	Second Choice





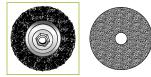
# COATED & NON-WOVEN ABRASIVES Non-Woven Discs

### Cross Reference Guide - For All Discs Used on Right Angle Grinders

STRIPPING (EXTRA COARSE) SURFACE FINISHING (COARSE – MEDIUM – FINE) SURFACE PREP (VERY FINE)

	BEST	BETTER	BEST	BETTER	BEST	BETTER
NORTON	Blaze Rapid Strip	Rapid Strip	Vortex Rapid Blend	Rapid Blend	Vortex Rapid Prep	Rapid Prep
3M	Clean & Strip XT PRO, Clean & Strip XT PRO Extra Cut	Clean & Strip X	Debur and Finish PRO, Cut and Polish	EXL	SE, Duraflex	SC, PD, AI, LS
Bibielle	_	SDR Strip-It/Red	_	BUR Unitized	SCHD	SCLS, SCD, SCSB
Camel	_	EZ Strip Black/Red				_
Flexovit	_	Clean & Strip				_
Hermes	Strip Discs	Webrax	—	—	—	—
Pearl	—	S/C Stripping	_	—	—	Surface Preparation
Pferd	_	Policlean	_	Poliflex PUR	_	_
Sait	_	Sait-Strip	_	Unitized	7S, 8S	3Z
SIA	SiaStrip	—	—	_	6260	6250
Standard		Cleaning	700/800/900 Series	700/800/900 Series	FE, GP	FE, GP, RC
Superior	_	Stripping		XL Unitized		FD, GD, CC
Walter		FX Cleaning		—	—	Blendex Surface Conditioning

### Why Choose Non-Woven Depressed Center Discs?



Non-Woven Right Angle Discs vs. Fiber Discs, Wire Wheels, and Depressed Center Wheels

- Deburring, blending and finishing done with one product to reduce the number of steps
- To provide a controlled, sustained finish
- To prevent undercutting and gouging
- To provide a cooler grinding action to lessen the chance of warping or discoloration

For stripping coatings and paint off of hard materials like concrete, cement and stone

· When loading is an issue with fiberglass, adhesives and soft metals



Less vibration and quieter for high operator acceptance

• To provide an alternative to wire brushes





#### RAPID, DURABLE BLENDING AND FINISHING

Reduce Steps and Increase Productivity Choose a Vortex Rapid Prep Flap Disc

Norton Vortex Rapid Prep flap discs, featuring layers of non-woven surface conditioning material, offer a longer life over traditional single layer products. Featuring high performance Vortex grain technology that cuts coarser and finishes finer with a smear free resin system.

The Type 27 shape provides forgiveness when going over uneven surfaces and reduces vibration to improve the ergonomics of any operation.

- Product finer finish faster, reduce steps
- Improve life and reduce disc changes, reduce vibration
- Faster cut rate, longer life and less disc changes

#### Recommended Starting Grits for Applications

			<u> </u>									
	AVERAGE			EDGE		PAINT	PARTING	RUST				SURFACE
GRIT	RA (µIN)	BLENDING	DEBURRING	BREAK	FINISHING	REMOVAL	LINE REMOVAL	POLISHING REMOVAL	SANDING	SMOOTHING	STRIPPING	PREP
COARSE	40	•	•	•		•	•	•	•	٠	•	•
MEDIUM	20	•	•	•	•	•	•	•	•	•	•	•
FINE	10	•			•			•	•	•		•
VERY FINE	5	•			•			•	٠			•



#### Rapid Strip



Best choice for quick and easy rough cleaning and stripping of all materials

# BLAZE RAPID STRIP CERAMIC ALUMINA

- Blaze ceramic grain provides 2X plus faster, consistent rate and life than silicon carbide discs, leaves a thoroughly cleaned surface, ensuring excellent adhesion in subsequent processes such as painting and soldering
- Open web construction for minimal loading; does not shed or snag on rusty pieces; prevents gouging and rework
- · Rapid Strip material provides a unique combination of aggressive performance, long life, and improved finish

#### Better choice for use on a variety of materials, including metal, fiberglass and stone



- · Sharp silicon carbide abrasive provides fast aggressive cutting action
- · Advanced resin bond prevents shedding, snagging, gouging, and rework
- · Open web construction for minimal loading; great alternative to wire brushes



ABRASIVE: GRADE: X-Coarse

		GRADE:	X-Coarse	X-Coarse
		TYPE/BACKING:	Type 27/Fiberglass	Type 27/Fiberglass
SIZE (D x H)	MAX. RPM	STD. PKG.	PART #	PART #
4-1/2 x 5/8-11	12,000	10	662544 <b>98101</b>	662610 <b>09585</b>
4-1/2 x 7/8	12,000	10	666233 <b>03783</b>	662610 <b>09649</b>
5 x 5/8-11	11,000	10	666233 <b>03915</b>	
5 x 7/8	11,000	10	666233 <b>03916</b>	
7 x 5/8-11	8,000	10	666233 <b>03919</b>	662610 <b>09650</b>
7 x 7/8	8,000	10	666233 <b>03920</b>	662610 <b>09586</b>





### Rapid Blend / High Strength



#### Best choice with revolutionary technology for heavy deburring and finishing

# VORTEX RAPID BLEND ALUMINUM OXIDE

- Proprietary engineered Vortex aluminum oxide agglomerated grain performs the medium to fine grit steps of traditional aluminum oxide discs
- Thick nylon web for 2X longer life and faster finishing vs. traditional aluminum oxide discs, with minimal shedding
- Special resin chemistry resists shedding when used on sharp edges, making it ideal for deburring; no smearing



#### Best Choice for tough and conformable, resists tearing on burrs and sharp edges

# HIGH-STRENGTH ALUMINUM OXIDE

- · Premium aluminum oxide grain; engineered for more demanding applications
- Uniform construction maintains part tolerance; prevents cutting and gouging
- · Smear-free bond excels at producing light satin finishes



Better choice for surface prep, deburring, blending and removing parting lines, rust, and coatings

# RAPID BLEND NEX A/O / S/C

- · Premium aluminum oxide or silicon carbide grain for consistent performance
- · Uniform construction extends life and maintains part tolerance; prevents cutting and gouging
- Resin formula produces consistent, smear-free finishes

MOST AGGRESSIVE / LEAST CONFORMABLE

#### LEAST AGGRESSIVE / MOST CONFORMABLE

	0	0	0	0	0	0	0	0
TIER:	BEST	BEST	BEST	BEST	BETTER	BETTER	BETTER	BEST
TRADENAME:	VORTEX Rapid Blend	VORTEX Rapid Blend	VORTEX Rapid Blend	HIGH- Strength	RAPID BLEND Nex	RAPID BLEND Nex	RAPID BLEND Nex	HIGH- Strength
ABRASIVE:	Engineered A/O	Engineered A/O	Engineered A/O	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Silicon Carbide	Aluminum Oxide
GRIT SIZE:	Coarse	Coarse	Medium	Coarse	Medium	Fine	Fine	Medium
SPECIFICATION:	Vortex 5AC	Vortex 8AC	Vortex 5AM	High Strength	NEX-2AM	NEX-2AF	NEX-2SF	High Strength
TYPE/BACKING:	Type 27/	Type 27/	Type 27/	Type 27/	Type 27/	Type 27/	Type 27/	Type 27/
TTEL/DAGNING.	Fiberglass	Fiberglass	Fiberglass	Fiberglass	Fiberglass	Fiberglass	Fiberglass	Fiberglass
SIZE MAX. STD.	DADT #	DADT #	DADT #	DADT #	D4DT //	D107 //	D107 //	DADT //
(D x H) RPM PKG.	PART #	PART #	PART #	PART #	PART #	PART #	PART #	PART #
4-1/2 x 5/8-11 12,000 10	662611 <b>32881</b>	662611 <b>32929</b>	662544 <b>29243</b>	776960 <b>00144</b>	662610 <b>23947</b>	662610 <b>23946</b>	662610 <b>23943</b>	662610 <b>23949</b>
4-1/2 x 7/8 12,000 10	662611 <b>32880</b>	662611 <b>32928</b>	662544 <b>29268</b>	776960 <b>00145</b>	662610 <b>20548</b>	662610 <b>20547</b>	662610 <b>20546</b>	662610 <b>20549</b>





### Vortex Rapid Prep Flap Discs



Best choice for cleaning, light deburring and processing TIG welded seams on stainless steel

# VORTEX RAPID PREP FLAP DISCS

- High-performing, patented Vortex agglomerated aluminum oxide grain provides the cutting power of a coarser grit
  with the finish of a finer grit
- Proprietary Clean Bond resin technology guarantees smear-free finishes even on high nickel content alloys and reduces loading on aluminum and other soft metals
- Multiple layers of surface conditioning material provide added life, fewer disc changes, and reduced vibration





Reduce Grits & Steps with Norton Vortex Rapid Prep Flaps Discs!



MOLDO

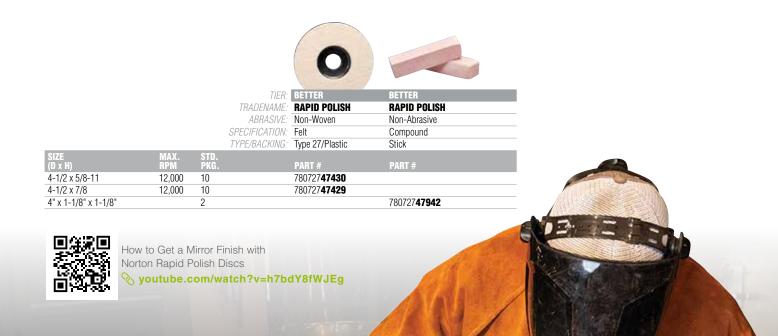


### Rapid Polish

Better choice for finishing to a mirror like shine

# RAPID POLISH

- Type 27 disc with premium quality pressed hardened felt for polishing to a mirror like finish
- Use with our without polishing compound
- Soft padding is Ideal for final finishing with no vibration



TILLMAN'



# **COATED & NON-WOVEN ABRASIVES** Non-Woven Arbor Hole Discs

### **Rapid Strip Arbor Hole Discs**



Best choice for removing rust, scale and paint/coatings on a variety of substrates, such as wood, metal and plastics

# BLAZE RAPID STRIP CERAMIC ALUMINA

- · Norton Blaze ceramic alumina grain provides 2X cut rate, 2X life over silicon carbide products
- · Advanced resin bond does not shed on rust-encrusted pieces, and prevents gouging and rework; does not snag when used for deburring
- · Leave a thoroughly cleaned surface that ensures excellent adhesion for subsequent processes such as coating, painting and soldering

Better choice for removing coatings on a variety of substrates such as wood metal and plastics

# RAPID STRIP SILICON CARBIDE

- · Faster cutting, sharp, extra coarse silicon carbide abrasive provides a unique combination of aggressive performance, long life, and improved finish
- · Advanced resin bond prevents shedding on rust-encrusted pieces and gouging and rework; does not snag when used for deburring
- Leaves a thoroughly clean surface that ensures excellent adhesion in subsequent processes such as coating, painting and soldering



SIZE (D x H)	MAX. RPM	STD. PKG.		PART #
Arbor Hole				
4 x 1/4	8,000	25	662610 <b>09324</b>	662610 <b>08008</b>
4 x 1/2	8,000	25	666233 <b>04856</b>	662610 <b>07916</b>
6 x 1/4	4,000	15	666233 <b>40171</b>	662610 <b>07988</b> NS
6 x 1/2	4,000	15	662610 <b>99378</b>	662610 <b>08051</b>

act your Norton representative for current order quantities and lead times



FITS HOLE	FOR DISC WIDTH	FOR DISC DIAMETER	SHANK Diameter	OVERALL LENGTH	WASHER DIAMETER	STD. PKG.	PART #
Mandrel	Assemblies						
1/4"	1/2" (Standard)	up to 6"	1/4"	2-1/2"	1-1/2"	1	662610 <b>09502</b>







# COATED & NON-WOVEN ABRASIVES Non-Woven Arbor Hole Discs

### High-Strength Arbor Hole Discs

Applications include rust/oxide or coating removal, pipe ID and OD polishing, casting cleaning, highlighting (antiquing), contaminant removal, removal of handling marks, gasket removal, cleaning and blending of surface imperfections, prepping prior to soldering, removal of filling materials, cleaning angles and odd shapes. Will not stretch or shed. Ganging increases versatility. For use on larger portable and fixed-base tools where the wheel must fit on an existing arbor.



Best choice for removing rust, scale and paint/coatings on a variety of substrates, such as wood, metal and plastics

# HIGH-STRENGTH ALUMINUM OXIDE DISCS

- Strongest non-woven buffing and polishing disc
- · Premium aluminium oxide grain; engineered for more demanding applications
- Tough but flexible web resists tearing on burrs and sharp edges; and conforms to intricate shapes and contours
  without changing the workpiece dimension; can be ganged together and used as a wheel
- Smear-free bond excels at producing light satin finishes



			TIER:	BEST
			TRADENAME:	HIGH STRENGTH
			ABRASIVE:	Aluminum Oxide
SIZE (D x H)	GRIT	MAX. RPM	STD. PKG.	PART #
6 x 1/4	VF	4,000	70	662610 <b>07628</b>
6 x 1/2	С	4,000	70	776960 <b>00146</b>
	М	4,000	70	662610 <b>05073</b>
	VF	4,000	70	662610 <b>04980</b>
8 x 1/2	С	3,000	50	776960 <b>00147</b>
	М	3,000	50	662610 <b>05491</b>
	VF	3,000	50	662610 <b>04506</b>
12 x 1-1/4	С	1,900	25	776960 <b>00148</b>
	VF	1,900	25	662610 <b>08723</b>

See page 169 for High Strength quick-change discs.



FITS Hole	FOR DISC WIDTH	FOR DISC DIAMETER	SHANK Diameter	OVERALL Length	WASHER DIAMETER	STD. PKG.	PART #
Mandre	<b>Assemblies</b> For	Using Discs On	Edge				
1/4"	1/2" (Standard)	up to 6"	1/4"	2-1/2"	1-1/2"	1	662610 <b>09502</b>
1/2"	1/2" (Standard)	Up to 8"	1/4"	3-1/8"	2-1/4"	1	662610 <b>59420</b>



#### Rapid Prep 7/8" Center Hole

# COATED & NON-WOVEN ABRASIVES Non-Woven Standard Back-up Pad Discs



#### Best choice for aggressive stock removal and blending in one step

# RAPID PREP XHD

- Coarse and Medium discs solve your most aggressive stock removal and blending challenges; remove weld lines, weld spatter, weld discoloration and blend surfaces in a single step
- Improve cut control and surface blending over traditional coated flap discs and fiber discs from our unique combination of a conformable fiber matrix and premium ceramic grain
- XHD Coarse discs for aggressive weld removal and surface blending on steels and Medium discs on softer metals/alloys



		IIER: BEST
		TRADENAME: RAPID PREP XHD
		ABRASIVE: Ceramic Alumina
SIZE (D x H)	STD. PKG.	PART #
Coarse		
4-1/2 x 7/8	40	662611 <b>70275</b>
5 x 7/8	40	662611 <b>70279</b>
7 x 7/8	25	662611 <b>70280</b>
Medium		
4-1/2 x 7/8	40	662611 <b>70282</b>
5 x 7/8	40	662611 <b>70283</b>
7 x 7/8	25	662611 <b>70284</b>
N. / NA DOMA! /		

Note: Max RPM is determined by corresponding back up pad.



### Norton Rapid Prep Surface Conditioning Products

The Perfect Abrasive, Coating, and Bond Built into Every Disc and Belt

- Available in premium Vortex aluminum oxide aggregate grain and Norton aluminum oxide grain; ideal for many aerospace, metal and stainless steel fabrication, and MRO applications
- Our proprietary coating method extends life and delivers consistent finishes by creating a thick layer of grain throughout the product; grain does not sit on top of fibers as other competitive products can
- Our new Clean Bond resin system guarantees smear-free finishes, even on high nickel content alloys; will not load on
  aluminum and soft metals, as competitive products can





#### Rapid Prep 7/8" Center Hole

# COATED & NON-WOVEN ABRASIVES Non-Woven Standard Back-up Pad Discs



#### Best choice for finishing and blending applications

# VORTEX RAPID PREP ALUMINUM OXIDE DISCS

- High-performing, patented Vortex agglomerated aluminum oxide grain provides the cutting power of a coarser grit with the finish of finer grits
- Premium high-loft nylon fiber bonded to a strong nylon scrim backing allows a thick layer of resin bond and grain for extended life and provides added durability and stiffness
- Proprietary Clean Bond resin technology guarantees smear-free finishes even on high nickel content alloys and reduces loading on aluminum and other soft metals

Better choice for high nickel content alloys, aluminum and other soft metals



# RAPID PREP ALUMINUM OXIDE

- Quality aluminum oxide abrasive grain coating provides up to 20% higher cut rate and 50% better performance than competitive products
- Premium high-loft nylon fiber bonded to a strong nylon scrim backing allows a thick layer of resin bond and grain for extended life, added durability and stiffness
- Proprietary Clean Bond resin technology guarantees smear-free finishes even on high nickel content alloys and reduces loading on aluminum and other soft metals



	TIER:	BEST	BETTER
	TRADENAME:	VORTEX RAPID PREP	RAPID PREP
	ABRASIVE:	Engineered Aluminum Oxide	Aluminum Oxide
SIZE (D x H)	STD. PKG.	PART #	PART #
Extra Coarse			
4-1/2 x 7/8	25		666233 <b>26070</b>
5 x 7/8	25	666233 <b>34975</b>	
7 x 7/8	25	666233 <b>41360</b>	
Coarse			
4-1/2 x 7/8	25	666233 <b>34944</b>	662544 <b>73868</b>
5 x 7/8	25	666233 <b>34946</b>	662610 <b>08293</b>
7 x 7/8	25	666233 <b>41362</b>	666233 <b>25138</b>
Medium			
4-1/2 x 7/8	25	666233 <b>33612</b>	666233 <b>25915</b>
5 x 7/8	25	666233 <b>34963</b>	662610 <b>17124</b>
7 x 7/8	25	666233 <b>41364</b>	666233 <b>25919</b>
Fine			
4-1/2 x 7/8	25	666233 <b>33608</b>	666233 <b>25153</b>
5 x 7/8	25	666233 <b>34954</b> NS	662544 <b>69132</b>
7 x 7/8	25	666233 <b>41366</b> NS	
Very Fine			
4-1/2 x 7/8	25	666233 <b>33616</b>	
5 x 7/8	25		666233 <b>25943</b>
7 x 7/8	25	666233 <b>41368</b> NS	666233 <b>25959</b>

Additional sizes are available made-to-order, contact your Norton representative for current order quantities and lead times. NS Non-Stock, contact your Norton representative for current order quantities and lead times.

Note: Max RPM is determined by corresponding back-up pad.

#### See page 68 for 7/8" Hole Air Cooled Back-up Pads





# Rapid Prep

- Speed Change 5/8"-11
- These discs feature Norton quick, tool-free, twist-on and -off Speed-Change fasteners. Discs lock to standard back-up pads with a unique nut design and are easily removed, increasing your productivity with more time to grind.
- Rapid Prep XHD are the best choice for aggressive stock removal and blending in one step.

	Th	ER: BEST
	TRADENAN	ME: RAPID PREP XHD
	ABRASI	VE: Ceramic Alumina
SIZE (D x H)	STD. PKG.	PART #
Coarse		
4-1/2 x 5/8-11	25	662611 <b>70060</b>
5 x 5/8-11	25	662611 <b>70061</b>
7 x 5/8-11	25	662611 <b>70288</b>
Medium		
4-1/2 x 5/8-11	25	662611 <b>70062</b>
5 x 5/8-11	25	662611 <b>70063</b>
7 x 5/8-11	25	662611 <b>70289</b>
Max RPM is deter	mined by correspon	ding back un nad

Max RPM is determined by corresponding back up pad.

		TIER:		BETTER
		TRADENAME:		RAPID PREP
		ABRASIVE:	Engineered Aluminum Oxide	Aluminum Oxide
SIZE (D x H)	STD. PKG.		PART #	PART #
Extra Coarse				
4-1/2 x 5/8-11	25		666233 <b>73667 NS</b>	666233 <b>73690</b> NS
5 x 5/8-11	25		666233 <b>73669 NS</b>	
7 x 5/8-11	25		666233 <b>73670</b>	
Coarse				
4-1/2 x 5/8-11	25		666233 <b>73671</b>	666233 <b>73693</b> NS
5 x 5/8-11	25		666233 <b>73674 NS</b>	662544 <b>98516</b>
7 x 5/8-11	25		666233 <b>73675 NS</b>	662611 <b>92908</b>
Medium				
4-1/2 x 5/8-11	25		666233 <b>73678</b>	666233 <b>08157</b>
5 x 5/8-11	25		666233 <b>73679 NS</b>	666233 <b>73694</b> NS
7 x 5/8-11	25		666233 <b>73680 NS</b>	662611 <b>92913 NS</b>
Fine				
4-1/2 x 5/8-11	25		666233 <b>73681</b>	
5 x 5/8-11	25		666233 <b>73682</b> NS	666233 <b>73695</b> NS
7 x 5/8-11	25		666233 <b>73684 NS</b>	
Very Fine				
5 x 5/8-11	25		666233 <b>73686 NS</b>	666233 <b>73699</b> NS
7 x 5/8-11	25		666233 <b>73687</b>	666233 <b>73700</b> NS

Note: Speed Change discs must always be used with smooth face back-up pads.

Max RPM is determined by corresponding back-up pad.

NS Non-Stock, contact your Norton representative for current order quantities and lead times.

#### AVOS Non-Woven Speed-Lok

- Patented hole design allows for interrupted cut, reducing heat up to 30% over standard surface preparation discs for cooler cutting and longer life
- With complete vision into the grinding zone, operators can grind more accurately with less re-work; scooped holes create air glow to pull loose abrasive and swarf away from work surface grinding zone – resulting in extended disc life
- The 15° angle back-up pad lets you grind at 5° 15° angle allowing for greater utilization of disc surface and eliminates gouging of workpiece

See page 68 for Speed Change and AVOS Back-up Pads



	LIER.	DEIIEN
	TRADENAME:	RAPID PREP AVOS
	ABRASIVE:	Aluminum Oxide
SIZE (DIAMETER)	STD. PKG.	PART #
Coarse		
4-1/2	10	662610 <b>10447</b>
5	10	666233 <b>74818</b>
Medium		
4-1/2	10	662610 <b>10448</b>
5	10	666233 <b>74819</b>
Very Fine		
4-1/2	10	666233 <b>74823</b>
5	10	666233 <b>74824</b>
Note: AV/OS discs m	ust he used with AV/OS	Sneed_Lok hack_un nads

Note: AVOS discs must be used with AVOS Speed-Lok back-up pads Max RPM is determined by corresponding back up pad.



# COATED & NON-WOVEN ABRASIVES Non-Woven Speed-Change Discs



# **COATED & NON-WOVEN ABRASIVES** Non-Woven Hook and Loop Discs

# Rapid Prep

#### Non-Woven Hook and Loop Discs

 Rapid Prep XHD are the best choice for aggressive stock removal and blending in one step.



	TIER	BEST
	TRADENAME	RAPID PREP XHD
	ABRASIVE	Ceramic Alumina
SIZE (DIAMETER)	STD. PKG.	PART #
Coarse		
4-1/2	40	662611 <b>70179</b>
5	40	662611 <b>70181</b>
7	25	662611 <b>70182</b>
Medium		
4-1/2	40	662611 <b>70183</b>
5	40	662611 <b>70185</b>
7	25	662611 <b>70186</b>
M. DDM 's defending	and the second second second Present to a state	and the second sec

Max RPM is determined by corresponding back-up pad.

\* Standard Package = 80

Back-up Pade	5	
Hook & Loop	Back-up	Pads



PAD Diameter	SPINDLE OR Hole Size	MAX. RPM	3M Equivalent	STD. PKG.	PART #			
Back-up Pads for Non-Woven Hook and Loop Discs								
2	1/4 Steel Shank	23,000	922	5	662610 <b>59352</b>			
3	1/4 Steel Shank	20,000	923	5	662610 <b>59354</b>			
4	1/4 Steel Shank	18,000	924	5	662610 <b>59356</b>			
	5/8-11	13,000	914	5	662610 <b>59304</b>			
4-1/2	5/8-11	10,000	9145	5	662610 <b>06948</b>			
5	5/16-24 Male	10,000	905	5	662610 <b>59360</b>			
	5/8-11	10,000	915	5	662610 <b>59310</b>			
6	5/8-11	8,000	916	5	662610 <b>59312</b>			
7	5/8-11	6,000	917	5	662610 <b>59368</b>			
8	5/8-11	4,500	918	5	662610 <b>59372</b>			

		100	
	TIER:	BEST	BETTER
	TRADENAME:		RAPID PREP
	ABRASIVE:	Engineered Aluminum Oxide	Aluminum Oxide
SIZE (DIAMETER)	STD. PKG.	PART #	PART #
Extra Coarse			
2	50		662610 <b>17900</b> NS
4-1/2	25	666233 <b>34972</b>	662610 <b>17906</b>
5	25	666233 <b>34974</b>	662610 <b>17215</b>
7	25	666233 <b>34976</b>	662611 <b>92846</b>
Coarse			
2	50	666233 <b>34882</b>	662610 <b>04431</b> *
3	25	666233 <b>34883</b>	662610 <b>55015</b>
4-1/2	25	666233 <b>34943</b>	662610 <b>17806</b>
5	25	666233 <b>34945</b>	662610 <b>04435</b>
7	25	666233 <b>34951</b>	662610 <b>55027</b>
Medium			
2	50	666233 <b>34958</b>	662610 <b>04441</b>
3	25	666233 <b>34956</b>	662610 <b>04442</b>
4-1/2	25	666233 <b>34961</b>	662610 <b>04444</b>
5	25	666233 <b>34962</b>	662610 <b>55022</b>
7	25	666233 <b>34965</b>	662610 <b>17813</b>
Fine			
2	50		666233 <b>25141</b>
3	25	666233 <b>33605</b>	666233 <b>25143 NS</b>
4-1/2	25	666233 <b>33607</b>	666233 <b>25147</b>
5	25	666233 <b>33609</b>	666233 <b>25154</b>
5 7	25	666233 <b>34955</b>	662611 <b>99465</b>
Very Fine			
2	50		666233 <b>25926</b>
3	25	666233 <b>33614</b>	666233 <b>25934</b>
4-1/2	25	666233 <b>33615</b>	666233 <b>25936</b>
5	25	666233 <b>33617</b>	666233 <b>25941</b>
7	25	666233 <b>34969</b>	662610 <b>19990</b>
May DDM in datarming	d by corresponding back u		



Max RPM is determined by corresponding back-up pad. \* Standard Package = 80

NS Non-Stock, contact your Norton representative for current order quantities and lead times.







# COATED & NON-WOVEN ABRASIVES Cloth PSA Discs and Accessories

Norton PSA (pressure sensitive adhesive) individual cloth discs are used on four different types of machines and the application changes depending on which machine they are used on.

#### **Applications:**

Pneumatic and Electric Dual-Action (DA) and Electric Random Orbital Sanders – for use on contours or flat surfaces for light- to medium-pressure grinding, blending, leveling, and finishing applications.

Stationary Disc Sanders – used in woodworking and metalworking for stock removal, sanding/grinding flat surfaces, dimensioning and finishing. 5" - 24" diameter

Size Range: Grit Range: Abrasive Grain: Back-up Pads:

Machine Used:

Ceramic Alumina, Zirconia Alumina, Aluminum Oxide Rubber, with hardness variations for different applications, for portable machines. Steel for stationary disc sanders.





#### Best choice for all hard-to-grind high alloy steels

24 - 180

# BLAZE R980P CERAMIC ALUMINA

- 100% ceramic alumina micro-fracturing grain constantly exposes sharper grain edges to provide fastest cut rate and longest life over competitive blended/low-ratio ceramic alumina discs
- Strong resin bond and heavy-duty Y-weight polyester backing for consistent cut, better grain adhesion, edge-tear
  resistance, and durability
- Self-lubricating grinding aid treatment delivers the coolest cut on stainless steel, high alloy steels, super alloys, titanium, and other difficult to grind materials



Better choice for grinding and deburring stainless steel

# BLUEFIRE R821P ZIRCONIA ALUMINA

- Latest generation of self-sharpening, zirconia alumina abrasive for cooler cut and extended life over aluminum oxide discs
- · Heavy-duty Y-weight cotton backing for edge-tear resistance and durability
- · Pressure sensitive adhesive makes for easy application and removal



#### Good choice for general-purpose metalworking

# GEMINI R228 ALUMINUM OXIDE

- · Premium aluminum oxide abrasive gives an excellent initial cut rate
- Durable X-weight cotton backing makes these discs a good blend of flexibility and life
- · The cotton backing provides good resistance to heat



# Good option for light- to medium-pressure grinding, blending, leveling and finishing applications

# METAL R243 ALUMINUM OXIDE

- · Aluminum Oxide grain provides consistent cut for general purpose use
- Improved resin bond system provides longer life
- · Flexible J-weight cotton backing for added conformability, tabs allow for easy liner removal



# COATED & NON-WOVEN ABRASIVES Cloth PSA Discs and Accessories

# Cloth PSA Discs for Dual-Action and Random Orbital Sanders

		TIER:	BEST	BETTER	GOOD	GOOD
		TRADENAME:	BLAZE R980P	BLUEFIRE R821P	GEMINI R228	METAL R243
				Zirconia Alumina	Aluminum Oxide	Aluminum Oxide
		=	PSA Discs	PSA Discs	PSA Discs	PSA Discs
			Supersize	Tabbed	1 0/1 0/000	Tabbed
SIZE (D)	GRIT	PKG./CASE	PART #	PART #	PART #	PART #
5	36	50/250	662544 <b>61506</b> *	662611 <b>32579</b>	662611 <b>36589</b>	
-	40	50/250	662544 <b>61507</b>		662611 <b>36588</b>	
	50	50/250	66254461508	699573 <b>49352</b>	662611 <b>36587</b>	
	60	50/250	662544 <b>61509</b>	699573 <b>49353</b>	662611 <b>36586</b>	
	80	50/250	662544 <b>61510</b>	662611 <b>35091</b>	662611 <b>36585</b>	699573 <b>39967</b>
	100	50/250			662611 <b>36584</b>	
	120	50/250	662544 <b>61512</b>		662611 <b>36583</b>	699573 <b>39969</b>
	150	50/250			662611 <b>36582</b>	
	180	50/250			662611 <b>36581</b>	
6	60	50/250			662611 <b>36596</b>	
	80	50/250			662611 <b>36595</b>	699573 <b>39973</b>
	100	50/250			662611 <b>36594</b>	
	120	50/250			662611 <b>36593</b>	699573 <b>39978</b>
	150	50/250				
	180	50/250			662611 <b>36592</b>	
8	36	50/250			662611 <b>36350</b>	
	40	50/250			662611 <b>36351</b>	
	50	50/250			662611 <b>36352</b>	
	60	50/250			662611 <b>36576</b>	
	80	50/250			662611 <b>36354</b>	
	120	50/250			662611 <b>36355</b>	

\*Pkg./Case: Blaze R980P 5" 36 grit discs = 50/200



### Back-up Pads for Cloth PSA Discs

DESCRIPTION	MAX. RPM	STD. PKG.	PART #
Back-up Pads for Cloth PSA Discs			
5" Diameter – Low Profile – Soft	12,000	5	636425 <b>06126</b>
5" Diameter – Low Profile – Medium	12,000	5	636425 <b>06131</b>
5" Diameter – Tapered – Medium	12,000	5	636425 <b>06139</b>
6" Diameter – Low Profile – Soft	10,000	5	636425 <b>06127</b>
6" Diameter – Low Profile – Med	10,000	5	636425 <b>06133</b>
6" Diameter – Tapered – Medium	10,000	5	636425 <b>06141</b>
8" Diameter – Tapered – Medium	6,000	5	636425 <b>43112</b>



# COATED & NON-WOVEN ABRASIVES Cloth PSA Discs and Accessories

### Large Diameter Cloth PSA Discs

Used on stationary disc machines for dimensioning and finishing metal workpieces and woodworking. Pressure sensitive adhesive offers fast, convenient mounting. Made without center holes for full-face usage.

			<b>ADDELEDENCE</b>		
		TIER:	BEST	BETTER	GOOD
			BLAZE R980P	BLUEFIRE R821P	GEMINI R228
		ABRASIVE:	Ceramic Alumina	Zirconia Alumina	Aluminum Oxide
		ATTACHMENT:		PSA	PSA
			Supersize		
IZE (D)	GRIT	PKG./CASE	PART #	PART #	PART #
0	36	25/50			662611 <b>36606</b>
	40	25/50		662611 <b>38314</b>	662611 <b>36604</b>
	50	25/50			662611 <b>36607</b>
	60	25/50		662611 <b>38316</b>	662611 <b>36602</b>
	80	25/50		662611 <b>38317</b>	662611 <b>36601</b>
	100	25/50			662611 <b>36600</b>
2	24	25/50		662611 <b>38318</b>	
	36	25/50	662544 <b>16171</b>	662611 <b>38319</b>	662611 <b>36635</b>
	40	25/50	662544 <b>16172</b>	662611 <b>38320</b>	662611 <b>36630</b>
	50	25/50	662544 <b>16173</b>	662611 <b>38321</b>	662611 <b>36625</b>
	60	25/50	662544 <b>16174</b>	662611 <b>38322</b>	662611 <b>36620</b>
	80	25/50	662544 <b>16175</b>	662611 <b>38323</b>	662611 <b>36615</b>
	100	25/50			662611 <b>36614</b>
	120	25/50	662544 <b>16176</b>		662611 <b>36613</b>
5	36	25/50			662611 <b>36666</b>
	60	25/50			662611 <b>36663</b>
	80	25/50			662611 <b>36662</b>
6	36	25/50			662611 <b>36700</b>
	40	25/50			662611 <b>36685</b>
	50	25/50			662611 <b>36684</b>
	60	25/50		662611 <b>38334</b>	662611 <b>36683</b>
	80	25/50			662611 <b>36701</b>
8	36	25/50			662611 <b>36720</b>
	60	25/50			662611 <b>36696</b>
	80	25/50			662611 <b>36723</b>
0	36	25/50	662544 <b>16165</b>	662611 <b>38343</b>	662611 <b>36710</b>
	40	25/50		662611 <b>38344</b>	662611 <b>36709</b>
	50	25/50	662544 <b>16167</b>		662611 <b>36711</b>
	60	25/50	662544 <b>16168</b>	662611 <b>38346</b>	662611 <b>36712</b>
	80	25/50	662544 <b>16169</b>		662611 <b>36706</b>
	120	25/50	662544 <b>16170</b>		
4	36	10/10			662611 <b>36718</b>
	40	10/10			662611 <b>36717</b>
	50	10/10			662611 <b>36725</b>
	60	10/10			662611 <b>36726</b>
	80	10/10			662611 <b>36727</b>



NDRTDN

SAINT-GOBAIN

For use on dual action and random orbital sanders. The industry's highest performing and broadest selection of paper discs in PSA (pressure sensitive adhesive) disc rolls and individual discs, and hook and loop discs.

#### **Applications:**

Size Range: Grit Range: Abrasive Grain: Attachment Systems: Paper Weights: Vacuum Holes: Machine Used:

Stripping and preparing primed and painted surfaces for finishing, sanding of plastics, fiberglass and composites, bare wood sanding, light weld blending, preparing and finishing metal, and sanding of all gel coat and body filler compounds. 3" – 8"

#### 36 - 1500

Ceramic Alumina, Zirconia Alumina, Aluminum Oxide, Silicon Carbide PSA (pressure-sensitive adhesive), hook and loop Heavyweight – E and F; Lightweight – B, C, and D See product availability charts



ORBITAL VE SANDER PC

VERTICAL SHAFT PORTABLE GRINDER

### Material/Application-to-Product Recommendation Guide

	BEST			BETTER		GOOD	
	Heavy-Medium Stock Removal	Light Stock Removal Heavy-Mediun Finishing Stock Remova			Light Stock Removal Finishing	Light Stock Removal Finishing	
	SG H920	Blaze A995	Dry Ice A975	BlueFire H875P	BlueFire H822	A2750P	Gold Reserve A296
Primed, Painted Surfaces		•	•	•		•	•
Fiberglass / Composites / Gel Coats		•	•	•		•	•
Wood		•	•	•		•	•
Metal	•	•	•		•	•	•
Body Fillers / Compounds / Plastics		•	•	•		•	•

# Application/Grit Recommendation Guide

COARSER (GRINDING)

36	40	60	80	100	120	150	180	220	240	280	320	360	400	500	600	800	1000	1200	1500
Rough	ing to Int	ermediat	е																
			Interm	ediate to	Finishing														
									Fine Fir	nishing									
																Ultra Fir	ne Finishi	ng	

# Cross Reference Guide

TOTAL PERFORMANCE

INITIAL PRICE

FINER (FINISHING)

	DEOT			DETTED				0000
NORTON	BEST F-Weight SG H920	D-Weight Blaze A995	B- & C-Weight Dry Ice A975	BETTER F-Weight BlueFire H822	E-Weight BlueFire H875P	B-Weight A275 OP	B-Weight Durite A475	GOOD C-Weight Gold Reserve A296
3M	763U	732U, 737U, 755L 775L	334U, 734U, 735U		7401, 7451, 750U, 751U, 7511	216U, 255L, 236U, 260L, 334U	405N, 414N, 415U, 426U, 435U	236U, 316U, NX, 216U, 236U
Hermes	BW114, CR116	CR116	_	BW115, BW184	BW110, VC153	VC154-LL	SF168	VC151-LL, VC152, WA flex 28
Indasa		HT Line	HT Line, RedLine		HeavyLine	PlusLine	_	WhiteLine, YellowLine
Klingspor	PS61	_	PS36	PS21	PS36	PS33, PS73W	PL35, PS14	PS33, PL36
Mirka	—	—	_		Royal CRS. Cut	Q-Silver, Royal Micro	CaratFlex, PolarStar	Bulldog Gold, Basecut
SIA		_	Siaprime 5550, 1958	1820	1820, 1919, 1948	1940, 1944,1950	1748	1947, 1960
VSM	_	_	_	_	KP510E, KP709		CP131A	KP911



#### Heavyweight Paper Discs





# SG H920 CERAMIC ALUMINA

- Durable and friable Norton seeded gel ceramic alumina abrasive ensures fast, aggressive, yet cool cutting action and maximum life
- Strong F-weight paper, synthetically-coated, provides maximum durability and resistance to edge chipping and shedding
- Closed coat and sharp grain make this a premiere product for metal fabricating and blending; ideal for soldered and welded areas

Better choice for aggressive metalworking applications

# BLUEFIRE H822 ZIRCONIA ALUMINA

- · Patented zirconia alumina abrasive provides 2X-3X life over aluminum oxide products
- Strong F-weight paper, synthetically-coated for excellent durability and chip resistance; pressure sensitive adhesive
  and linked disc roll format allow easy application, removal, and dispensing
- Non-stearated (no anti-loading agents) for non-contaminating; often required for prime auto and aerospace paint applications

Better choice for soft material and wood applications

# BLUEFIRE H875P ZIRCONIA ALUMINA

- Next-generation, self-sharpening zirconia alumina abrasive provides 2-3 times the life of aluminum oxide discs, longer life versus original zirconia alumina discs, improved cut rate, and minimal heat
- Strong E-weight latex/paper backing resists tearing while staying conformable and flexible
- · Open coat contributes to minimized loading

Stick & Sand (PSA) Heavyweight Disc Rolls Non-Vacuum

			TIER:	BEST	BETTER	BETTER
			TRADENAME:	SG H920	BLUEFIRE H822	BLUEFIRE H875P
			ABRASIVE:	Ceramic Alumina	Zirconia Alumina	Zirconia Alumina
		PAP	ER BACKING WEIGHT:	F-Weight	F-Weight	E-Weight
			FASTENING:	PSA	PSA	PSA
SIZE (D)	GRIT	ROLLS/STD. PKG.	DISCS/ ROLL	PART #	PART #	PART #
5	60	4	100	662611 <b>49873</b>	662611 <b>37310</b>	
	80	4	100	662611 <b>49872</b>	662611 <b>37309</b>	662611 <b>24977</b>
	100	4	100		662611 <b>37308</b>	
	120	4	100	662611 <b>49870</b>		
6	60	4	100		662611 <b>37323</b>	
	80	4	100	662611 <b>49876</b>	662611 <b>37322</b>	662611 <b>25573</b>
	120	4	100	662611 <b>49874</b>		

Refer to the Sanding Accessories section for back-up pads and accessories.





### Heavyweight Paper Discs

пеачуже		aper Discs		
Stick & Sa Individual Non-Vacu	Discs			•••
		TIFR	BETTER	BETTER
		TRADENAME:		BLUEFIRE H875P
		ABRASIVE:	Zirconia Alumina	Zirconia Alumina
		PAPER BACKING WEIGHT:	E-Weight	E-Weight
		FASTENING:		PSA Vacuum
SIZE (D)	GRIT	PKG./CASE	PART #	PART #
5	36	50/200	662611 <b>25436</b>	
	40	50/200	662611 <b>25307</b>	
	80	50/200	662611 <b>25244</b>	
				○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○
6	36	50/200	662611 <b>23575</b>	
	40	50/200	662611 <b>23574</b>	662611 <b>23580</b>
	80	50/200	662611 <b>23573</b>	
				8" x 8 Hole Die #3370
8	36	25/100	662611 <b>23578</b>	662611 <b>23584</b>
-	40	25/100	662611 <b>23577</b>	
	80	25/100	662611 <b>23576</b>	662611 <b>23582</b>
		20,100		

# Hook & Loop Individual Discs

Non-Vac	uum and	laccum	and the second		
NOTE Vac		accum	Senties and		
			State and	hanne state in the	
		TIER:	BEST	BETTER	BETTER
		TRADENAME:	SG H920	BLUEFIRE H875P	BLUEFIRE H875P
		ABRASIVE:	Ceramic Alumina	Zirconia Alumina	Zirconia Alumina
		PAPER BACKING WEIGHT:	F-Weight	E-Weight	E-Weight
		FASTENING:	Hook & Loop	Hook & Loop	Hook & Loop
		OTHER:			Vacuum
SIZE (D)	GRIT	PKG./CASE	PART #	PART #	PART #
5	40	25/100		662611 <b>25684</b>	
	60	50/250	662611 <b>49864</b>		
	80	50/250	662611 <b>49865</b>	662611 <b>25444</b> *	
6	36	25/100		662611 <b>23590</b>	
	40	25/100		662611 <b>23589</b>	
	80	25/100		662611 <b>23588</b>	
					0
					(
					000
					8" x 8 Hole
					Die #3370

				Die #3370	
8	36	25/100	662611 <b>23593</b>	662611 <b>23598</b>	
	40	25/100	662611 <b>23592</b>		
	80	25/100	662611 <b>23591</b>	662611 <b>23596</b>	
Dackaging	Ctandarde: Min / Ctd	Dkg * 49750 _ 25/100			

Packaging Standards: Min. / Std. Pkg. \* H875P = 25/100



### Lightweight Paper Discs



#### ess dust; more productivity

# MULTI-AIR CYCLONIC HOOK & LOOP VACUUM

- Multi-Air Cyclonic precision laser-cut, spiral vacuum hole design maximizes dust extraction for cleanest work environment and less potential for contamination, while delivering coolest, fastest, most consistent cut rate, and longest life of any paper disc
- Water-based, non-pigmented stearate No-Fil coating and open coat provide maximum load resistance and no color transfer to work
- Exceptional choice for the most demanding paper disc sanding applications; hook and loop back for easy disc
  mounting and changing

				ALC: NOT		120.0	
					k		NORTON
					A		SAINT-GOBAIN MULTI AIR
					2		CYCLONIC
					R		
		TIER:	BEST	BEST	<u> </u>	BEST	
	TE		BLAZE A995	DRY ICE A975	-	A2750P	
		ADENAME:	NO-FIL	NO-FIL	_	NO-FIL	
24.855			Ceramic Alumina	Ceramic Alumina		Aluminum Oxide	
PAPEK /		IG WEIGHT:		B- & C-Weight		B-Weight	
	Γ/		Hook & Loop P-Graded	Hook & Loop P-Graded	_	Hook & Loop P-Graded	and a start of the
					PKG/		and the state of t
SIZE (D)	GRIT	PKG/ CASE	PART #	PART #	PKG/ Case	PART #	and the state of the
3 x 0	80	50/200		776960 <b>95005</b>			a and a star attained and a second
	120	50/200		776960 <b>95006</b>			a strate to the state of the st
	150	50/200		776960 <b>95007</b>			
	180	50/200		776960 <b>95008</b>			
	220	50/200 50/200		776960 <b>95009</b> 776960 <b>95010</b>			
	240 320	50/200		776960 <b>95010</b>			and a start of the second of
	400	50/200		776960 <b>95011</b>			anal a contract of the second
	500	50/200		776960 <b>95012</b>			and the set of the second
	600	50/200		776960 <b>95014</b>			A AND A AND A AND AND A
	800	50/200		776960 <b>95015</b>			and the state of the second state of the secon
	1000	50/200		776960 <b>95016</b>			
5 x 11/16	80	50/200	636425 <b>97500</b>	776960 <b>07745</b>	100	666233 <b>90524</b>	· · · · · · · · · · · · · · · · · · ·
(125mm x 18mm)	100				100	666233 <b>90525</b>	
	120	50/200	636425 <b>97501</b>	77696007753	100	666233 <b>90526</b>	-
	150	50/200	636425 <b>97502</b>	77696007755	100	666233 <b>90527</b>	—
	180	50/200	636425 <b>97503</b> 636425 <b>97504</b>	776960 <b>07756</b>	100	666233 <b>90528</b> 666233 <b>90529</b>	Die punched holes cause deformation.
	220	50/200 50/200	63642337304	776960 <b>07757</b> 776960 <b>07760</b>	100	666233 <b>90530</b> <i>NS</i>	
	240	50/200		776960 <b>07762</b>	100	00023330300 110	
	320	50/200		776960 <b>07763</b>	100	666233 <b>90531</b>	
	400	50/200		776960 <b>07765</b>	100	666233 <b>90532</b>	SU;]FAGE AREA
	500	50/200		77696007768			Multi-Air Cyclonic laser-cut discs are flat and true.
	600	50/200		776960 <b>07791</b>	100	666233 <b>90534</b>	
	800	50/200		776960 <b>07793</b>	100	666233 <b>90535</b>	
		50/200		776960 <b>07795</b>	100	666233 <b>90536</b>	SURFACEAREA
6 x 11/16 (150mm x 19mm)	40	25/200	636425 <b>97515</b>				
(150mm x 18mm)	60 80	50/200	636425 <b>97519</b>	77606007770	100	000000000000	Interest and Durat
	80	50/200 50/200	636425 <b>97505</b> 636425 <b>97506</b>	776960 <b>07770</b> 776960 <b>07773</b>	100	666233 <b>90503</b> 666233 <b>90504</b>	Improved Dust
	120	50/200	636425 <b>97507</b>	776960 <b>07774</b>	100	666233 <b>90505</b>	Extraction / Increased Productivity
	180	50/200	636425 <b>97508</b>	776960 <b>07775</b>	100	66623390506	The upgrade to precise, flat, laser-cut holes instead
	220	50/200	636425 <b>97509</b>	776960 <b>07776</b>	100	666233 <b>90507</b>	of die-punched holes, dramatically increases surface
	240	50/200	000.222	776960 <b>07777</b>	100	666233 <b>90508</b>	area contact allowing Norton Multi-Air Cyclonic
	280	50/200		77696007778			discs to improve productivity by 32% versus
	320	50/200	636425 <b>97516</b>	776960 <b>07781</b>	100	666233 <b>90509</b>	conventional multi-hole sanding and by 60% versus
	400	50/200	636425 <b>97517</b>	776960 <b>07784</b>	100	666233 <b>90510</b>	non-vacuum sanding.
	500	50/200		776960 <b>07785</b>	100	666233 <b>90511</b>	The end result is more holes for dust extraction, more
	600	50/200		776960 <b>07786</b>	100	666233 <b>90512</b>	abrasive coverage for a better cut and no deformation –
	800	50/200		77696007787	100	666233 <b>90513</b>	for full surface contact utilizing all the cutting power of the
	1000	50/200		776960 <b>07788</b>	100	666233 <b>90514</b>	premium ceramic grain.

Refer to the Sanding Accessories section for back-up pads and accessories.



### Lightweight Paper Discs



Best choice for the most demanding coarse grit stripping, blending, and sanding applications

# BLAZE A995 NO-FIL CERAMIC ALUMINA

- P-graded, next-generation sharper-edged ceramic aluminum oxide abrasive ensures fastest cut rate and longest life of any paper disc
- Unique polyester-reinforced, D-weight latex saturated backing provides maximum tear strength while retaining flexibility
- Water-based, non-pigmented stearate No-Fil coating and open coat provide maximum load resistance and no color transfer to work

Best choice for the most demanding sanding applications

# DRYICE A975 NO-FIL CERAMIC ALUMINA

- · P-graded seeded-gel ceramic alumina abrasive for fastest cut rate and longest life of any paper disc
- Unique fiber reinforced, flexible B or C-weight latex saturated backing delivers 50% 60% improvement in tear strength while retaining flexibility
- Water-based, non-pigmented stearate No-Fil coating and open coat provide maximum load resistance and no color transfer to work

Better choice for high-performance dry finishing on all materials

# A2750P NO-FIL ALUMINUM OXIDE

- Premium P-graded, heat treated, toughened aluminum oxide abrasive delivers superior life, fast cut rate, consistent finish
- Unique fiber reinforced, flexible B-weight latex saturated backing provides 50% 60% improvement in tear strength while retaining flexibility
- Water-based, non-pigmented stearate No-Fil coating and open coat provide maximum load resistance and no color transfer to work
- 5" and 6" individual PSA discs in fine grits have a tabbed, white translucent liner to protect the PSA adhesive from airborne contaminants; the tab allows easier removal of the paper liner



Better choice for hard-to-sand surfaces and wood applications

# DURITE A475 NO-FIL SILICON CARBIDE

- Sharp and hard, P-graded, silicon carbide abrasive easily penetrates the hardest material and veneers to create finer finishes where finish is critical
- · Flexible, B-weight fiber reinforced, latex paper backing provides flexibility and resistance to tearing
- Water-based, non-pigmented stearate No-Fil coating and open coat provide maximum load resistance and no color transfer to work



Good choice for sanding a broad range of substrates including primed or painted surfaces, wood, composites, aluminum, and ferrous metals

# GOLD RESERVE A296 NO-FIL ALUMINUM OXIDE

- P-graded premium aluminum oxide abrasive produces a quick, cool cut and a more consistent surface finish
- · Strong C-weight high latex/paper backing resists tearing while staying conformable and flexible
- · Water-based, non-loading (No-Fil) stearate coating minimizes clogging and increases disc life





# Lightweight Paper Discs

Stick 8	k Sano	d (PSA)	1 2100				
		Disc Roll	S				
Non-Va	acuun	n					
			TIFR	BEST	BETTER	BETTER	GOOD
		T		DRYICE A975	A2750P	DURITE A475	GOLD RESERVE
		11	RADENAME:	NO-FIL	NO-FIL	NO-FIL	A296 NO-FIL
			ABRASIVE:		Aluminum Oxide	Silicon Carbide	Aluminum Oxide
		PAPER BACKIN			B-Weight	B-Weight	C-Weight
		ŀ	ASTENING:	PSA	PSA	PSA	PSA
_	_	20110/	-	P-Graded	P-Graded	P-Graded	P-Graded
SIZE (D)	GRIT	ROLLS/ STD. PKG.	DISCS/ Roll	PART #	PART #	PART #	PART #
3-1/2	80	4	100		662611 <b>36376</b>		
.,_	120	4	100		662611 <b>36375</b>		
	180	4	100		662611 <b>36373</b>		
	220	4	100		662611 <b>36372</b>		
	280	4	100		662611 <b>36370</b>		
	320	4	100		662611 <b>36369</b>		
	400	4	100		662611 <b>36368</b>		
	60	4	100				780727 <b>48552</b>
	80	4	100	662611 <b>40502</b>	662611 <b>31464</b> *	662544 <b>87415</b>	662611 <b>83806</b>
	100	4	100	662611 <b>40501</b>	662611 <b>31463</b> *	662544 <b>87417</b>	662611 <b>83807</b>
	120	4	100	662611 <b>40500</b>	662611 <b>31462</b> *	662544 <b>87418</b>	662611 <b>83808</b>
	150	4	100	662611 <b>40499</b>	662611 <b>31461</b> *	662544 <b>87440</b>	662611 <b>83809</b>
	180	4	100	662611 <b>40498</b>	662611 <b>31460</b> *	662544 <b>87441</b>	662611 <b>83810</b>
	220	4	100	662611 <b>42474</b>	662611 <b>31459</b> *	662544 <b>87442</b>	662611 <b>83811</b>
	240	4	100	662611 <b>55380</b>	662611 <b>31458</b> *	662544 <b>87443</b>	780727 <b>48551</b>
	280	4	100		662611 <b>31457</b> *		
	320	4	100	662611 <b>55378</b>	662611 <b>31456</b> *	662544 <b>87444</b>	662611 <b>83813</b>
	400	4	100	662611 <b>55377</b>	662611 <b>31454</b> *	662610 <b>65293</b>	662611 <b>83814</b>
	500	4	100		662611 <b>31453</b> *		
	600	4	100	666233 <b>05608</b>	662611 <b>31452</b> *	662544 <b>21217</b>	662544 <b>92263</b>
	800	4	100	662544 <b>80230</b>	662611 <b>31451</b> *		776960 <b>69730</b>
	60	4	100				780727 <b>48553</b>
	80	4	100	662611 <b>40512</b>	662611 <b>31481</b> *	662544 <b>87446</b>	662611 <b>83815</b>
	100	4	100	662611 <b>40511</b>	662611 <b>31480</b> *		662611 <b>83816</b>
	120	4	100	662611 <b>40510</b>	662611 <b>31479</b> *	662544 <b>87447</b>	662611 <b>83817</b>
	150	4	100	662611 <b>40509</b>	662611 <b>31478</b> *		662611 <b>83818</b>
	180	4	100	662611 <b>40508</b>	662611 <b>31477</b> *	662544 <b>87448</b>	662611 <b>83819</b>
	220	4	100	662611 <b>48340</b>	662611 <b>31476</b> *	662544 <b>87449</b>	662611 <b>83820</b>
	240	4	100	662611 <b>55376</b>	662611 <b>31475</b> *		662611 <b>83821</b>
	280	4	100		662611 <b>31474</b> *		
	320	4	100	662611 <b>55374</b>	662611 <b>31473</b> *	662544 <b>87450</b>	662611 <b>83822</b>
	400	4	100	662611 <b>55373</b>	662611 <b>31471</b> *		662611 <b>83823</b>
	500	4	100	636425 <b>06198</b>	662611 <b>31470</b> *		636425 <b>06165</b>
	600	4	100	636425 <b>06199</b>	662611 <b>31469</b> *		662610 <b>40261</b>
	800	4	100	636425 <b>06200</b>	662611 <b>31468</b> *		636425 <b>06164</b>
	80	4	100		662611 <b>31617</b>		
	120	4	100		662611 <b>31615</b>		
	150	4 4	100		662611 <b>31614</b>		
	180 220	4	100		662611 <b>31613</b> 662611 <b>31612</b>		
	320	4	100		662611 <b>31609</b>		
		4 ards A275 = 6/1			00201131003		

Refer to the Sanding Accessories section for back-up pads and accessories.



### Lightweight Paper Discs

	weigł	nd (PSA) nt Disc Rc	olls				Indi	k & Sar vidual [ 1-Vacuu			
			TIER:			GOOD			TIER:		BETTER
		TRADE	ENAME:	A2750P No-Fil		GOLD RESERVE A296 NO-FIL			TRADENAME:	A2750P No-Fil	GOLD RESERVE A296 NO-FIL
				Aluminum Oxide		Aluminum Oxide			ABRASIVE:	Aluminum Oxide	Aluminum Oxide
	PA	PER BACKING V	VEIGHT:	B-Weight		C-Weight		PAPER BAC	KING WEIGHT:		C-Weight
		FAST	TENING:			PSA				PSA Tabbed	PSA Tabbed
			OTHER:	P-Graded		P-Graded				P-Graded	P-Graded
SIZE (D	) GRIT		DISCS/ Roll	PART #	ROLLS/	G. PART #	SIZE	(D) GRIT	MIN./ STD PKG.		PART #
512E (U	) unii	SID. FRU.	NULL	$\bigcirc$	31 <b>0.</b> FK	$\bigcirc$	5	(b) ann 60	100/400		780727 <b>45905</b> <i>NS</i>
				$\begin{pmatrix} \circ & \circ \end{pmatrix}$		$\left( \circ \circ \right)$	J	80	100/400		662610 <b>38758</b>
				( )		( )		100	100/400		780727 <b>42907</b>
								120	100/400		662610 <b>38759</b>
				5" x 5 Hole Die #3329		5" x 5 Hole Die #3329		150	100/400		662610 <b>38760</b>
5	60			DIE #3329	4	780727 <b>48543</b>		180	100/400		780727 <b>42909</b>
5	80	6	100	662611 <b>31498</b>	4	662544 <b>77327</b>		220	100/400		780727 <b>42910</b>
	100		100	662611 <b>31497</b>	4	662611 <b>30264</b>	_	240	100/400		780727 <b>42911</b>
	120		100	662611 <b>31496</b>	4	666233 <b>07048</b>		320	100/400		780727 <b>42912</b>
	150		100	662611 <b>31495</b>	4	666233 <b>05824</b>		400	100/400		780727 <b>42913</b>
	180	6	100	662611 <b>31494</b>	4	662610 <b>21898</b>	_	600	100/400		780727 <b>53545</b>
	220		100	662611 <b>31493</b>	4	662544 <b>77328</b>	_	800	100/400		780727 <b>53468</b>
	240	6	100	662611 <b>31492</b>				1000	100/400	662611 <b>31450</b>	780727 <b>12632</b>
	320	6	100	662611 <b>31490</b>	4	662610 <b>23787</b>		1200	100/400	662611 <b>31449</b>	
	400	6	100	662611 <b>31488</b>	4	662611 <b>30257</b>	6	60	100/400		780727 <b>53831</b> NS
				0		$\bigcirc$		80	100/400		662611 <b>83824</b>
				( ° ° ° )		( ° ° ° )		100	100/400		662611 <b>83825</b>
				$\langle \circ \circ \rangle$		$\langle \circ \circ \rangle$		120 150	100/400		662611 <b>83826</b>
								150	100/400 100/400		662611 <b>83827</b>
				6" x 6 Hole		6" x 6 Hole		220	100/400		662611 <b>83828</b> 662611 <b>83829</b>
				Die #3333		Die #3333		240	100/400		662611 <b>83830</b>
6	80		100	662611 <b>31515</b>	4	780727 <b>48550</b>	_	320	100/400		662611 <b>83831</b>
	100		100	662611 <b>31514</b>	4	780727 <b>48549</b>		400	100/400		662611 <b>83832</b>
	120		100	662611 <b>31513</b>	4	780727 <b>48547</b>	_	600	100/400		780727 <b>53546</b>
	150 180		100 100	662611 <b>31512</b> 662611 <b>31511</b>	4	780727 <b>48546</b> 780727 <b>48545</b>		800	100/400		780727 <b>53469</b>
	220		100	662611 <b>31511</b>	4	780727 <b>48545</b> 780727 <b>02746</b>		1000	100/400	662611 <b>31467</b>	780727 <b>12633</b>
	240		100	662611 <b>31509</b>	4	10012102140	_	1200	100/400	662611 <b>31466</b>	
	280		100	662611 <b>31508</b>				1500	100/400	662611 <b>31465</b>	
	320		100	662611 <b>31507</b>	4	780727 <b>48787</b>					
	400	-	100	662611 <b>31505</b>			Befe	er to th	e Sandin	g Accessories	s section for
	600		100	662611 <b>31503</b>						ccessories.	



### **PSA Disc Roll Dispenser**

- · Norton disc roll dispensers feature heavy-duty construction and a rubberized finish to protect your product, as well as the finish on your workpiece
- These versatile dispensers are designed to accommodate any 5" or 6" disc roll or sheet roll
- They can be attached to a wall or stacked for multi-grit or multi-diameter operations
- · Discs are individually dispensed and removed from the roll by a cutter bar

DESCRIPTION	STD. PKG.	PART #
PSA Disc Roll Dispenser		
Single Disc Roll Dispenser	1	636425 <b>42772</b>
Double Disc Roll Dispenser (shown)	1	636425 <b>02981</b>



### Lightweight Paper Discs

	ok & Lo vidual							
					1			
on	n-Vacui	um						
				Here is a second		12 10 20 20 125	0	
			DECT	DECT		DETTED	DETTED	COOD
			BEST BLAZE A995	BEST DRY ICE A975		BETTER A2750P	BETTER DURITE A475	GOOD GOLD RESERVE
		CAP CODE:	NO-FIL	NO-FIL		NO-FIL	NO-FIL	A296 NO-FIL
		ABRASIVE:	Ceramic Alumina	Ceramic Alumina		Aluminum Oxide	Silicon Carbide	Aluminum Oxide
P	PAPER BACI	KING WEIGHT:		B- & C-Weight		B-Weight	B-Weight	C-Weight
			Hook & Loop	Hook & Loop		Hook & Loop	Hook & Loop	Hook & Loop
			P-Graded	P-Graded		P-Graded	P-Graded	P-Graded
IZE (		PKG/CASE	PART #	PART #	PKG/CASE		PART #	PART #
	80				50/200	662611 <b>31532</b>		
	100				50/200	662611 <b>44926</b>		
	120				50/200	662611 <b>28688</b>		
	150				50/200	662611 <b>40385</b>		
	180				50/200	662611 <b>31528</b>		
	220				50/200 50/200	662611 <b>31527</b> 662611 <b>31526</b>		
	320				50/200	662611 <b>31526</b>		
	400				50/200	662611 <b>36995</b>		
	500				50/200	662611 <b>31521</b>		
	600				50/200	662611 <b>36996</b>		
	800				50/200	662611 <b>31519</b>		
	1000				50/200	662611 <b>35900</b>		
	1500				50/200	662611 <b>47434</b>		
	60				100/400			780727 <b>48477</b>
	80	50/200		662611 <b>40522</b>	100/400	662611 <b>31549</b>		666233 <b>77539</b>
	100	50/200		662611 <b>40521</b>	100/400	662611 <b>31548</b>		66623377540
	120	50/200		662611 <b>40520</b>	100/400	662611 <b>31547</b>		666233 <b>77541</b>
	150	50/200		662611 <b>40519</b>	100/400	662611 <b>31546</b>		666233 <b>77542</b>
	180	50/200		662611 <b>40518</b>	100/400	662611 <b>31545</b>		666233 <b>77543</b>
	220	50/200		662611 <b>49541</b>	100/400	662611 <b>31544</b>		666233 <b>05637</b>
	240	50/200		662611 <b>49540</b>	100/400	662611 <b>31543</b>		662544 <b>57751</b>
	280				100/400	662611 <b>31542</b>		
	320	50/200		662611 <b>49538</b>	100/400	662611 <b>31541</b>		666233 <b>05638</b>
	400	50/200		662611 <b>49537</b>	100/400	662611 <b>31539</b>	662610 <b>52270</b>	666233 <b>05639</b>
	500	50/200		662544 <b>80233</b>	100/400	662611 <b>31538</b>		
	600				100/400	662611 <b>31537</b>		662611 <b>05390</b>
	800	50/200		662544 <b>80232</b>	100/400	662611 <b>31536</b>	662610 <b>52267</b>	666233 <b>77544</b>
	1000				100/400	662611 <b>31535</b>	662610 <b>52254</b>	699573 <b>50989</b>
	1200				100/400	662611 <b>31534</b>		
	1500	50/000	000 40507540	00001140500	100/400	662611 <b>31533</b>		00040500000*
	80	50/200	636425 <b>97510</b>	662611 <b>40532</b> 662611 <b>40531</b>	100/400	662611 <b>31566</b>		636425 <b>06236</b> *
	100 120	50/200	60640E07E11		100/400	662611 <b>31565</b>		636425 <b>06235</b> *
		50/200	636425 <b>97511</b>	662611 <b>40530</b> 662611 <b>40529</b>	100/400	662611 <b>31564</b>		636425 <b>06234</b> *
	150 180	50/200	636425 <b>97512</b>		100/400	662611 <b>31563</b>		636425 <b>06233</b> *
	220	50/200 50/200	636425 <b>97513</b> 636425 <b>97514</b>	662611 <b>40528</b> 662611 <b>49546</b>	100/400	662611 <b>31562</b> 662611 <b>31561</b>		636425 <b>06232</b> * 636425 <b>06231</b> *
	240	JU/200	0004203/014	002011 <b>43340</b>	100/400	662611 <b>31560</b>		636425 <b>06225</b> *
	240				100/400	662611 <b>31559</b>		
	320	50/200		662611 <b>49543</b>	100/400	662611 <b>31558</b>		636425 <b>06230</b> *
	400	50/200		662611 <b>49542</b>	100/400	662611 <b>31556</b>		636425 <b>06229</b> *
	500	50/200		636425 <b>06202</b>	100/400	662611 <b>31555</b>		636425 <b>06228</b> *
	600	50/200		636425 <b>06203</b>	100/400	662611 <b>31554</b>		636425 <b>06227</b> *
	800	50/200		636425 <b>06204</b>	100/400	662611 <b>31553</b>		636425 <b>06226</b> *
	1000	50/200		636425 <b>06375</b>	100/400	662611 <b>31552</b>	662610 <b>52255</b>	699573 <b>50990</b> *
	1200	50/200			100/400	662611 <b>31551</b>		
	1500	50/200		636425 <b>06377</b>	100/400	662611 <b>31550</b>		
	120				100/400	662611 <b>31662</b>		
	180				100/400	662611 <b>31661</b>		

Packaging Standards: PKG/CASE A296 = 50/250

Refer to the Sanding Accessories section for back-up pads and accessories.



# Lightweight Paper Discs

	& Loop dual Di Im		•••		
		TIER:	BETTER	GOOD	GOOD
		CAP CODE:	A2750P	GOLD RESERVE	GOLD RESERVE
			NO-FIL Aluminum Quide	A296 NO-FIL	A296 NO-FIL
	ה הרה ה		Aluminum Oxide	Aluminum Oxide	Aluminum Oxide
	РАРЕК В.	ACKING WEIGHT:	v	C-Weight	C-Weight
		OTHER:	Hook & Loop P-Graded	Hook & Loop P-Graded	Hook & Loop P-Graded
SIZE (D)	GRIT	PKG./CASE	PART #	PART #	PART #
312E (D)	unii	FRU./GASE	$\frown$	$\frown$	FARI #
			$\begin{pmatrix} \circ & \circ \\ \circ & \circ \end{pmatrix}$	$\langle \circ \circ \rangle$	
			5" x 5 Hole	5" x 5 Hole	5" x 8 Hole
			Die #3328	Die #3328	Die #3392
5	60	100/400	DIC #3320	780727 <b>48541</b> *	780727 <b>48542</b> *
0	80	100/400	662611 <b>31583</b>	666233 <b>07110</b> *	662611 <b>83916</b> *
	100	100/400	662611 <b>31582</b>	666233 <b>12914</b> *	662611 <b>83917</b> *
	120	100/400	662611 <b>31581</b>	666233 <b>07111</b> *	662611 <b>83918</b> *
	150	100/400	662611 <b>31580</b>	666233 <b>12917</b> *	662611 <b>83920</b> *
	180	100/400	662611 <b>31579</b>	666233 <b>07112</b> *	662611 <b>83921</b> *
	220	100/400	662611 <b>31578</b>	666233 <b>07113</b> *	662611 <b>83934</b> *
	320	100/400	662611 <b>31575</b>	666233 <b>07114</b> *	662611 <b>83977</b> *
	400	100/400	662611 <b>31573</b>	666233 <b>07115</b> *	
	600	100/400	662611 <b>31571</b>		
			6" x 6 Hole	6" x 6 Hole	
			Die #3371	Die #3371	
6	80	100/400	662611 <b>31600</b>	666233 <b>34786</b> *	
	100	100/400	662611 <b>31599</b>	666233 <b>34787</b> *	
	120	100/400	662611 <b>31598</b>	666233 <b>34788</b> *	
	150	100/400	662611 <b>31597</b>	666233 <b>34789</b> * <i>NS</i>	
	180	100/400	662611 <b>31596</b>	666233 <b>34790</b> *	
	220	100/400	662611 <b>31595</b>	666233 <b>34791</b> *	
	240 320	100/400	662611 <b>31594</b> 662611 <b>31592</b>	666233 <b>34793</b> *	
	400	100/400	662611 <b>31592</b>	666233 <b>34794</b> *	
	500	100/400	662611 <b>31589</b>	00023334134	
	600	100/400	662611 <b>31588</b>	666233 <b>34796</b> *	
	800	100/400	662611 <b>31587</b>	666233 <b>34797</b> *	
	1000	100/400	662611 <b>31586</b>	000200 <b>07131</b>	
	1200	100/400	662611 <b>31585</b>		
	1500	100/400	662611 <b>31584</b>		
Doologin			1206 Vacuum 50/200		

Packaging Standards: \* A975 Vacuum, A296 Vacuum = 50/200

Refer to the Sanding Accessories section for back-up pads and accessories.



An alternative to traditional perforated paper discs, mesh discs are a multi-functional abrasive, designed with thousands of holes, created by the unique mesh matrix structure. For use with random orbital and rotary sanders, superior performing mesh discs are engineered for maximum dust extraction on composite, automotive, and other fine finishing applications. Norton mesh discs produce superior finishes with virtually dust free sanding.

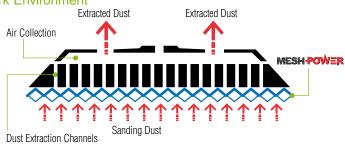
Applications: Size Range: Grit Range: Machine Used: Surface preparation, Sanding, Finishing 5", 6"



60-400

Powerful Dust Extraction Means A Cleaner, Safer Work Environment

We've answered the demands for a cleaner and safer working environment with Norton MeshPower discs. The open construction of the mesh backing allows dust particles to flow freely through the thousands of tiny holes, creating a virtually dust free sanding environment. Better for your health, better for your application and better for your business!





Best choice for sharp cutting along with powerful dust extraction

# MESHPOWER CERAMIC

- Mesh matrix backing with thousands of tiny holes offers powerful dust extraction for a cleaner, healthier
   working environment
- · Full ceramic grain for excellent cut rates and superior scratch pattern
- · Norton No-Fil technology prevents clogging and creates a consistent cut throughout the product life
- Self-grip backing with no designated hole pattern is quick and easy to align to any backing pad just apply and go!

		TIER:	BEST
		TRADENAME:	MESHPOWER
		ABRASIVE:	Ceramic
SIZE (D)	GRIT	PKG./CASE	PART #
5	60	50/200	77696099015
	80	50/200	662611 <b>50061</b>
	120	50/200	662611 <b>50062</b>
	180	50/200	662611 <b>50063</b>
	220	50/200	662611 <b>50064</b>
	240	50/200	662611 <b>50065</b>
	320	50/200	662611 <b>50066</b>
	400	50/200	662611 <b>50067</b>
6	60	50/200	776960 <b>99017</b>
	80	50/200	662611 <b>70645</b>
	100	50/200	662611 <b>70644</b>
	120	50/200	662611 <b>70643</b>
	150	50/200	662611 <b>70642</b>
	180	50/200	662611 <b>70641</b>
	220	50/200	662611 <b>70640</b>
	240	50/200	662611 <b>50054</b>
	320	50/200	662611 <b>50055</b>
	400	50/200	662611 <b>50057</b>

TE	СН	TI	Ρ

Increase performance even further by using the Norton MeshPower discs with the Norton Multi-Air back-up pads - it's the ultimate dust extraction experience!

Contact your Norton representative for more information on additional grit sizes.



# COATED & NON-WOVEN ABRASIVES Film and Foam Finishing Discs

For use on random orbital and rotary sanders. The industry's highest performing film and foam finishing discs are engineered for composite, automotive, and other fine finishing applications. Norton microfinishing film discs produce superior finishes dry without sacrificing cut rate while Norton foam finishing discs are used moist to produce a semi-polished surface to reduce buffing time.

> Film discs: final dry finishing of primed and painted surfaces, varnishes, composites, and gel coats before buffing Foam finishing discs: final moist finishing of clear coat, varnishes, composites, and gel coats before buffing

Compounds and buffing pads: removes swirl marks and sand scratches 3", 5" and 6" Film Discs: P80-P3000

Foam Discs: P1500, P2000, P3000

Machine Used:

Size Range:

Grit Range:

Applications:

ORBITAL SANDER VERTICAL SHAFT PORTABLE GRINDER

MINI ANGLE SANDER

**Finishing Film** 



Best choice for final dry finishing of primed and painted surfaces, varnishes, composites, and gel coats

# PURE ICE Q175 A/O FINISHING FILM

- White aluminum oxide grain and patented resin system for better life, cut rate, and finish
- 3 mil polyester film backing for better flexibility and flatness of discs; hook and loop attachment for easy mounting and removal
- Color-coded backprint by grit size



Best choice for moist finishing of clear coats, varnishes, composites, and gel coats

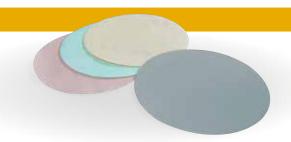
# ICE Q255 A/O FINISHING FOAM

- Premium, P-graded fine grit aluminum oxide grain
- Conformable, integrated foam backing eliminates pigtails and costly rework; produces a semi-polished finished that can be quickly buffed out; hook and loop attachment
- Open mesh design distributes pressure evenly for quicker sanding and uniform scratch patterns
- · Color coded abrasive face by grit size for easy grit identification

#### Best choice for easy sanding of hard-to-reach areas

# NORTON SUPERFLEXIBLE FILM

- Durable yet flexible film backing conforms better to surfaces and contours, preventing "over sanding" or "burn through"
- Anti-loading stearate for optimum performance and long life
- · Consistent scratch pattern and even finish





# COATED & NON-WOVEN ABRASIVES Film and Foam Finishing Discs

		TIFR:	BEST	ar ar		BEST			BEST	
		TRADENAME:		0175	•	SUPERFLEXIB	LE		ICE Q255	
		ABRASIVE:	Aluminum	Oxide		Aluminum Oxid	e		Aluminum (	Dxide
	BAC	CKING WEIGHT:	3 mil Poly	ester Film	_	3 mil Polyester	Film		Foam	
		ATTACHMENT:	Hook and	Loop	_	Hook and Loop			Hook and L	оор
		OTHER:	P-Graded	·		P-Graded			P-Graded	· ·
SIZE (D)	GRIT	PKG./CASE	COLOR	PART #	PKG./CASE	COLOR	PART #	PKG./CASE	COLOR	PART #
3	P800	50/200	Black	776960 <b>88701</b>						
	P1000	50/200	Red	776960 <b>88702</b>						
	P1200	50/200	Green	776960 <b>88703</b>						
	P1500	50/200	Blue	776960 <b>88704</b>	25/100	Rose	666233 <b>90561</b>	6/24	Blue	636425 <b>06022</b>
	P2000				25/100	Jade	666233 <b>90562</b>	6/24	Magenta	636425 <b>06021</b>
	P2500				25/100	Aquamarine	666233 <b>90563</b>			
	P3000				25/100	Meteorite	666233 <b>90564</b>	6/24	Green	636425 <b>06020</b>
6	P800	50/200	Black	776960 <b>88713</b>						
	P1000	50/200	Red	776960 <b>88714</b>						
	P1200	50/200	Green	776960 <b>88715</b>						
	P1500	50/200	Blue	776960 <b>88716</b>	25/100	Rose	666233 <b>90556</b>	15/60	Blue	636425 <b>06015</b>
	P2000				25/100	Jade	666233 <b>90557</b>	15/60	Magenta	636425 <b>06014</b>
	P2500				25/100	Aquamarine	666233 <b>90558</b>			
	P3000				25/100	Meteorite	666233 <b>90559</b>	15/60	Green	636425 <b>06013</b>

# Refer to the Sanding Accessories section for back-up pads and accessories.





# **COATED & NON-WOVEN ABRASIVES** Flexible Diamond-Coated Discs

Grinding ceramic, glass, composites, carbide and ceramic coatings, fiberglass, and reinforced plastics; removing rust and scale on other materials; producing

Norton flexible diamond coated discs combine the durability and aggressiveness of diamond, on a flexible backing.

**Applications:** 

#### Size Range:

Grit Range: **Abrasive Types: Backing Color: Machine Used:** 



metallurgical stamps and coupons

PSA (Pressure Sensitive Adhesive) Discs: 2" - 6"

Quick-Change TR (Type III) Discs: 2" and 3"

ORBITAL SANDER

60 - 1500

Diamond

VERTICAL SHAFT PORTABLE GRINDER



Better choice for grinding glass, ceramics and composites, removing rust and scale, and producing metallurgical stamps and coupons

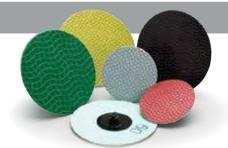
# D71S PSA DISCS

- · Combines the durability and aggressiveness of a unique diamond abrasive face pattern with a flexible backing, to significantly increase life and lower costs versus standard coated and diamond discs
- Cloth backing provides strength, tear resistance, and flexibility •
- · Color-coded, PSA backing for quick, easy mounting and removal and identification of coarse grit sizes/applications

			TIER:	BETTER
SIZE (D)	COLOR	MESH	STD. PKG.	PART #
<b>Flexible Dian</b>	nond Coated PS	SA Discs		
2	Green	60	1	662603 <b>08159</b>
	Black	120	1	662603 <b>07722</b>
	Red	200	1	662603 <b>07723</b>
	Yellow	400	1	662603 <b>08160</b>
	White	800	1	662603 <b>07012</b>
5	Green	60	1	662603 <b>07839</b>
	Black	120	1	662603 <b>07838</b>
	Red	200	1	662603 <b>07019</b>
	Yellow	400	1	662603 <b>07960</b>

			TIEF	R: BETTER
SIZE (D)	COLOR	MESH	STD. PKG.	PART #
<b>Flexible Dia</b>	mond Coated	PSA Discs		
6	Green	60	1	662603 <b>06381</b>
	Black	120	1	662603 <b>06382</b>

See Page 88 – Coated Abrasive Cloth PSA Disc section for back-up pads.



Better choice for improved cut rate and finish on ceramics, glass, fiberglass, composites, carbide, and other tough metals and coatings

# D7210 QUICK-CHANGE TR (TYPE III) DISCS

- · Unique, durable diamond abrasive pattern increases life and lowers costs versus standard coated and diamond discs; color-coded backing for easy grit/application identification
- Better choice for improved cut rate and finish on ceramics, glass, fiberglass, composites, carbide, and other tough metals and coatings
- Removes rust and scale on other material; producing metallurgical stamps and coupons

				TIER: BETTER		
SIZE (D)	COLOR	MESH	STD. PKG	. PART #	SIZE (D)	COLOF
<b>Flexible Di</b>	amond Coated	l Quick-Chang	e TR (Type III)	Discs	Flexible D	iamond Co
2	Green	60	12	662603 <b>11778</b>	3	Green
	Black	120	12	662603 <b>11779</b>		Black
	Red	200	12	662603 <b>11780</b>		Yellow
	Yellow	400	12	662603 <b>11781</b>	See Page 1.	70 – Quick-I
	White	800	12	662603 <b>11782</b>		

			TIE	R: BETTER			
SIZE (D)	COLOR	MESH	STD. PKG.	PART #			
Flexible Diamond Coated Quick-Change TR (Type III) Discs							
3	Green	60	12	662603 <b>11783</b>			
	Black	120	12	662603 <b>11784</b>			
	Yellow	400	12	662603 <b>11786</b>			



#### Multi-Air Foam Interface Pads

- · Designed for use with fine grit Multi-Air Cyclonic hook and loop sanding discs to improve both surface finish and cut rate
- Use with Multi-Air hook and loop disc back-up pads
- · Align the interface pad with the Multi-Air back up pad then simply attach the disc to the interface pad because the holes do not have to be lined up
- · Ideal for use with new Mesh discs

#### SIZE (D x T) DESCRIPTION

Multi-Air F	oam Interface Pads with Vacuum Hol	es	
5 x 1/2	Multi-Air Hook & Loop Interface Pad	8	636425 <b>85864</b>
6 x 1/2	Multi-Air Hook & Loop Interface Pad	12	076607 <b>19359</b>

# **COATED & NON-WOVEN ABRASIVES** Sanding Accessories

#### Multi-Air Hook & Loop Back-up Pads with Vacuum Holes

- · Innovative design optimized for maximum air flow and powerful dust extraction
- · Pads are engineered with a durable urethane foam, heat-resistant plastic, a molded-in 5/16"-24 spindle, and hooked face
- Holes in the disc do not have to be matched up with the holes in the pad, so changeover is fast and easy



Ideal for use with new Mesh discs

SIZE (D)	DESCRIPTION	MAX. RPM	STD. PKG.	PART #
<b>Multi-Air Hook</b>	& Loop Back-up Pads with Va	cuum Hol	es	
5" (125mm) with 5/16"-24 Shank	Medium-Density Urethane Pad	15,000	5	666233 <b>76000</b>
6" (150mm) with 5/16"-24 Shank	Medium-Density Urethane Pad	15,000	5	636425 <b>06160</b>

#### Low-Profile Pads for Dual Action / Random Orbital Sanders

- Soft density low-profile pads utilize 1/2" thick foam for fine finish sanding and offer moderate conformability
- Medium low-profile pads have 1/2" thick urethane foam for intermediate and finish sanding
- Available with PSA (pressure sensitive) adhesive) or hook and loop faces; both designs are shock resistant and have a fiberglass backing plate with a riveted 5/16"-24 threaded shank for added strength and increased heat resistance



STD. PKG. PART #

· Available with standard hole patterns for vacuum-assist sanding

0175 (D)	DEGODIDEIGN	MAX.	SID.	DADT #				
SIZE (D)	DESCRIPTION	RPM	PKG.	PART #				
Low Profile Pads for DA/Random Orbital Sanders								
3	Hook & Loop Soft Low-Profile	12,000	10	636425 <b>06128</b>				
3-1/4	Hook & Loop Buffing Pad		5	662610 <b>85302</b>				
5	PSA Soft Low-Profile	12,000	5	636425 <b>06126</b>				
5	PSA Medium Low-Profile	15,000	5	636425 <b>06131</b>				
5 x 5 holes	PSA Medium Low-Profile	15,000	5	636425 <b>06132</b>				
5	Hook & Loop Soft Low-Profile	12,000	5	636425 <b>06129</b>				
5	Hook & Loop Medium Low-Profile	15,000	5	636425 <b>06135</b>				
5 x 5 holes	Hook & Loop Medium Low-Profile	15,000	5	636425 <b>06136</b>				
6	PSA Soft Low-Profile	12,000	5	636425 <b>06127</b>				
6	PSA Medium Low-Profile	15,000	5	636425 <b>06133</b>				
6	Hook & Loop Soft Low-Profile	12,000	5	636425 <b>06130</b>				
6	Hook & Loop Medium Low-Profile	15,000	5	636425 <b>06137</b>				
6 x 6 holes	Hook & Loop Medium Low-Profile	15,000	5	636425 <b>06138</b>				
8 x 8 holes, 5 screws	Hook & Loop Medium Low-Profile	1,500	5	636425 <b>43712</b>				
8 x 8 holes, 6 screws	Hook & Loop Medium Low-Profile	1,500	5	636425 <b>43714</b>				
Packed in inc	lividual clamshell							

Packed in individual clamshell

### **Tapered Pads for** Dual Action / Random Orbital Sanders

- Designed with medium density polyurethane foam and a tapered edge for conformability, these pads are firm enough for flat surfaces, yet soft enough for severe curves and contours
- · Available with either PSA (vinyl, pressure sensitive adhesive) or hook and loop faces in vacuum or non-vacuum
- The 5" and 6" pads are shock resistant and have a fiberglass backing plate with a riveted 5/16"-24 threaded shank for use on random orbital or dual action sanders

female hub





SIZE (D)	DESCRIPTION	RPM	PKG.	PART #
<b>Tapered Pad</b>	s for DA/Random Orbital Sanders			
5	PSA Medium Tapered	15,000	5	636425 <b>06139</b>
5 x 5 holes	PSA Medium Tapered	15,000	5	636425 <b>06140</b>
5	Hook & Loop Medium Tapered	15,000	5	636425 <b>06143</b>
5 x 5 holes	Hook & Loop Medium Tapered	15,000	5	636425 <b>06144</b>
6	PSA Medium Tapered	15,000	5	636425 <b>06141</b>
6 x 6 holes	PSA Medium Tapered	15,000	5	636425 <b>06142</b>
6	Hook & Loop Medium Tapered	15,000	5	636425 <b>06145</b>
6 x 6 holes	Hook & Loop Medium Tapered	15,000	5	636425 <b>06146</b>
8	PSA Medium Tapered	6,000	5	636425 <b>43112</b>
8	Hook & Loop Medium Tapered	3,200	5	636425 <b>43704</b>

Packed in individual clamshell



# COATED & NON-WOVEN ABRASIVES Sanding Accessories

### Hook & Loop Foam Interface Pads

- Designed for use with our fine grit hook and loop sanding discs
- Improve both surface finish and cut rate
- Use with hook and loop back-up pads



SIZE (D x T)	DESCRIPTION	STD. PKG.	PART #
Foam Hook	& Loop Interface Pads		
3 x 1/2	Interface Pad	10	636425 <b>05457</b>
6 x 1/2	Interface Pad	5	636425 <b>42089</b>
5 x 3/4	Interface Pad	2	636425 <b>02161</b>
6 x 3/4	Interface Pad	2	636425 <b>02162</b>

### Half Moon Hand Pad

- The unique half moon pad takes a standard 5" hook and loop disc folded in half, which adheres to the hooks on the pad face
- The straight edge of the pad allows the operator to sand corners, contours, narrow crevices and minute imperfections without over-sanding



SIZE (D)	DESCRIPTION	STD. PKG.	PART #
<b>Half Moon</b>	Hand Pad		
5	Hook & Loop	10	636425 <b>02768</b>

# Polishing Adapter Pad

- Converts your standard hook and loop
   pad into a soft polishing pad
- The foam adapter is 3/8" thick and is excellent for fine grits where minimal removal is required

DESCRIPTION

Hook & Loop Adapter Pad

 It is ideal for either flat or contour surfaces

**Polishing Adapter Pad** 

5

MAX. RPM	STD. PKG.	PART #

10

636425**03121** 

# Ergonomic Hand Sanders

- The ergonomic palm sander is uniquely designed to be user-friendly, with finger indentations for the operator
- It quickly converts standard 5" and 6" hook and loop discs into hand sanders for finishing flat surfaces



SIZE (D)	DESCRIPTION	STD. PKG.	PART #
	Ergonomic Hand Sander		
5	Hook & Loop	5	636425 <b>03147</b>
6	Hook & Loop	5	636425 <b>03726</b>

<u>a</u>

# **Disc Hand Pads**

- Hand pads eliminate finger sanding
- The ultra-thin 3/16" thick pad is composed of a single layer of neoprene foam and is designed for maximum flexibility – producing excellent finishes

3,786

- The 1" thick pad is composed of two layers, neoprene and polyester foam, for excellent conformability and softness, resulting in fine finishes
- Each pad has an elastic hand strap to hold it firmly in place
- Available with either PSA (vinyl, pressure sensitive adhesive) faces or hook and loop face



# Panel and Adhesive Cleaner Removes adhesives, tar, grease, wax, body confers underspating sprays, and

- body sealers, undercoating sprays, and silicone from most surfaces
- Aggressive cleaner is safe to use on most paint applications
- Packaged with squirt dispenser
- Use as directed

SIZE/DESCRIPTION	STD. PKG.	PART #
Panel and Adhesive Cleaner		
Quart Can	12	076607 <b>82780</b>

SIZE (D x T	) DESCRIPTION	STD. PKG.	PART #
<b>Disc Hand</b>	Pads		
5 x 3/16	Soft Foam PSA	10	636425 <b>03111</b>
5 x 1	Soft Foam PSA	10	636425 <b>02842</b>
5 x 1	Soft Foam Hook & Loop	10	636425 <b>03117</b>



### Liquid Ice Extra-Cut Compound

- · Water soluble; easy to use and easy to clean up
- Engineered to be used with a selection of 3 pads, depending on the finish required



63642597116

DESCRIPTION Liquid Ice Extra-Cut Compound Quart

1 4

#### Liquid Ice Clean-up / Detailer Spray • The spray detailer easily cleans up excess buffing residue and produces paint protection

Spray it on and wipe off with a Norton Microfiber cloth ("Masking Products" section)

			2世世	
SIZE	DESCRIPTION	STD. PKG.	STD. CASE	PART #
32 oz.	Spray Bottle Clean-up Detailer	1	4	636425 <b>42082</b>

**COATED & NON-WOVEN ABRASIVES** 

Sanding Accessories

### 8" Hook & Loop Buffing/Polishing Waffle Pads 8" and 9" Hook & Loop Buffing/Polishing Pads

 These pads can be used with Norton Liquid Ice Extra-Cut Compound



SIZE (D)	DESCRIPTION	STD. PKG.	STD. CASE	PART #
8	Orange Waffle Foam pad - Step 1	1	6	636425 <b>06379</b>
8	Blue Waffle Foam Pad - Step 2	1	6	636425 <b>06380</b>
8	White Waffle Foam Pad - Step 3	1	6	636425 <b>06381</b>

# 3" Hook & Loop Buffing/Polishing Pads

· For small spot repair



SIZE (D)	DESCRIPTION	STD. PKG.	STD. Case	PART #
3	Super Cut Wool Pad - Step 1	10	40	636425 <b>43832</b>
3	Blue Cutting Foam Pad - Step 2	10	40	636425 <b>05459</b>
3	White Finishing Foam Pad - Step 3	10	40	636425 <b>05460</b>

 These pads can be used with Norton Liquid Ice Extra-Cut Compound following the step numbers



SIZE (D)	DESCRIPTION	STD. PKG.	STD. Case	PART #
8	Super Cut Wool Pad - Step 1	1	6	636425 <b>42077</b>
9	Blue Cutting Foam Pad - Step 2	1	6	636425 <b>42078</b>
9	White Finishing Foam Pad - Step 3	1	6	636425 <b>42079</b>

### Hook & Loop Back-up Pads for 8" and 9" **Buffing Pads**

 Black plastic back-up plate with hook and loop face. Molded-in 5/8"-11 threaded female hub



SIZE (D)	DESCRIPTION	STD. PKG.	STD. CASE	PART #
8 and 9	Hook & Look Back-up Pad	1	3	636425 <b>42080</b>

#### Black Lambswool Hook & Loop **Polishing Pads**

 Distributing and applying material evenly and consistently, these dense, durable, lambswool pads are designed to repair clearcoat finishes



SIZE	DESCRIPTION	STD. CASE	PART #
3	Pad with Loop – 3/4" nap	40	636425 <b>03670</b>
4	Pad with Loop – 3/4" nap	250	636425 <b>03671</b>

#### Please pages 350 - 356 for additional finishing products



# COATED & NON-WOVEN ABRASIVES Non-Woven Convolute Wheels

Made from non-woven synthetic fiber mesh, which is impregnated with abrasives and bound with resins, non-woven wheels are designed to create desired surface finish where little or no stock removal is required. Non-woven wheels have an open mesh construction that is waterproof, washable, conformable and non-loading.

Non-Woven Convolute wheels are formed by wrapping and bonding web material impregnated with abrasive grain and resin around a center core.

#### Applications:

- Burr and flashing removal
  Surface roughness reduction
- Blending weld areas on stainless steel
- Blending scratch patterns
- Weld polishing
- Removing rust and oxides
- Applying decorative finishes including antique patterns

Aluminum Oxide, Silicon Carbide

Abrasive Grain: Grit Range: Machine Used:



# Application/Grit Recommendation Guide

NORTON	Rapid Finish GP Convolute Wheels	Metal Finishing Convolute Wheels	Clean & Finish Convolute Wheels	Light Finishing Convolute Wheels
Scale Removal				
Stock Removal	Second Choice			
Heavy Deburring	Second Choice			
Decorative Finishing		First Choice	Second Choice	
Blending	First Choice	Second Choice		
Cleaning		Second Choice	First Choice	
Light Deburring	Second Choice			First Choice
Light Finishing	Second Choice			First Choice
Polishing				First Choice
Buffing				

### Surface Finish Variables

Changes in any one of many factors can affect the surface finish on the workpiece. This chart shows the effect on surface finish by changes in single factors of product specifications. Arrows have been used to signify the trend direction. The arrow length does not signify that the effect of each factor is equal.

Variable Factor	Rough Finish High RMS Reading	Smooth Surface Lower RMS Reading
1. Wheel Speed	Slow <	Fast
2. Feed Speed	Faster (Long Scratch)	Slower (Short Scratch)
3. Oscillation	No Oscillation	Oscillation
4. Lubricants	Dry Kater	Soluble Oil <> Straight Oil
		Compounds

### Non-Woven Marking System

ABRASIVE	SILICON CARBIDE			ALUMINUM OXIDE
	SHARPER, FINER/BRIGHT	ER SCRATCH PATTERN	MORE DURABLE, LONGER LAS	STING, POLISHED FINISH
GRIT SIZE	XC (50)	C (60-80)	M (100-150)	F (180-220)
	FASTER, AGGRESSIVE CU	T, ROUGHER FINISH	REDUCED	CUT RATE, FINER FINISH
DENSITY	2			9
	SOFT, OPEN, CONFORMAE	BLE, LESS BURNING/LOADING	HARDER, MORE DURABLE, FASTER C	UTTING, BETTER FINISH

### Cross Reference Guide

	BEST	BETTER	GOOD	GOOD	GOOD
NORTON	Rapid Finish	Metal Finishing	Series 4000	Light Finishing	Clean & Finish
3M	3M EXL, General Purpose	Metal Finishing	EX2 & EX3	Light Deburring	Multi Finishing
Standard	General Purpose Plus, Light Deburring	Metal Finishing	GP Plus	LDW	Multi Finishing





Convolute Wheels For Cylindrical & Centerless Grinding!



# COATED & NON-WOVEN ABRASIVES Non-Woven Convolute Wheels

### **Aggressive Deburring**

#### Good choice for heavy deburring applications



# SERIES 4000 ALUMINUM OXIDE & SILICON CARBIDE

- High-quality synthetic web provides long life for heavy deburring, edge-breaking, and parting line removal on exotic metals
- · Advanced resin bond system ensures free cutting action
- · Use both wet and dry

					ER: GOOD	
				TRADENAN	<i>NE:</i> SERIES 4000	
SIZE (D x T x H)	ABRASIVE	GRIT	MAX. RPM	STD. PKG.	8 DENSITY PART #	9 DENSITY PART #
6 x 1/2 x 1	S/C	F	6,000	4		662610 <b>04021</b>
6 x 1 x 1	A/0	Μ	6,000	3	662610 <b>04208</b>	
	S/C	F	6,000	3	662610 <b>04142</b>	662610 <b>04141</b>
8 x 1 x 3	A/0	Μ	4,500	3	662610 <b>04165</b>	
	S/C	F	4,500	3	662610 <b>04123</b>	662610 <b>04135</b>
12 x 1 x 5	S/C	F	3,000	2	662610 <b>04284</b>	662610 <b>04148</b>
12 x 2 x 5	S/C	F	3,000	1		662610 <b>04011</b>

#### **General Duty**



# Best choice for broad range of applications: general deburring, blending, and finishing on all materials including metals, wood, glass

# RAPID FINISH GENERAL PURPOSE A/O & S/C

- Eliminate smearing and loading on a wide range of workpieces (from high-nickel-content alloys to aluminum and other soft metals with patent-pending Norton Clean Bond resin technology
- Increase throughput with a 30% faster finish through new Norton grain/bond configuration, decrease wheel changes with a 10-30% longer life, provided by a new fiber and the high-temperature resin bond
- Ease wheel selection with color-coding wheel to match the primary use (maroon for General Purpose), and fiberglass core to match the abrasive (black for silicon carbide and white for aluminum oxide)

					TIER:	BEST			
					TRADENAME:	<b>RAPID FINISH GENI</b>	RAL PURPOSE		
SIZE (D x T x H)	ABRASIVE	GRIT	MAX. RPM	STD. PKG.	PRODUCT CODE	6 DENSITY PART #	7 DENSITY PART #	8 DENSITY PART #	9 DENSITY PART #
6 x 1/2 x 1	A/0	М	6,000	4	C2315		662611 <b>34177</b>	662611 <b>34178</b>	662611 <b>34179</b>
	S/C	М	6,000	4	C4315				662611 <b>08076</b>
	S/C	F	6,000	4	C4415		662611 <b>33213</b>	662611 <b>06732</b>	662611 <b>12985</b>
6 x 1 x 1	A/0	М	6,000	3	C2315	662611 <b>34180</b>	662611 <b>34181</b>	662611 <b>34182</b>	662611 <b>34183</b>
	A/0	F	6,000	3	C2408	662611 <b>32100</b>		662611 <b>32324</b>	
	S/C	М	6,000	3	C4315		662611 <b>08074</b>	662611 <b>33215</b>	662611 <b>08075</b>
	S/C	F	6,000	3	C4415	662611 <b>14475</b>	662611 <b>19988</b>	636425 <b>77269</b>	636425 <b>81587</b>
	S/C	VF	6,000	3	C4515	662611 <b>31970</b>			
6 x 2 x 1	A/0	М	6,000	2	C2315		662611 <b>34184</b>		
	S/C	М	6,000	2	C4315		662611 <b>14471</b>		
	S/C	F	6,000	2	C4415		662611 <b>32325</b>		
8 x 1 x 3	S/C	М	4,500	3	C4315		662611 <b>08066</b>	662611 <b>08069</b>	
	S/C	F	4,500	3	C4415	662611 <b>08064</b>	662611 <b>08065</b>	636425 <b>53754</b>	636425 <b>76004</b>
	S/C	VF	4,500	3	C4515				662611 <b>33209</b>
8 x 2 x 3	S/C	М	4,500	2	C4315		662611 <b>14473</b>		
	S/C	F	4,500	2	C4415		662611 <b>14480</b>	662611 <b>14483</b>	662611 <b>14486</b>
	S/C	VF	4,500	2	C4515				662611 <b>33210</b>
10 x 1 x 5	A/0	М	3,600	3	C2315		662611 <b>34185</b>		
	S/C	F	3,600	3	C4415			662611 <b>06554</b>	662611 <b>14488</b>
10 x 2 x 5	S/C	F	3,600	1	C4415			636425 <b>81044</b>	
12 x 1 x 5	A/0	М	3,000	2	C2315				662611 <b>34186</b>
	S/C	F	3,000	2	C4415	662611 <b>08053</b>	662611 <b>14481</b>	662611 <b>14484</b>	662611 <b>14074</b>
	S/C	VF	3,000	2	C4515				
12 x 2 x 5	S/C	F	3,000	1	C4415		662611 <b>14482</b>	662611 <b>12766</b>	662611 <b>14490</b>



### Aesthetic Finishing



00

Better choice for decorative finishing, blending, and final finishing

# METAL FINISHING ALUMINUM OXIDE

- · Premium, medium grit aluminum oxide grain generates uniform distinct satin and antique finishes
- Dense, very durable web allows these wheels to be used for blending applications; strong resin binder provides
  resiliency and long life
- Uniform grain dispersion and coating clean and condition without gouging or changing dimensions of workpiece

					TIER:	BETTER						TIER:	BETTER
				TRAL	DENAME:	METAL FINISHING					TRAE	ENAME:	METAL FINISHING
			DEN-	MAX.	STD.					DEN-	MAX.	STD.	
SIZE (D x T x H)	ABRASIVE	GRIT	SITY	RPM	PKG.	PART #	SIZE (D x T x H)	ABRASIVE	GRIT	SITY	RPM	PKG.	PART #
6 x 1 x 1	A/0	М	5	6,000	3	662610 <b>07936</b>	12 x 1 x 5	A/0	М	5	3,000	2	662610 <b>07434</b>
	A/0	М	6	6,000	3	662610 <b>10148</b>		A/0	М	6	3,000	2	662610 <b>09481</b>
6 x 2 x 1	A/0	М	5	6,000	2	662610 <b>07957</b>	12 x 2 x 5	A/0	М	5	3,000	1	662610 <b>07212</b>
	A/0	М	6	6,000	2	662610 <b>09635</b>	14 x 2 x 8	A/0	М	5	2,550	1	662610 <b>07817</b>
8 x 1 x 3	A/0	М	5	4,500	3	662610 <b>07831</b>							
8 x 2 x 3	A/0	М	5	4,500	2	662610 <b>07904</b>							
	A/0	М	6	4,500	2	662610 <b>12971</b>							



Good choice for light deburring, polishing, and fine finishing applications

# LIGHT FINISHING SILICON CARBIDE

- Advanced manufacturing process produces a consistent web and grain distribution for a consistent finish on intricate polishing applications
- Superior form holding for consistent, reliable edge breaking and finishing with minimal wheel dressing and reshaping; less dust and shedding with more uniform wear
- · Controlled cut rate prevents "over benching", deburrs and polishes without altering geometry

			ī	TIER: GOOD		
			TRADENA	ME: LIGHT FINISHING		
SIZE (D x T x H)	ABRASIVE	GRIT	MAX. RPM	6 DENSITY PART #	7 DENSITY PART #	8 DENSITY PART #
6 x 1/2 x 1	S/C	F	6,000	662610 <b>92322</b>	662610 <b>92324</b>	662544 <b>21572</b>
6 x 1 x 1	S/C	F	6,000	662544 <b>03708</b>	662544 <b>03709</b>	662544 <b>21573</b>
8 x 1/2 x 3	S/C	F	4,500	662544 <b>03707</b>	662544 <b>09698</b>	662544 <b>21575</b>
8 x 1 x 3	S/C	F	4,500	662610 <b>95702</b>	662544 <b>09924</b>	662544 <b>21577</b>

All Light Finishing convolute wheels are non-stock. Ask your Norton representative for current lead-times and order quantities.



#### Good choice for fine finishing with light pressure

# CLEAN & FINISH SILICON CARBIDE

- · Sharp, more aggressive silicon carbide abrasive leaves a fine/brighter scratch pattern
- · Conformable to intricate shapes and contours without changing the workpiece dimension
- · Open web construction makes these ideal for low-to moderate-pressure, low speed applications

			TIER: GOOD				
			TRAD	ENAME:	<b>CLEAN &amp; FINISH</b>		
ABRASIVE	GRIT	DENSITY	MAX. RPM	STD. PKG.	PART #		
S/C	М	4	4,000	10	662610 <b>58502</b>		
	F	4	4,000	10	662610 <b>58501</b>		
S/C	М	4	3,000	4	662610 <b>58507</b>		
	F	4	3,000	4	662610 <b>58506</b>		
S/C	М	4	3,000	2	662610 <b>58510</b>		
	F	4	3,000	2	662610 <b>58509</b>		
S/C	М	4	3,000	1	662610 <b>58512</b>		
S/C	М	4	3,000	1	662610 <b>58514</b>		
	S/C S/C S/C S/C	F S/C M F S/C M F S/C M	S/C         M         4           F         4           S/C         M         4	ABRASIVE         GRIT         DENSITY         MAX.           S/C         M         4         4,000           F         4         4,000           S/C         M         4         3,000           F         4         3,000           S/C         M         4         3,000           S/C         M         4         3,000           F         4         3,000           F         4         3,000           S/C         M         4         3,000	TRADENAME:           ABRASIVE         GRIT         DENSITY         MAX.         STD.           S/C         M         4         4,000         10           F         4         4,000         10           S/C         M         4         3,000         4           F         4         3,000         4           S/C         M         4         3,000         2           F         4         3,000         2           F         4         3,000         2           F         4         3,000         1		

				TRAD		GOOD Clean & Finish
SIZE (D x T x H)	ABRASIVE	GRIT	DENSITY	MAX. RPM	STD. PKG.	PART #
8 x 1 x 3	S/C	М	4	2,500	3	662610 <b>58518</b>
8 x 2 x 3	S/C	М	4	2,500	2	662610 <b>58521</b>
8 x 3 x 3	S/C	М	4	2,500	1	662610 <b>58524</b>
8 x 4 x 3	S/C	М	4	2,500	1	662610 <b>58526</b>



## COATED & NON-WOVEN ABRASIVES Non-Woven Convolute Wheels

### Aluminum Reducing Bushings for Flap and Convolute Wheels



- Durable, aluminum one-piece-design flanges with integrated contact washer
- Snug fit; extended usable life
- · Available in stock and non-stock sizes in many combinations of ID hole reduction

WHEEL CENTER HOLE	BUSHING REDUCES HOLE SIZE TO	FOR WHEEL DIAMETER	STD. PKG.	PART #
1	3/8	4 - 6	1 Pair	662610 <b>80522 NS</b>
	1/2	4 - 6	1 Pair	662610 <b>80523</b>
	5/8	4 - 6	1 Pair	662610 <b>80524</b>
	3/4	4 - 6	1 Pair	662610 <b>80525 NS</b>
	7/8	4 - 6	1 Pair	662610 <b>80526 NS</b>
2	1/2	6	1 Pair	662610 <b>80527 NS</b>
	5/8	6	1 Pair	662610 <b>80528 NS</b>
	1	6	1 Pair	662610 <b>80529 NS</b>
3	1	8	1 Pair	662610 <b>80531</b>
	1-1/4	8	1 Pair	662610 <b>80532</b>
5	1	10 and 12	1 Pair	662610 <b>80533</b>
	1-1/4	10 and 12	1 Pair	662610 <b>80534</b>
	3	10 and 12	1 Pair	662610 <b>80535 NS</b>
8	1-1/4	14	1 Pair	662610 <b>80536 NS</b>

NS Non-Stock, contact your Norton representative for current order quantities and lead times.

### TECH TIP

- Convolute wheels must always run in the direction indicated by the arrow printed on the side of each wheel.
- · Light to medium pressure is recommended. Excessive pressure may result in part damage.
- · Lubricants such as water-soluble oil and straight oil will decrease the heat and improve the surface finish and lustre.

It is the user's responsibility to refer to and comply with ANSI B7.1





## **COATED & NON-WOVEN ABRASIVES** Non-Woven Unified Wheels

Made from non-woven synthetic fiber mesh, which is impregnated with abrasives and bound with resins, non-woven wheels are designed to create desired surface finish where little or no stock removal is required. The industry's broadest offering is available for light stock removal, deburring, blending, finishing and polishing. Non-woven wheels have an open mesh construction that is waterproof, washable, conformable and non-loading.

#### **Applications:**

**Abrasive Grain:** Grit Range: **Machine Used:** 

Cleaning and removing imperfections on metal surfaces, cleaning built-up residue, deburring or finishing a variety of surfaces, blending weld seams or creating decorative finishes. Non-woven surface finishing products have excellent versatility. Engineered Aluminum Oxide, Aluminum Oxide, Silicon Carbide Extra Coarse (XC), Coarse (C), Medium (M), Fine (F)

GRINDER



GRINDER



DIE GRINDER

GRINDER

### Surface Finish Variables

Changes in any one of many factors can affect the surface finish on the workpiece. This chart shows the effect on surface finish by changes in single factors of product specifications. Arrows have been used to signify the trend direction. The arrow length does not signify that the effect of each factor is equal.

Variable Factor	Rough Finish High RMS Reading	Smooth Surface Lower RMS Reading
1. Wheel Speed	Slow <	► Fast
2. Feed Speed	Faster (Long Scratch) 🔍	Slower (Short Scratch)
3. Oscillation	No Oscillation <	Oscillation
4. Lubricants	Dry 🔶 Water 🗲	Soluble Oil <> Straight Oil
		Compounds

#### Non-Woven Marking System

ABRASIVE	SILICON CARBIDE			ALUMINUM OXIDE
	SHARPER, FINER/BR	IGHTER SCRATCH PATTERN	MORE DURABLE, LONGER LA	STING, POLISHED FINISH
GRIT SIZE	XC (50)	C (60-80)	M (100-150)	F (180-220)
	FASTER, AGGRESSIV	E CUT, ROUGHER FINISH	REDUCED	CUT RATE, FINER FINISH
DENSITY	2			9
	SOFT, OPEN, CONFO	RMABLE, LESS BURNING/LOADING	HARDER, MORE DURABLE, FASTER	CUTTING, BETTER FINISH

### **Cross Reference Guide**

	BEST	BETTER	
NORTON	Vortex Rapid Blend	Rapid Blend NEX	
3M	Cut & Polish Unitized, Deburr and Finish PRO	EXL Unitized	
Standard	800 & 900 Series	500 - 700 Series	





## COATED & NON-WOVEN ABRASIVES Non-Woven Unified Wheels

NEW

#### **Rapid Blend Unified Wheels**

Designed for maintenance operations needing an efficient and cost-effective method of deburring, polishing, cleaning or finishing metals and composites. Easily preformed for use on a wide variety of shapes/contours. Hold shape well; less wheel dressing. Non-metallic so no contamination of workpiece. Uniform construction maintains part tolerance; prevents cutting or gouging.



Best choice for light weld bead and weld spatter removal, heavy deburring and finishing applications

## VORTEX RAPID BLEND ALUMINUM OXIDE

- Proprietary engineered Vortex aluminum oxide aggregate grain stays sharper longer for increased cut rate while still
  offering a fine finish
- Special resin chemistry resists shedding when used on sharp edges, making it ideal for deburring; no smearing
- 3D wheel construction enables multi-dimensional grinding which saves time on multiple wheel changes
- · Aggressive, fast stock removal cut rate while providing a fine finish

				COAR GRI	SE					COAR	ISE
			TIER:	BEST	BEST				TIER:	BEST	BEST
			GRIT:	Coarse	Medium				GRIT:	Coarse	Medium
		AB	RASIVE:	Engineered A/O	Engineered A/O			AB	RASIVE:	Engineered A/O	Engineered A/O
		MAX.	STD.		-			MAX.	STD.		-
SIZE (D x T)	DENSITY	RPM	PKG.	PART #	PART #	SIZE (D x T)		RPM	PKG.	PART #	PART #
1" x 1" x 3/16"	5	35,000	50	662611 <b>32922</b>	-	3" x 1/4" x 1/4"	3	12,000	40	-	662544 <b>28454</b> NS
	8	35,000	50	662611 <b>32923</b>	-		5	18,000	40	662611 <b>32906</b>	662544 <b>14832</b>
2" x 1/8" x 1/8"	5	22,000	60	662611 <b>32896</b>	662544 <b>25657 NS</b>		7	18,000	40	-	662611 <b>99696</b>
	7	22,000	60	-	662544 <b>10849</b> NS		8	18,000	40	662611 <b>32907</b>	-
	8	22,000	60	662611 <b>32897</b>	-	3" x 1/4" x 3/8"	3	12,000	40	-	662544 <b>33505</b> NS
2" x 1/8" x 1/4"	5	22,000	60	662611 <b>32898</b>	662544 <b>06346</b> NS		5	18,000	40	662611 <b>32908</b>	662544 <b>33506 NS</b>
7	7	22,000	60	-	662611 <b>91446</b>		7	18,000	40	-	662611 <b>99697</b>
	8	22,000	60	662611 <b>32899</b>	-		8	18,000	40	662611 <b>32909</b>	-
2" x 1/4" x 1/4"	3	18,000	60	-	662544 <b>28456 NS</b>	3" x 1/2" x 1/4"	5	18,000	20	662611 <b>32912</b>	662544 <b>32925</b>
	5	22,000	60	662611 <b>32900</b>	662544 <b>33504</b>		7	18,000	20	-	662610 <b>80267</b>
	7	22,000	60	-	662610 <b>80270</b>		8	18,000	20	662611 <b>32913</b>	-
	8	22,000	60	662611 <b>32901</b>	-		9	18,000	20	-	662544 <b>33507 NS</b>
2" x 1/2" x 1/4"	5	22,000	30	662611 <b>32914</b>	-	3" x 1/2" x 3/8"	5	18,000	20	662611 <b>32910</b>	662544 <b>33508</b>
	8	22,000	30	662611 <b>32915</b>	-	- , .,.	7	18.000	20	_	662610 <b>80266</b>
2" x 1" x 1/4"	5	22,000	15	662611 <b>32916</b>	-		8	18.000	20	662611 <b>32911</b>	-
	7	22,000	15	-	662610 <b>80269 NS</b>		9	18,000	20	-	662544 <b>20696 NS</b>
	8	22,000	15	662611 <b>32917</b>	-	3" x 1" x 1/4"	5	18,000	10	662611 <b>32918</b>	_
3" x 1/8" x 1/4"	5	18,000	40	662611 <b>32902</b>	-	•	8	18.000	10	662611 <b>32919</b>	_
	5	18,000	40		662610 <b>93448</b>	4" x 1" x 1/4"	5	16.000	5	662611 <b>32920</b>	_
	7	18,000	40	-	662611 <b>91445</b>		8	16,000	5	662611 <b>32921</b>	_
	8	18,000	40	662611 <b>32903</b>	-	6" x 1/2" x 1"	5	12,000	4	662611 <b>32924</b>	699573 <b>18950</b>
3" x 1/8" x 3/8"	5	18,000	40	662611 <b>32904</b>	662544 <b>33503 NS</b>	. ,=	8	12,000	4	662611 <b>32925</b>	78072767709
	7	18,000	40	-	662544 <b>01131 NS</b>	6" x 1" x 1"	5	12,000	2	662611 <b>32926</b>	77696093919
	8	18,000	40	662611 <b>32905</b>	-		8	12,000	2	662611 <b>32927</b>	780727 <b>13652</b>
NS - Non-Stock	itomo					NC - Non Stop	li itama	,			

NS = Non-Stock items.

NS = Non-Stock items.

For Rapid Blend Unified Quick-Change discs please see Quick-Change disc section.

NEW



How to Grind & Blend in One Step! Non-Woven Discs Vs Grinding Wheels! ft. Vortex Rapid Blend Coarse **youtube.com/watch?v=FgSLez3MKj8** 







Better choice for light deburring and blending

# RAPID BLEND NEX ALUMINUM OXIDE AND SILICON CARBIDE

- Uniform construction provides extra-long life and holds shape well for less wheel dressing
- Smear free resin binder formula provides smear-free finishes
- A great option for light deburring and blending applications

				TIER:	BETTER				
				TRADENAME:	RAPID BLEND NEX				
SIZE (D x T x H)	ABRASIVE	GRIT	MAX. RPM	STD. PKG.	2 DENSITY Part #	3 DENSITY Part #	4 DENSITY Part #	6 DENSITY PART #	8 DENSITY Part #
1 x 1 x 3/16	A/0	С	30,000	50					662610 <b>14915</b>
	A/0	Μ	18,000	50	662610 <b>14891</b>				
	A/0	М	30,000	50				662610 <b>14908</b>	662610 <b>14924</b>
	S/C	F	18,000	50	662610 <b>14883</b>				
	S/C	F	30,000	50				662610 <b>14904</b>	662610 <b>14923</b>
2 x 1/8 x 1/4	A/0	М	22,000	60					662610 <b>14927</b>
2 x 1/4 x 1/4	A/0	М	18,000	60	662610 <b>14892</b>				
	A/0	М	22,000	60					662610 <b>14926</b>
	A/0	F	22,000	60				662610 <b>14901</b>	
	S/C	F	18,000	60	662610 <b>14884</b>				
2 x 1/2 x 1/4	A/0	М	22,000	30					662610 <b>14925</b>
3 x 1/4 x 1/4	A/0	С	18,000	40					662610 <b>14919</b>
	A/0	М	18,000	40				662610 <b>14909</b>	662610 <b>14930</b>
	A/0	F	18,000	40			662610 <b>15565</b>	662610 <b>14902</b>	662610 <b>14902</b>
	S/C	F	12,000	40	662610 <b>14886</b>				
3 x 1/4 x 3/8	A/0	С	18,000	40					662610 <b>14920</b>
	A/0	М	12,000	40	662610 <b>14895</b>				
	A/0	М	18,000	40				662610 <b>14910</b>	662610 <b>14933</b>
	A/0	F	12,000	40			662610 <b>14899</b>		
	S/C	F	12,000	40	662610 <b>14887</b>	662610 <b>16006</b>			
3 x 1/2 x 1/4	A/0	М	12,000	20	662610 <b>14893</b>				
	A/0	М	18,000	20				662610 <b>14928</b>	
	S/C	F	12,000	20	662610 <b>14885</b>				
3 x 1/2 x 3/8	A/0	M	18,000	20					662610 <b>14929</b>
3 x 1 x 3/8	S/C	XC	18,000	10				662610 <b>14914</b>	
6 x 1/2 x 1	A/0	Μ	7,500	4					662610 <b>14931</b>
6 x 1 x 1	S/C	F	6,000	2	662610 <b>14888</b>				

For Rapid Blend Unified Quick Change discs please see Quick Change disc section.

### Assemblies and Mandrels for Unified Wheels

FITS WHEEL Center Hole	FOR WHEEL WIDTH	FOR WHEEL DIAMETER	SHANK DIAMETER	OVERALL LENGTH	WASHER DIAMETER	3M Equivalent	STD. PKG.	PART #
<b>Mandrel Assem</b>	ublies for Unified V	Vheels and Discs (	In Edge					
3/16	1/8 – 1/2	1 – 2	1/4	2	7/16	994	1	662610 <b>09852</b>
1/4 - 5/16	Up to 1/2	Up to 2	1/4	2	5/8	932	1	662610 <b>15146</b>
1/4 – 5/16	Up to 1	Up to 2	1/4	2-1/2	5/8	932	1	662610 <b>59422</b>
	Up to 1	2-3	1/4	2-1/2	1	933	1	662610 <b>59421</b>
3/8	Up to 1/2	2-4	1/4	2-1/2	1	990	1	662610 <b>09851</b>
1/2	Up to 1	3-6	1/4	3-1/8	1-5/8	934	1	662610 <b>09850</b>
FOR CENTER Hole	USE WITH UNIFIED WHEEL	SHANK DIAMETER	SHANK Length			3M Equivalent	STD. PKG.	PART #
<b>Threaded Mana</b>	drel for Unified Wh	eels						
3/16	1 x 1 x 3/16	1/4"	1-3/4"			948	5	662610 <b>47584</b>



MANDREL ASSEMBLY 66261059421



THREADED MANDREL 66261047584



MANDREL ASSEMBLY 66261059422



## COATED & NON-WOVEN ABRASIVES File Belts

Portable file belt sanders have replaced tedious hand filing and sanding. First introduced in pneumatic, they are now also available in electric. Increasingly, tool manufacturers are introducing additional fixtures for additional applications. The belts listed are popular stock sizes, but additional sizes, specifications, backing materials, and edge scallops are available made-to-order.

#### Applications:

Size Range: Grit Range: Abrasive Grain: Machine Used: Light weld removal and blending, shape and contour sanding, surface preparation prior to coating and plating, removing cutting tool marks from molds and dies, general clean-up and finishing 1/8" to 1" wide, 12" to 30" long 40 - 120Ceramic Alumina, Zirconia Alumina, Aluminum Oxide



### **Cross Reference Guide**

VDRTDN

SAINT-GOBAIN

	BEST	BEST	BETTER	GOOD	GOOD
NORTON	Blaze R980P	RedHeat R983	BlueFire R887D/R823P	Gemini R766	Gemini R283
3M	963G/H, 966F, 967F, 997F, 984F, 784F, 947A	747D, 777F, 778F, 784F, 987F, 977F	577F, 551E	361F, 363F	241E, 244E, 251E, 261E
Hermes	CR456	—	RB48624YX, RB48644Z	RB377XY, SB378	RB530J, RB304J, RB306J
Klingspor	CS610	CS912	CS411X, CS416, CS409	CS412, CS413	CS412
SIA	2515, 2503	—	2800,2803, 2815, 2829, 2824	_	_
VSM	XK875X, XK885Y, XK880Y	XK870X, XK870X	ZK713X, ZK713T, KK715X	LK719X, KK711X	KK711E
Sait	—	—	AZ-X	1AX, 2AX	LA-X
Sunmight	—	—	—	P656W	_

### Material-to-Product Recommendation Guide

	BEST	BEST	BETTER	BETTER		
	Blaze R980P	RedHeat R983	BlueFire R887D	BlueFire R823P	Gemini R766	Gemini R283
Carbon Steel	•	•	•	•	•	•
Stainless Steel / Alloys	•	•	•	•	•	
Cast Iron	•	•	•	•	•	
Brass / Bronze			•	•	•	
Aluminum			•	•	•	



#### Best for stainless, cobalt, chrome, inconel, titanium, mild and carbon steel

## BLAZE R980P CERAMIC ALUMINA

- Next-generation cooler cutting Norton SG ceramic alumina grain lasts 50% to 200% longer on mild and carbon steel, stainless, cobalt, chrome, inconel and titanium with better metal integrity
- Durable Y-weight polyester, waterproof cloth backing for improved grain adhesion, reduced edge-fray, and better body retention, resulting in longer life and product consistency
- Lubricating grinding aid coating means cooler cut, burn-free grinding of heat-sensitive materials, minimized loading, and improved part finish and integrity



#### Exceptional performance, especially on hard-to-grind alloys

## REDHEAT R983 CERAMIC ALUMINA

- · Premium ceramic abrasive provides sharp cutting, exceptional life and value, especially on hard-to-grind alloys
- "Supersize" grinding-aid for longer life, cooler cut and minimized loading
- Strong Y-weight polyester, waterproof cloth backing for improved grain adhesion, reduced edge-fray and better body
  retention, resulting in longer life and product consistency



## COATED & NON-WOVEN ABRASIVES File Belts



Better choice for stainless and carbon steel

## BLUEFIRE R887D/R823P ZIRCONIA ALUMINA

- Strong, self-sharpening zirconia alumina abrasive for fast, aggressive cut and 30% longer life than competitive
  zirconia belts
- Durable resin bond for excellent grain retention and product life
- Strong Y-weight polyester backing R887D for heavy-duty stock removal applications; flexible X-weight polyester backing - R823P for moderate- to light-pressure applications

## Good choice for difficult-to-grind materials (aluminum, brass, bronze, stainless, carbon steel, titanium, etc.)

## GEMINI R766 ALUMINUM OXIDE

- Premium aluminum oxide abrasive blend is ideal when primary purchasing criteria is a good-performing, economically-priced, general-purpose belt
- Y-weight waterproof polyester backing withstands light- to moderately-demanding applications and provides extended life on dry grinding applications
- · Resin bond system provides improved edge retention and 30% plus improvement in life versus key competitors



Good choice for stainless and carbon steel applications when initial price is the primary purchasing factor

## GEMINI R283 ALUMINUM OXIDE

- · P-graded premium aluminum oxide abrasive for consistent, cool cut
- Strong, semi-flexible, smooth X-weight rayon waterproof backing is designed for light- to moderate- pressure applications
- · Durable resin coating provides excellent grain retention and product life

		VENDBL		
TIER: BEST	BEST	BETTER	GOOD	GOOD

		IIER:	BEST	BEST	BEITEK	GUUD	GUUD
		TRADENAME:	BLAZE R980P	REDHEAT R983	BLUEFIRE R887D/R823P	GEMINI R766	GEMINI R283
		ABRASIVE:	Ceramic Alumina	Ceramic Alumina	Zirconia Alumina	Aluminum Oxide Blend	Aluminum Oxide
		BACKING:	Y-Weight Polyester	Y-Weight Polyester	Y- or X-Weight Polyester	Y-Weight Polyester	X-Weight Rayon
		OTHER:	Supersize	Supersize			
SIZE (W x L)	GRIT	STD. PKG.	PART #	PART #	PART #	PART #	PART #
12" Belts							
1/8 x 12	40	50				666233 <b>90000 NS</b>	
	60	50	662544 <b>05345</b> NS		662610 <b>93029</b> NS		
	80	50		66254491523 NS			
	120	50		662544 <b>91524 NS</b>			
1/4 x 12	40	50	662544 <b>91520 NS</b>				
	60	50	662611 <b>96480 NS</b>		780727 <b>58896</b>		
	80	50		662544 <b>91526 NS</b>	780727 <b>82621</b>		780727 <b>66143</b>
	120	50	662610 <b>63632 NS</b>		780727 <b>82622</b>		780727 <b>63175</b>
1/2 x 12	40	50	699573 <b>98018</b>	662544 <b>91528 NS</b>	662544 <b>92522</b>	666233 <b>90006</b>	780727 <b>27557</b>
	50	50	662610 <b>43759</b>	780727 <b>18700</b>			
	60	50	699573 <b>98019</b>	780727 <b>18701</b>	780727 <b>28745</b>	66623390008 NS	780727 <b>27555</b>
	60	25 V			666233 <b>73753</b>		
	80	50	699573 <b>98020</b>	780727 <b>18702</b>	780727 <b>28744</b>	666233 <b>90009</b>	780727 <b>27554</b>
	80	25 V			666233 <b>73754</b>		
	100	50	662610 <b>81180</b>		662544 <b>91534</b>		780727 <b>27553</b>
	120	50	662610 <b>42909</b>	780727 <b>00518 NS</b>	780727 <b>28742</b>		780727 <b>27552</b>
1 x 12	60	50	662610 <b>63641 NS</b>		780727 <b>53073</b>		780727 <b>73813</b>

Additional sizes, grits and scalloped edge belts are available MTO (made-to-order). Contact your Norton representative for availability, order quantities and lead-times. 40 and 50 grit BlueFire belts are furnished in BlueFire R887D (Y-weight Polyester); 60-120 grits are supplied in BlueFire R823P (X-weight Polyester). Joints – All belts are PG jointed; a butt joint joined with flexible tape for contour grinding.

V = Vendible package. Ideal for vending machines and small jobs. 5 belts per pack / 5 packs per carton. Order in multiples of 25.

NS Non-Stock, contact your Norton representative for current order quantities and lead times.

Continued

## **COATED & NON-WOVEN ABRASIVES** File Belts



					VENDIBLE		
			BEST	BEST	BETTER	GOOD	GOOD
			BLAZE R980P Ceramic Alumina	REDHEAT R983 Ceramic Alumina	BLUEFIRE R887D/R823P Zirconia Alumina	Aluminum Oxide Blend	GEMINI R283 Aluminum Oxide
			Y-Weight Polyester	Y-Weight Polyester	Y- or X-Weight Polyester	Y-Weight Polyester	X-Weight Rayon
		OTHER:	<i>,</i>	Supersize			
SIZE (W x L)	GRIT	STD. PKG.	PART #	PART #	PART #	PART #	PART #
3" Belts	00	50	00057045050	70070746460	700707 <b>4000F</b>	0000000011	70070700110
8/8 x 13	60 80	50 50	699573 <b>45359</b> 699573 <b>92150</b>	780727 <b>45459</b> 780727 <b>74916</b>	780727 <b>40295</b> 780727 <b>36062</b>	666233 <b>90011</b> 666233 <b>90012</b>	780727 <b>32112</b> 780727 <b>71323</b>
8" Belts	00	50	00001002100	10012114310	10012100002	0002000012	10012111020
/8 x 18	60	50	662610 <b>80010</b>			666233 <b>90014 NS</b>	
	80	50	662610 <b>89120</b>	780727 <b>89083</b>	780727 <b>60595 NS</b>	666233 <b>90015 NS</b>	
	120	50	662544 <b>75215</b>	780727 <b>89084</b>			
/4 x 18	40	50	662610 <b>27923</b>	662611 <b>98953</b>	662544 <b>92525</b>	666233 <b>90016</b> NS	662544 <b>91543</b>
	60 80	50 50	699573 <b>47249</b> 699573 <b>46155</b>	780727 <b>74684</b> 780727 <b>03284</b>	780727 <b>43583</b> 780727 <b>53075</b>		780727 <b>71000</b> 780727 <b>73921</b>
	80	25 V	03301040100	10012103204	666233 <b>73748</b>		10012113321
	120	50	662610 <b>85071</b>	780727 <b>85655</b>	780727 <b>73764</b>		
/2 x 18	40	50	699573 <b>98021</b>	78072766018	662544 <b>44193</b>	666233 <b>90019</b>	780727 <b>27561</b>
	60	50	699573 <b>98022</b>	780727 <b>18704</b>	780727 <b>28569</b>	666233 <b>90020</b>	780727 <b>27560</b>
	60	25 V			666233 <b>73756</b>		
	80	50	699573 <b>98023</b>	780727 <b>18705</b>	780727 <b>28568</b>	666233 <b>90021</b> NS	780727 <b>27559</b>
	80 120	25 V 50	662610 <b>41384</b>	780727 <b>18706</b>	666233 <b>73757</b> 780727 <b>28567</b>		780727 <b>27558</b>
	120	25 V	00201041304	10012110100	666233 <b>73758</b>		10012121330
3/4 x 18	40	50	699573 <b>98027</b>	780727 <b>62476</b>	662544 <b>92526</b>	666233 <b>90022</b>	780727 <b>81797</b>
	60	50	699573 <b>98028</b>	780727 <b>45691</b>	78072709590	666233 <b>90023</b>	78072739966
	60	25 V			666233 <b>73762</b>		
	80	50	699573 <b>98029</b>		780727 <b>58953</b>	666233 <b>90024</b>	780727 <b>32289</b>
	80	25 V			666233 <b>73763</b>		
20-1/2" Belts	120	25 V			666233 <b>73764</b>		
20-1/2 Della 3/4 x 20-1/2	40	50	699573 <b>98030</b>	780727 <b>14398</b>	662544 <b>57869</b>	666233 <b>90025</b>	780727 <b>27573</b>
1/ 1 X 20 1/2	50	50	699573 <b>44982</b>	780727 <b>18714</b>	662544 <b>92527</b>		10012121010
	60	50	699573 <b>98031</b>	780727 <b>18715</b>	78072728560	666233 <b>90027 NS</b>	780727 <b>27571</b>
	60	25 V			666233 <b>73765</b>		
	80	50	699573 <b>98032</b>	780727 <b>18716</b>	780727 <b>28559</b>	666233 <b>90028</b> NS	780727 <b>27570</b>
	80	25 V	0000105540		666233 <b>73766</b>		70070707560
	100 120	50 50	662610 <b>55516</b> 662610 <b>44755</b>	780727 <b>27380 NS</b>	662610 <b>38911</b> 780727 <b>28557</b>		780727 <b>27569</b> 780727 <b>27575</b>
4" Belts	120	50	00201044755	10012121000110	10012120001		10012121010
/4 x 24	40	50	662611 <b>98631</b>	780727 <b>47823</b>	662544 <b>73499 NS</b>		
	60	50	699573 <b>45451</b>	780727 <b>56534</b>	780727 <b>28552</b>		780727 <b>27548</b>
	60	25 V			666233 <b>73750</b>		
	80	50	636425 <b>96940</b>	780727 <b>18340</b>	78072767713		
10 1 01	120	50	662610 <b>80367</b>	780727 <b>70718</b>	780727 <b>28550</b>	66600000000	70070797560
/2 x 24	40 50	50 50	699573 <b>98024</b> 662610 <b>43757</b>	780727 <b>60092</b> 780727 <b>18707</b>	662544 <b>92528</b> 662544 <b>52237</b>	666233 <b>90032</b> 666233 <b>46910</b> NS	780727 <b>27568</b>
	60	50	699573 <b>98025</b>	780727 <b>18708</b>	780727 <b>28564</b>	666233 <b>90033</b>	780727 <b>27566</b>
	60	25 V			666233 <b>73759</b>		
	80	50	699573 <b>98026</b>	780727 <b>18709</b>	780727 <b>28566</b>	666233 <b>90034</b>	780727 <b>27565</b>
	80	25 V			666233 <b>73760</b>		
	100	50	662610 <b>42203</b>	780727 <b>45021</b>	780727 <b>53076</b>		662544 <b>91545</b>
x 24	120 40	50 50	662610 <b>42565</b> 699573 <b>50019</b>	780727 <b>18710</b> 662544 <b>91531</b> NS	780727 <b>28565</b>		780727 <b>27564</b>
x 24	40 50	50	699573 <b>44889</b> NS	780727 <b>10374</b> NS			
	60	50	699573 <b>53375</b> NS				
	80	50	699573 <b>45419</b> NS	780727 <b>72209</b>	780727 <b>76498</b> NS	666233 <b>34206</b> NS	662610 <b>85068 NS</b>
	120	50	662610 <b>85067</b>	662544 <b>91532</b> NS	780727 <b>30029</b> NS		662610 <b>85069 NS</b>
30" Belts							
x 30	40	50	662610 <b>53470</b>		70070700000	666233 <b>90038</b>	662611 <b>89958</b> NS
	60	50 50	699573 <b>45985</b> 699573 <b>46105</b>	780727 <b>64439</b>	780727 <b>28583</b> 780727 <b>28582</b>	666233 <b>90039</b> 666233 <b>90040</b> NS	662544 <b>91549</b> 780727 <b>27579</b>
	80						

Additional sizes, grits and scalloped edge belts are available MTO (made-to-order). Contact your Norton representative for availability, order quantities and lead-times. 40 and 50 grit BlueFire belts are furnished in BlueFire R887D (Y-weight Polyester); 60-120 grits are supplied in BlueFire R823P (X-weight Polyester). Joints – All belts are PG jointed; a butt joint joined with flexible tape for contour grinding. V = Vendible package. Ideal for vending machines and small jobs. 5 belts per pack / 5 packs per carton. Order in multiples of 25.

## COATED & NON-WOVEN ABRASIVES Portable Belts





Portable belts are ideal for all your metal and woodworking applications. Choose 36 - 50 grits for rough/heavy-duty applications, 60 - 100 for intermediate, and 100 - 220 for finishing/polishing applications.

The belts listed are popular stock sizes, but additional sizes, specifications, and backing materials, are available made-to-order.

#### Applications:

Size Range: Grit Range: Abrasive Grain: Machine Used: Grinding and finishing all metals, blending welds, sanding and finishing wood, glass seaming, and polishing 3" to 4" wide, 15-1/2" to 24" long 36-220

Ceramic Alumina, Zirconia Alumina, Aluminum Oxide



BELT IN-LINE DRUM SANDER SANDER

### Cross Reference Guide

	BEST	BETTER	GOOD
NORTON	RedHeat R983	BlueFire R831	Gemini R215/ Metalite R255
3M	747D, 777F, 778F, 784F, 987F, 977F	577F	240DZ, 340A, 340D
Hermes	—	RB480	RB320
Klingspor	CS912	CS411	LS309XH
Sait	_	Z-H	1A-X, 2A-X, AO-X, LA-X
SIA	—	2800, 2829, 2925	2920, 2928, 2921, 2951, 2925
VSM	XK870X, XK870X	ZK713X	KK504X, KP510E

### Material-to-Product Recommendation Guide

	BEST	BETTER	GOOD	
	RedHeat R983	Bluefire R831	Gemini R215	Metalite R255
Wood		•	•	•
Carbon Steel / Stainless Steel	•	•		
Brass / Bronze / Aluminum		•	•	•



#### Exceptional performance, especially on hard-to-grind alloys

## REDHEAT R983 CERAMIC ALUMINA

- · Premium ceramic abrasive provides sharp cutting, exceptional life and value, especially on hard-to-grind alloys
- "Supersize" grinding-aid for longer life, cooler cut and minimized loading
- Strong Y-weight polyester, waterproof cloth backing for improved grain adhesion, reduced edge-fray and better body retention, resulting in longer life and product consistency



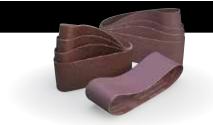
Better choice for stainless steel and wood

## BLUEFIRE R831 ZIRCONIA ALUMINA

- Premium, self-sharpening zirconia alumina abrasive provides superior cut on all surfaces, lasts substantially longer, and cuts faster than the next leading competitor in side-by-side comparisons
- Proprietary patented grain technology produces one of the finest scratch patterns in the industry for finer looking finish; open-coat design and strong Y-weight cotton backing for reduced loading and extended life
- · Reversible butt splice allows belt to be used in either direction for longer life



## COATED & NON-WOVEN ABRASIVES Portable Belts



Good choice to minimize loading on wood and soft metals - where initial price is the main concern

## GEMINI R215 / METALITE R255 ALUMINUM OXIDE

- Premium aluminum oxide abrasive for fast initial cut rate
- Heavy, durable X-weight cotton backing is ideal for heat sensitive applications
- Strong butt joint that allows the belt to be run in either direction

### Portable Belts for Belt Sanders

				ALOMINU	-	ALOMIN	ALUMUNI
					1000	12 365 52	C. Participant
			<b>JOBPACK</b>	<b>JOBPACK</b>			
		TIER:	BETTER	GOOD		GOOD	GOOD
		TRADENAME:	BLUEFIRE R831	GEMINI R215	_	GEMINI R215	METALITE R255
		ABRASIVE:	Zirconia Alumina	Aluminum Oxide		Aluminum Oxide	Aluminum Oxide
		BACKING:	Y-Weight Cotton	X-Weight Cotton		X-Weight Cotton	X-Weight Cotton
		JOINT:	Plyweld	Plyweld		Plyweld	Plyweld
		GRAIN COATING:	Open Coat	Open Coat		Open Coat	Open Coat
		OTHER:					UPC Bar Coded
SIZE (W x L)	GRIT	PKG./CASE	PART #	PART #	STD. PKG.	PART #	PART #
x 18	36				5		780727 <b>80447</b>
	50	5/25*	076607 <b>49259</b>	076607 <b>00964</b>	10		780727 <b>27994</b>
	80	5/25*	076607 <b>49258</b>	076607 <b>00968</b>	10		780727 <b>27993</b>
	120	5/25*	076607 <b>49256</b>		10		780727 <b>27992</b>
x 21	36	5/25*	076607 <b>49266</b>	076607 <b>01741</b>			
	40				10		780727 <b>27927</b>
	50	5/25*	076607 <b>49265</b>	076607 <b>01740</b>	10		780727 <b>27926</b>
	60				10	780727 <b>27925</b>	
	80	5/25*	076607 <b>49264</b>	076607 <b>02064</b>	10		780727 <b>27924</b>
	100	5/25*	076607 <b>49263</b>		10		780727 <b>27923</b>
	120	5/25*	076607 <b>49262</b>	076607 <b>02062</b>	10		780727 <b>27922</b>
	220	5/25*		076607 <b>05287</b>			
x 24	36	5/25*	07660749272	076607 <b>01743</b>	5		780727 <b>81847</b>
	40				10		780727 <b>27937</b>
	50	5/25*	076607 <b>49271</b>	076607 <b>01742</b>	10		780727 <b>27936</b>
	60				10	780727 <b>27935</b>	
	80	5/25*		076607 <b>02067</b>	10		780727 <b>27934</b>
	100	5/25*		076607 <b>02066</b>	10		780727 <b>27933</b>
	120	5/25*	07660749268	076607 <b>02065</b>	10		780727 <b>27932</b>
x 24	36	5/25*	07660749278	076607 <b>01745</b>	5		780727 <b>80438</b>
	40				10		78072727947
	50	5/25*	076607 <b>49277</b>	076607 <b>01744</b>	10		780727 <b>27946</b>
	60				10	780727 <b>27945</b>	
	80	5/25*	076607 <b>49276</b>	076607 <b>02069</b>	10		780727 <b>27944</b>
	100	5/25*			10		78072727943
	120	5/25*	076607 <b>49274</b>	076607 <b>02068</b>	10		780727 <b>27942</b>
	180	5/25*		076607 <b>05285</b>			

\*Job Pack packing standards: 5 belts/Job Pack; 5 Job Packs per case. Order by number of packs, in multiples of 5 packs.

### Portable Belts for Pneumatic In-Line Drum Sanders

					Aurean a
		TIER:	BEST	BETTER	GOOD
		TRADENAME:	REDHEAT R983	BLUEFIRE R823P	GEMINI R215
		ABRASIVE:	Ceramic Alumina	Zirconia Alumina	Aluminum Oxide
		BACKING:	Y-Weight Polyester	X-Weight Polyester	X-Weight Cotton
		JOINT:	Plyweld	Plyweld	Plyweld
		GRAIN COATING:	Closed Coat/Supersize	Closed Coat	Open Coat
SIZE (W x L)	GRI1	STD. PKG.	PART #	PART #	PART #
3-1/2 x 15-1/2	36	10	780727 <b>00783</b>		780727 <b>21997</b>
	60	10	780727 <b>18750</b>		780727 <b>22000</b>
	80	10	780727 <b>18751</b>	780727 <b>53074</b>	780727 <b>21995</b>
	120	10	78072718753		





A broad selection of sizes and grits for most dimensioning, intermediate grinding and polishing applications.

The belts listed are popular stock sizes, but additional sizes, specifications, and backing materials, are available made-to-order.

> Benchstand and Backstand Belts: grinding and deburring of all metals, heavy stock removal, blending, dimensioning and shaping, polishing. Centerless, Conveyor and Platen Belts: intermediate grinding stainless and carbon, moderate-pressure applications, dimensioning and finishing. 1" to 10" wide, 36" to 132" long

Size Range: Grit Range: Abrasive Grain: Machine Used:

**Applications:** 

Ceramic Alumina, Zirconia Alumina, Aluminum Oxide



24 - 320

BACKSTAND BELT GRINDER

BENCHSTAND GRINDER

### **Cross Reference Guide**

	BEST	BEST	BETTER	BETTER	BETTER	GOOD	GOOD
NORTON	Blaze R980P	RedHeat R983	BlueFire R821P	BlueFire R823P	BlueFire R884P	Gemini R766	Gemini R228
3M	963G/H, 966F, 967F, 997F, 984F, 784F, 947A	747D, 777F, 778F, 784F, 987F, 977F	_	551E	561D	361F, 363F	241D, 251D, 341D
Hermes	CR454, CR456	CN464	—	RB486 X, RB346, RB486	RB48024YX, RB48444Z, RB485Z	RB377XY, SB378, RB34MJ	RB320X, HSB
Klingspor	CS610	CS912	CS411X	CS411X, CS416	CS411	CS412, CS413	CS310
SIA	2515, 2503	_	—	_	2820	_	2918, 2928
VSM	XK875X, XK885Y, XK880Y	XK870X, XK870X	—	ZK713X, KK715X	KK716, ZK713T	LK719X, KK711X	KK511X, KK711

#### Material-to-Product Recommendation Guide

	BEST	BETTER			GOOD	
	Blaze R980P	BlueFire R884P	BlueFire R823P	BlueFire 821P	Gemini R766	Gemini R228
Aluminum		•	•		•	
Cast Iron	•		•		•	
Brass / Bronze		•	•		•	
Die Castings	•		•		•	
Carbon Steel	•		•		•	•
Glass / Ceramics	•			•	•	
Stainless Steel and Alloys	•	•	•		•	
Wood		•			•	

### Grit Selection Recommendation Guide

STOCK REMOVAL	INTERMEDIATE	FINISHING
24 – 50 grit	60 – 100 grit	120 – 320 grit

## TECH TIP

#### Troubleshooting Guide

0					
Problem	Correction	Problem	Correction		
Loading	Decrease infeed pressure or belt speed	Belt breakage	Reduce belt tension		
Shedding	Reduce applied pressure		Use less aggressive contact wheel		
Ū.	Use a less aggressive contact wheel		Check tracking mechanism for belts tracking erratically		
	Dress contact wheel if worn or damaged				
	Use entire surface of belt				





Best for mild and carbon steel, stainless, cobalt, chrome, inconel, titanium

## BLAZE R980P CERAMIC ALUMINA

- Next-generation cooler cutting Norton SG ceramic alumina grain lasts 50% to 200% longer on mild and carbon steel, stainless, cobalt, chrome, inconel and titanium with better metal integrity
- Durable Y-weight polyester, waterproof cloth backing for improved grain adhesion, reduced edge-fray, and better body retention, resulting in longer life and product consistency
- Lubricating grinding aid coating means cooler cut, burn-free grinding of heat-sensitive materials, minimized loading, and improved part finish and integrity

#### Exceptional performance, especially on hard-to-grind alloys

## REDHEAT R983 CERAMIC ALUMINA

- Premium ceramic abrasive provides sharp cutting, exceptional life and value, especially on hard-to-grind alloys
- "Supersize" grinding-aid for longer life, cooler cut and minimized loading
- Strong Y-weight polyester, waterproof cloth backing for improved grain adhesion, reduced edge-fray and better body
  retention, resulting in longer life and product consistency



#### Better choice for heaviest-pressure applications

## BLUEFIRE R821P/R823P/R884P ZIRCONIA ALUMINA

- Strong, self-sharpening zirconia alumina abrasive for fast, aggressive cut and 30% longer life than competitive zirconia belts
- Durable resin bond for excellent grain retention and product life
- R821P Y-weight cotton backing provides durability and even wear on coarser grit stock removal applications;
- R823 has flexible X-weight polyester waterproof backing to excel on light- to moderate-pressure, applications
- R884P has a durable Y-weight polyester waterproof cloth backing that excels on medium- to high pressure applications



## Good choice for difficult-to-grind materials (aluminum, brass, bronze, stainless, carbon steel, titanium, etc.)

## GEMINI R766 ALUMINUM OXIDE

- Premium aluminum oxide abrasive blend is ideal when primary purchasing criteria is a good-performing, economically-priced, general-purpose belt
- Y-weight waterproof polyester backing withstands light- to moderately-demanding applications and provides extended life on dry grinding applications
- · Resin bond system provides improved edge retention and 30% plus improvement in life versus key competitors



## Good choice for fine grit metalworking blending and polishing where initial price is the main concern

## GEMINI R228 ALUMINUM OXIDE

- Premium aluminum oxide abrasive delivers fast initial cut rate
- · Heavy, durable X-weight cotton backing is ideal for heat sensitive applications
- Strong butt joint that allows the belt to be run in either direction



## 1" to 6" wide, 36" to 72" long

			A REAL PROPERTY.		and the second s	G & 04	
			BEST	BETTER BLUEFIRE R821P	BETTER	GOOD	GOOD
		ABRASIVE:	BLAZE R980P Ceramic Alumina	Zirconia Alumina	<b>BLUEFIRE R823P</b> Zirconia Alumina	GEMINI R766 Aluminum Oxide Blend	GEMINI R228 Aluminum Oxide
			Y-Weight Polyester	Y-Weight Cotton	X-Weight Polyester	Y-Weight Polyester	X-Weight Cotton
		OTHER:	Supersize				
E (W x L)	GRIT	STD. PKG.	PART #	PART #	PART #	PART #	PART #
42	36	50	662544 <b>76825</b>				780727 <b>91710</b>
	40	50		780727 <b>26905</b>			780727 <b>20910</b>
	50 60	50 50	662544 <b>76826</b> NS	780727 <b>26904</b>	700707 <b>00E06</b>	666233 <b>90042</b>	780727 <b>20905</b>
	80	50	699573 <b>45486</b> 662610 <b>41539</b>	780727 <b>26903</b> 780727 <b>26902</b>	780727 <b>28596</b> 780727 <b>28594</b>	666233 <b>34502 NS</b>	780727 <b>20900</b> 780727 <b>20895</b>
	100	50	662610 <b>43462</b>	10012120302	780727 <b>28592</b>		780727 <b>20890</b>
	120	50	662610 <b>38660</b>		780727 <b>28590</b>		780727 <b>20885</b>
	150	50			78072728588		78072720880
	180	50			780727 <b>28586</b>		780727 <b>20875</b>
	220	50			780727 <b>00001</b>		780727 <b>20871</b>
	240	50					780727 <b>20870</b>
/2 x 60	320 36	50 10	699573 <b>45578</b>				780727 <b>20865</b> 780727 <b>21060</b>
/2 X UU	40	10	636425 <b>95003</b>				10012121000
	50	10					780727 <b>87807</b>
	60	10	699573 <b>45631</b>			666233 <b>90045</b>	10012101001
	80	10	699573 <b>45579</b>			666233 <b>90046 NS</b>	
	100	10			780727 <b>65077</b>		
	120	10	662610 <b>56493</b> NS		780727 <b>26984</b>		
48	24	10	000 105 000 00	70070707400		00000001	780727 <b>26130</b>
	36 40	10 10	636425 <b>92057</b>	780727 <b>27103</b> 780727 <b>27102</b>		666233 <b>90047</b>	780727 <b>21255</b>
	40 50	10	699573 <b>45193</b> 699573 <b>46716</b>	780727 <b>27102</b>		666233 <b>90048</b> NS	780727 <b>21250</b> 780727 <b>21245</b>
	60	10	699573 <b>44423</b>	780727 <b>27100</b>	780727 <b>28621</b>	666233 <b>90050</b>	780727 <b>21240</b>
	80	10	699573 <b>45100</b>	780727 <b>27099</b>	780727 <b>28619</b>	666233 <b>90051</b>	780727 <b>21235</b>
	100	10	662610 <b>52522</b>		780727 <b>28617</b>		780727 <b>21230</b>
	120	10	662610 <b>52520</b>		780727 <b>28615</b>		780727 <b>21225</b>
	150	10			780727 <b>28613</b>		780727 <b>23246</b>
	180	10			780727 <b>28611</b>		780727 <b>21223</b>
	220 320	10 10			780727 <b>28609</b>		780727 <b>63677</b> 780727 <b>46387</b>
60	24	10					662610 <b>54787</b> NS
00	36	10	699573 <b>45196</b>			666233 <b>90052</b>	00201004101100
	40	10	699573 <b>94425</b>	780727 <b>27124</b>			780727 <b>21300</b>
	50	10					780727 <b>62537</b>
	60	10	699573 <b>44901</b>	780727 <b>27122</b>		666233 <b>90055 NS</b>	780727 <b>21290</b>
	80	10	636425 <b>92574</b>	780727 <b>27121</b>			780727 <b>21285</b>
	100	10	66061040700		70070764050		780727 <b>21280</b>
	120 150	10 10	662610 <b>42738</b>		780727 <b>61958</b>		780727 <b>44018</b>
	180	10			780727 <b>02695</b>		780727 <b>20441</b>
	220	10			780727 <b>06282</b> NS		780727 <b>44020</b>
	240	10					780727 <b>61862</b>
	320	10					780727 <b>02825</b>
72	24	10	662544 <b>33969</b>				
	36	10	699573 <b>45460</b>	780727 <b>27147</b>		666233 <b>90057</b>	780727 <b>21335</b>
	40 50	10 10	699573 <b>46729</b>	780727 <b>27146</b>		666233 <b>90058</b> NS	70070704004
	50 60	10	699573 <b>44966</b> 699573 <b>45157</b>	780727 <b>27145</b> 780727 <b>27144</b>	780727 <b>28645</b>	666233 <b>90060 NS</b>	780727 <b>84894</b> 780727 <b>21325</b>
	80	10	699573 <b>44961</b>	780727 <b>27142</b>	780727 <b>28643</b>		780727 <b>21320</b>
	100	10	662610 <b>41897</b>		662610 <b>25537</b> NS		780727 <b>23235</b>
	120	10	662610 <b>44095</b>		780727 <b>28639</b>		780727 <b>21318</b>
	150	10			780727 <b>61770 NS</b>		780727 <b>61973</b>
					70070700050		70070740400
	180 220	10 10			780727 <b>63853</b> 780727 <b>28633</b>		780727 <b>18488</b> 780727 <b>65601</b>

NS Non-Stock, contact your Norton representative for current order quantities and lead times.

\* Std. Pkg. = 20 Belts

Continued



## 1" to 6" wide, 36" to 72" long continued

				the lost	and the second	an abin		
		TIED.	DECT	BETTER	BETTER	BETTER	GOOD	GOOD
		TRADENAME:	BEST BLAZE R980P	BLUEFIRE R821P	BLUEFIRE R823P	BLUEFIRE R884P	GEMINI R766	GEMINI R228
			Ceramic Alumina	Zirconia Alumina	Zirconia Alumina	Zirconia Alumina	Aluminum Oxide Blend	
			Y-Weight Polyester Supersize	Y-Weight Cotton	X-Weight Polyester	Y-Weight Polyester	Y-Weight Polyester	X-Weight Cotton
ZE (W x L)	GRIT			PART #	PART #	PART #	PART #	PART #
1/2 x 48	36	10					666233 <b>90061</b>	780727 <b>21540</b>
	50	10		780727 <b>27213</b>				
	60	10					666233 <b>90064</b>	780727 <b>21525</b>
1 10 00	80	10				700707070700000	666233 <b>90065</b> NS	780727 <b>21520</b>
1/2 x 60	24	10	CODE 70 4 40 CO	700707 <b>07005</b>		780727 <b>37759 NS</b>	6660000000CC NC	70070701610
	36 40	10 10	699573 <b>44963</b> 699573 <b>46523</b>	780727 <b>27235</b> 780727 <b>27234</b>			666233 <b>90066</b> NS 666233 <b>90067</b> NS	780727 <b>21610</b> 780727 <b>21605</b>
	40 50	10	699573 <b>45300</b>	780727 <b>27233</b>			666233 <b>90068</b>	780727 <b>21605</b>
	60	10	699573 <b>45002</b>	780727 <b>27232</b>	780727 <b>28692</b>	780727 <b>21383 NS</b>	000233 <b>30000</b>	780727 <b>21595</b>
	80	10	699573 <b>46095</b>	780727 <b>27231</b>	780727 <b>28690</b>		666233 <b>90070</b>	780727 <b>21590</b>
	100	10	662610 <b>41380</b>		78072768991			780727 <b>21585</b>
	120	10			780727 <b>28686</b>			780727 <b>21580</b>
	180	10			780727 <b>28682</b>			780727 <b>21570</b>
	220	10			780727 <b>78217 NS</b>			780727 <b>21565</b>
x 36	36	10						780727 <b>22110</b>
	40	10						780727 <b>22105</b>
	50	10		780727 <b>27475</b>	7007070007		666233 <b>90073</b>	780727 <b>22100</b>
	60	10		70070707470	780727 <b>28827</b>		666233 <b>90074</b>	780727 <b>22095</b>
	80 100	10 10		780727 <b>27473</b>	780727 <b>28825</b> 780727 <b>28823</b>		666233 <b>90075</b>	780727 <b>22090</b> 780727 <b>22085</b>
	120	10			780727 <b>28823</b>			780727 <b>22085</b>
	120	10			10012120021			780727 <b>22079</b>
	180	10						780727 <b>22075</b>
	240	10						780727 <b>22926</b>
	320	10						780727 <b>22071</b>
x 54	36	10						780727 <b>22185</b>
	40	10						780727 <b>22180</b>
	50	10					666233 <b>90078 NS</b>	780727 <b>22175</b>
	60	10	662610 <b>63419</b> NS	780727 <b>27518</b>	780727 <b>25116 NS</b>			780727 <b>22170</b>
	80	10	699573 <b>45139</b> NS		780727 <b>82996</b>			780727 <b>22165</b>
	100	10						780727 <b>22160</b>
	120	10	0005 4404 400		780727 <b>28847</b>			780727 <b>22155</b>
x 60	24	10	662544 <b>61488</b>			700707 <b>070FF</b>		780727 <b>72342</b> NS
	36 40	10 10	699573 <b>45298</b> 699573 <b>91732</b>			780727 <b>37955</b>		780727 <b>44693</b>
	50	10	699573 <b>46715</b>					780727 <b>61630</b>
	60	10	636425 <b>94485</b>		780727 <b>74790</b>			78072762861
	80	10	699573 <b>45099</b>		780727 <b>65086</b>			78072784685
	100	10			10012100000			78072763161
	120	10	662544 <b>16188</b>		780727 <b>66229</b>			78072787840
x 72	36	10				780727 <b>25984 NS</b>		
( 48	36	10	699573 <b>45143</b>	780727 <b>27698</b>			666233 <b>90081</b>	780727 <b>22590</b>
	40	10		780727 <b>27697</b>			666233 <b>90082</b>	
	50	10		780727 <b>27696</b>			666233 <b>90083</b> NS	780727 <b>22580</b>
	60	10	699573 <b>44422</b>	780727 <b>27695</b> *	780727 <b>28937</b> *		666233 <b>90084</b>	70070707070
	80	10		780727 <b>27694</b> *	780727 <b>28935</b> *		666233 <b>90085</b>	780727 <b>22570</b>
	100	10			780727 <b>28933</b> *			780727 <b>22565</b>
	120	10			780727 <b>28931</b> *			780727 <b>22560</b>
	150 180	10 10			780727 <b>70042</b>			780727 <b>22555</b> 780727 <b>22550</b>
	220	10						780727 <b>22546</b>
	240	10						780727 <b>22545</b>
	0	10						780727 <b>22543</b>

NS Non-Stock, contact your Norton representative for current order quantities and lead times.

\* Std. Pkg. = 20 Belts

Continued



## 1" to 6" wide, 36" to 72" long continued

				A CONTRACTOR OF THE OWNER OWNER OF THE OWNER OWNE	a al allutrig an alter	
	TIER:	BEST	BETTER	BETTER	BETTER	GOOD
	TRADENAME:	BLAZE R980P	BLUEFIRE R821P	BLUEFIRE R823P	BLUEFIRE R884P	GEMINI R228
	ABRASIVE:	Ceramic Alumina	Zirconia Alumina	Zirconia Alumina	Zirconia Alumina	Aluminum Oxide
	BACKING:	Y-Weight Polyester	Y-Weight Cotton	X-Weight Polyester	Y-Weight Polyester	X-Weight Cotton
	OTHER:	Supersize				
GRIT	STD. PKG.	PART #	PART #	PART #	PART #	PART #
60	10				780727 <b>46982</b> NS	
36	10					780727 <b>22680</b>
40	10		780727 <b>27762</b>			780727 <b>22679</b> NS
60	10	699573 <b>45149</b>	780727 <b>28957</b> *			780727 <b>22665</b> *
80	10			780727 <b>28955</b>		780727 <b>22660</b> *
100	10	662544 <b>77452</b> NS				
120	10					780727 <b>63882</b>
	60 36 40 60 80 100	TRADENAME:           ABRASIVE:         BACKING:           0THER:         0THER:           60         10           36         10           40         10           60         10           36         10           40         10           60         10           100         10	TRADENAME:         BLAZE R980P           ABRASIVE:         Ceramic Alumina           BACKING:         Y-Weight Polyester           OTHER:         Supersize           GRIT         STD. PKG.         PART #           60         10           36         10           40         10           60         10           60         10           60         10           60         10           60         10           60         10           60         10           60         10           60         10           60         10           60         10           60         10           60         10           60         10           60         10           100         10	TRADENAME:         BLAZE R980P         BLUEFIRE R821P           ABRASIVE:         Ceramic Alumina         Zirconia Alumina           BACKING:         Y-Weight Polyester         Y-Weight Cotton           OTHER:         Supersize         Y-Weight Polyester           GRIT         STD. PKG.         PART #           60         10         10           36         10         40           40         10         78072727762           60         10         69957345149           80         10         100           100         10         66254477452 NS	TRADENAME:         BLAZE R980P         BLUEFIRE R821P         BLUEFIRE R823P           ABRASIVE:         Ceramic Alumina         Zirconia Alumina         Zirconia Alumina           BACKING:         Y-Weight Polyester         Y-Weight Cotton         X-Weight Polyester           OTHER:         Supersize         Supersize         Free Content of the second seco	Image: TitleR:         BEST         BETTER         BETTER         BETTER         BETTER           TRADENAME:         BLAZE R980P         BLUEFIRE R821P         BLUEFIRE R823P         BLUEFIRE R884P           ABRASIVE:         Ceramic Alumina         Zirconia Alumina         Zirconia Alumina         Zirconia Alumina           BACKING:         Y-Weight Polyester         Y-Weight Cotton         X-Weight Polyester         Y-Weight Polyester           OTHER:         Supersize

NS Non-Stock, contact your Norton representative for current order quantities and lead times.

\* Std. Pkg. = 20 Belts

#### **Belt Cleaning Stick**



- This solid, rubber cleaning stick is designed to remove wood and other non-metallic materials that build up on belt surface during use
- Apply it to the face of the belt, while running, to remove unwanted materials and prolong the overall life of the belt up to 10 times

DESCRIPTION	STD. PKG.	PART #
1-3/8 x 1-3/8 x 6	10	076607 <b>01717</b>

## TECH TIP

A light-bodied grease applied to a benchstand belt surface will reduce loading and greatly enhance the belt life and performance when grinding soft, malleable nonferrous materials such as aluminum, brass, bronze and copper.



## Take Advantage of FastTrack Service!

For non-stock belts, FastTrack Service offers all the benefits of an ISO 9001 quality manufacturer and the advantages of a coated abrasives express belt service. As the industry's leading producer of abrasive material and backings, our FastTrack service offers an extensive range of Norton made-to-order belts including Blaze ceramic alumina, BlueFire zirconia alumina, and versatile aluminum oxide and silicon carbide belts.

Manufacturing Lead-times:

- Narrow belts: (1/2" 12" wide) two days
- Wide belts (14" 52" wide) three days
- Size Availability:
- Maximum width: 52"
- 1/2" and greater widths; 25" and greater lengths

Please see the FastTrack Service Made-to-Order Belts section of this catalog for complete details.



## 2" to 10" wide, over 70" long

				Contraction of the second		Larres Car	C. B. T. SIM	
		TIER:	BEST	BEST	BETTER	BETTER	GOOD	GOOD
		TRADENAME:	BLAZE R980P	REDHEAT R983	BLUEFIRE R884P	<b>BLUEFIRE R823P</b>	GEMINI R766	GEMINI R228
		ABRASIVE:	Ceramic Alumina	Ceramic Alumina	Zirconia Alumina	Zirconia Alumina	Aluminum Oxide Blend	Aluminum Oxide
		BACKING:	Y-Weight Polyester	Y-Weight Polyester	Y-Weight Polyester	X-Weight Polyester	Y-Weight Polyester	X-Weight Cotton
		OTHER:	Supersize	Supersize				
SIZE (W x L)	GRIT	STD. PKG.	PART #	PART #	PART #	PART #	PART #	PART #
x 132	36	10		780727 <b>53086</b>	780727 <b>50016</b>		666233 <b>47337</b>	
	40	10			780727 <b>50015</b>		666233 <b>90089 NS</b>	
	50	10		780727 <b>40771</b>	780727 <b>50013</b>			
	60	10			780727 <b>50011</b>		666233 <b>90091 NS</b>	780727 <b>21445 NS</b>
	80	10		780727 <b>01958</b>	780727 <b>50008</b>			780727 <b>21440</b>
	120	10				780727 <b>28662</b>		
3 x 79	50	10	662610 <b>90276</b>					
	60	10			780727 <b>48280</b>			
3 x 90	36	10	699573 <b>46319</b>					780727 <b>85831</b>
3 x 132	24	10			780727 <b>50140</b>			
	36	10	699573 <b>44710</b>	780727 <b>53087</b> NS	780727 <b>50138</b>		666233 <b>90093</b>	780727 <b>21900</b>
	36	10			780727 <b>50139</b>			
	40	10	699573 <b>44964</b>	780727 <b>01614 NS</b>				
	50	10	699573 <b>44763 NS</b>	780727 <b>03709</b>	780727 <b>50135</b>			780727 <b>21890</b>
	60	10	699573 <b>44958</b>			780727 <b>28794</b>	666233 <b>90096 NS</b>	780727 <b>21885</b>
	80	10	699573 <b>44764</b>			780727 <b>28792</b>		780727 <b>21880</b>
	100	10				780727 <b>28790</b>		
	120	10				780727 <b>28789</b>		780727 <b>21870</b>
	180	10				780727 <b>28785</b>		780727 <b>21860</b>
x 79	36	10		662610 <b>22622</b>				
	40	10			780727 <b>74955</b>			
x 100	36	10			780727 <b>68679</b>			
x 132	24	10			780727 <b>50289</b> NS			
	36	10	699573 <b>43852</b>	780727 <b>39662</b>	780727 <b>50287</b>		666233 <b>26093</b>	
	40	10			7007078777		666233 <b>90098 NS</b>	
	60	10			780727 <b>50281</b>			70070787777
	80	10			780727 <b>50279</b>			780727 <b>22385</b>
70 0/1	120	10			70070787177			780727 <b>22375</b>
6 x 78-3/4	40	10			780727 <b>25150</b>			
6 x 79	36	10			780727 <b>38105</b>			
407	80	10			780727 <b>79322</b>			20020200000
x 107	36	10						780727 <b>22795</b>
	50	10						780727 <b>49887</b>
	60	10						780727 <b>22780</b> *
	80	10						780727 <b>22775</b> *
10 x 70-1/2	36	10						780727 <b>22840</b>
	50	10					00000047047047	780727 <b>22830</b> NS
	60	10					666233 <b>47345</b> NS	780727 <b>22825</b>
	80	10		nt order quantities and lea				780727 <b>22820</b>

NS Non-Stock, contact your Norton representative for current order quantities and lead times.

\* Std. Pkg. = 20 Belts





## COATED & NON-WOVEN ABRASIVES Wide Belts

A small selection of stock products in popular sizes are available for wide belt woodworking and metalworking applications.

#### Applications: Metalworking

Metalworking wide belts are used for plate dimensioning, slag grinding, machining, deburring, and other general metalworking applications. They are usually cloth and are closed coat.

#### Woodworking

Cloth woodworking wide belts are used for rough stock removal and dimensioning Paper woodworking belts are used to upgrade the finish on furniture and other wood components. Stock: 25" - 52" wide, 48" to 103" long Stock: 36 - 220Zirconia Alumina, Aluminum Oxide

### Metalworking Cloth Belt Recommendation Guide/Cross Reference

Size Range:

Grit Range: Abrasive Grain:

	TOTAL PERFORMANCE INITIAL PRI										
	BEST		BETTER			GOOD					
NORTON	H-wt. Polyester Blaze R940P	Y-wt. Polyester Blaze R980P	H-wt. Polyester BlueFire R840P	Y-wt. Polyester BlueFire R887D/R884P	X-wt. Polyester BlueFire R823P	Y-wt. Polyester Gemini R766	X-wt. Polyester Gemini R766X	X-wt. Cotton Gemini R228			
3M	966F, 984F, 994F, 997F	963G/H, 966F, 967F, 997F, 984F, 784F, 947A	561F	577F, 561D	551E	361F, 363F	353F, 384F	241D, 251D, 341D			
Ekamant/ Uneeda	_	PS991, PS992	PZ628	PZ528, PZ633	XZ677	PA631, PG730, PG830	XA911	XA167			
Hermes	CB441Z	CR456	SB488YR	RB48624YX, RB48644Z, RB48024YX, RB48444Z, RB485Z	RB486	RB377XY, SB378	RB377XY	RB320X, HSB			
Klingspor		CS610	CS811	CS409, CS411	CS411X, CS416	CS412, CS413	CS341, CS710	CS310			
SIA	_	2515, 2503	C888DP	2803, 2815, 2829, 2824, 2820	_	_	2820	2918, 2928			
VSM	XK888Z, XK877Z	XK875X, XK885Y, XK880Y	KK717	KK716	ZK713X, ZK713T, KK715X	LK719X, KK711X	LK719X, KK711X	KK511X			

### Woodworking Cloth and Paper Belt Recommendation Guide/Cross Reference

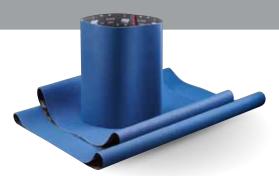
TOTAL PERFORMANCE

**INITIAL PRICE** 

	BEST		BETTER	GOOD			
	Y-wt. Cotton	F-wt. Paper	Y-wt. Cotton	X-wt. Cotton	F-wt. Paper	F-wt. Paper	
	Dust-Less	Dust-Less			Dust-Less	Dust-Less	
NORTON	R963	H975	BlueFire R831	Gemini R215	H295	H275	
3M	960G, 970DZ, 990FZ, 991FZ	966UZ	_	240DZ, 340A, 340D	260UZ	364UZ	
Ekamant/ Jneeda	_	—	XZ677	RKX, RKXO		ARKFO, EKA1000, EKABlack	
Hermes		CB115	RB480	RB320	BW114	BW110, BW114, CB115	
Klingspor	—		C409, CS411	LS309XH	PS22	PS29	
SIA	_	—	2803, 2820, 2829	2920, 2928, 2921, 2951	1919	1909,1918,1919 CRS,1993	
/SM	XK760X, XK760Y	XP760	KK713X, KK715X	KK504X, KP510E	KK508E	KP709, KP520, KP508E, KP510E	



## COATED & NON-WOVEN ABRASIVES Wide Belts



Better choice for all metal and wood applications due to the cut rate and life of the proprietary Norton BlueFire grain

## BLUEFIRE R884P/R823P ZIRCONIA ALUMINA CLOTH

- Strong, self-sharpening zirconia alumina abrasive for fast, aggressive cut and 30% longer life than competitive zirconia belts
- Durable resin bond for excellent grain retention and product life
- R884P has a durable Y-weight polyester waterproof cloth backing that excels on medium- to high pressure metal applications
- R823 has flexible X-weight polyester waterproof backing to excel on light- to moderate-pressure metal applications

Good choice for abrasive planing and dimensioning of glued-up stock and banded particleboard  $% \left( {\left[ {{{\mathbf{n}}_{\mathrm{s}}} \right]} \right)$ 

## GEMINI R215 ALUMINUM OXIDE CLOTH

- Premium aluminum oxide abrasive for fast initial cut rate
- · Heavy, durable X-weight cotton backing is ideal for heat sensitive applications
- Strong butt joint that allows the belt to be run in either direction

		TIER:	BETTER	BETTER	GOOD
		TRADENAME::		BLUEFIRE R823P	GEMINI R215
		ABRASIVE:		Zirconia Alumina	Aluminum Oxide
			Y-Weight Polyester Cloth	X-Weight Polyester Cloth	X-Weight Cotton Cloth
		JOINT/FLEX:		Plyweld, RR	Plyweld, RR
SIZE (W x L)	GRIT	STD. PKG.	PART #	PART #	PART #
25 x 48	80	3		699573 <b>44781</b>	
25 x 60	80	3		699573 <b>28117</b>	
	120	5		699573 <b>28115</b>	
36 x 75	36	2	699573 <b>50934</b>		
	60	3	699573 <b>50931</b>		
	120	5		699573 <b>29014</b>	
	180	5		699573 <b>44869</b>	
37 x 60	50	3	699573 <b>06219</b>		
	80	3		699573 <b>29019</b>	699573 <b>25709</b>
	100	5		699573 <b>28103</b>	699573 <b>25708</b>
	120	5		699573 <b>29018</b>	699573 <b>25707</b>
	150	5		699573 <b>28102</b>	699573 <b>02955</b>
	180	5		699573 <b>28101</b>	
	220	5		699573 <b>28100</b>	
37 x 75	36	2	699573 <b>50959</b>		
	50	3	699573 <b>05107</b>		
	80	3	699573 <b>50955</b>		699573 <b>25957</b>
	100	5			699573 <b>23880</b>
	120	5		699573 <b>07358</b>	699573 <b>25760</b>
	150	5			699573 <b>05737</b>
	180	5		699573 <b>06734</b>	
52 x 75	120	5		699573 <b>13510</b>	

NS Non-Stock, contact your Norton representative for current order quantities and lead times.

Due to the wide varieties of machines and applications, the majority of wide belts are non-stock. Our FastTrack belt service is available on the majority of products with 3-day lead-time on orders up to two cases quantity.

#### TECH TIP

6" wide belts can be used on machines that normally use 37" wide belts.





## COATED & NON-WOVEN ABRASIVES FastTrack Service Made-to-Order Belts

For many non-stock belts, our FastTrack belt service offers all the benefits of an ISO 9001 quality manufacturer and the advantages of a coated abrasives express belt service. As the industry leader of abrasive belts, our FastTrack belt service has an extensive range of Norton made-to-order belts including Blaze ceramic alumina, BlueFire zirconia alumina, versatile aluminum oxide, and silicon carbide belts.

Manufacturing lead-time is two days for narrow belts (1/2" - 12" wide) and three days for wide belts (14" - 52" wide). Please see the FastTrack belt service chart below for complete details on availability and lead-time.

## FastTrack Ordering Quantities and Lead-times

WIDTH*	GRIT SIZE	MINIMUM ORDER QUANTITY	CASE QUANTITY	MAXIMUM ORDER QUANTITY (EQUALS 2 CASES)	CONVERSION Lead-times
Narrow Belts					
1/2" through 1"	All	50	200	400	2
Over 1" through 5"	All	10	50	100	2
Over 5" through 9"	All	10	20	40	2
Over 9" through 14"	All	10	10	20	2
Wide Belts					
Over 14" through 20"	All	5	10	20	3
Over 20" through 52"	36 & coarser	2	2	4	3
Over 20" through 52"	40-80	3	3	6	3
Over 20" through 52"	100 & finer	5	5	10	3

#### How to Place a FastTrack Belt Order

- Check the FastTrack product availability
- Include a full description of belt: quantity, size, Norton CAP code, and grit size. (FastTrack Service is limited to standard joints and flexes.)
- Send order electronically, fax, or phone to customer service
- When ordering a belt that does not have an existing part number, please call Customer Service to expedite part number creation

\* FastTrack belt service applies to belts 25" and greater in length. Maximum length for FastTrack belts is 350".

TIER	PRODUCT CAP CODE	SHAPE Availability	GRIT SIZE	ABRASIVE Grain	BACKING	APPLICATIONS
Metal	working					
Best	R980P	Narrow, Wide	24 - 120	Norton Blaze Ceramic Alumina	Y-wt. Polyester	Latest-generation Norton SG grain, supersized and designed for high-performance grinding on stainless and other alloys
Best	R984-NA	Narrow, Wide	36 - 120	Norton SG Ceramic Alumina	Y-wt. Polyester	Norton SG grain for medium-pressure grinding and finishing heat-sensitive alloys
Best	R983	Narrow, Wide	36 - 120	Norton Red Heat Ceramic Alumina	Y-wt. Polyester	High performance grain chemistry, enhanced backing and supersize provide longer life and faster cut for stainless and tough-to-grind alloys.
Better	R884P	Narrow, Wide	24, 36 - 80	Norton BlueFire Zirconia Alumina	Y-wt. Polyester	High-performance zirconia alumina grain designed for medium- to high-pressure grinding
Better	R887D	Narrow, Wide	24, 36 - 120	Norton BlueFire Zirconia Alumina	Y-wt. Polyester	New, significantly improved-performance zirconia alumina grain, supersized and designed for medium- to high-pressure grinding of heat-sensitive alloys
Better	R823P	Narrow, Wide	60 - 220	Norton BlueFire Zirconia Alumina	X-wt. Polyester	High-performance zirconia alumina grain on lighter backing designed for light to medium grinding
Good	R766	Narrow, Wide	P24 - 80	Aluminum Oxide Blend	Y-wt. Polyester	Premium aluminum oxide blend product designed for a variety of applications including soft metals to hard-to-grind stainless and carbon steel
Good	R766X	Narrow, Wide	P60 - P400	Norton Gemini Aluminum Oxide	X-wt. Polyester	Quality, P-graded aluminum oxide and broad grit range for stock removal to finer finishing
Good	MX240	Narrow, Wide	P80 - P150	Aluminum Oxide	X-wt. Poly/Cotton	P-graded, heat-treated aluminum oxide X-weight cloth with strong, but flexible, cotton/polyester backing making it an ideal multi-purpose product
Good	R245	Narrow	P80 – P240, P320, P400	Aluminum Oxide	J-wt. Polyester	Aluminum oxide on flexible, lightweight polyester backing for moderate- to light- pressure applications on mild steel
Good	KF376	Narrow	P80 – P320, P400, P600	Aluminum Oxide	J-wt. Cotton	P-graded, heat-treated aluminum oxide with ceramic coating on a very flexible backing for use wherever flexibility and conformability are needed
Good	R445	Narrow	60 - 220	Silicon Carbide	X-wt. Polyester	Sharp, silicon carbide grain on medium polyester backing for grinding very hard materials – glass, stone, solid surface
Good	U243	Narrow, Wide to 12"	X80, X65, X45, X30, X22, X16	Aluminum Oxide	J-wt. Cotton	High-performance, multi-layered NORaX grain on very flexible backing for dry polishing applications
Wood	working					
Best	R963	Narrow, Wide	24 – 60, P80 100 – 150	Norton SG Ceramic Alumina	Y-wt. Polyester	Norton SG ceramic alumina grain with anti-static coating for forest product applications (MDF, particleboard, plywood)
Best	R955P	Narrow	P24 - P120	Norton Red Heat Ceramic Alumina	Y-wt. Cotton	100% ceramic alumina abrasive with Y-weight cloth backing for dimensioning, intermediate sanding of wood
Better	R831	Narrow, Wide	24, 36 - 120	Norton BlueFire Zirconia Alumina	Y-wt. Cotton	Norton BlueFire open-coat product recommended for dry low-pressure applications or where loading is a problem
Good	R215	Narrow, Wide	50 - 180	Aluminum Oxide	X-wt. Cotton	Initial starting specification for all woodworking applications where loading is a problem
Good	R464P	Narrow, Wide	P36 - P180	Silicon Carbide	Y-wt. Polyester	Anti-static product for forest product applications (MDF, particle board, plywood) where loading is an issue
Good	R422	Narrow	50 - 120	Silicon Carbide	X-wt. Cotton	Initial starting specification for all woodworking applications where loading is not an issue
Best	H975	Narrow, Wide	60 - 220	Norton Red Heat Ceramic Alumina	F-wt. Paper	Ceramic alumina grain, antistatic coating, and open coat; the best choice for applications where loading is a problem (soft woods, etc.)
Better	H831	Wide	24, 36 - 120	Norton BlueFire Zirconia Alumina	F-wt. Paper	Durable zirconia alumina grain, antistatic coating, and open coat: the better choice for applications where loading is a problem (soft woods, etc.)
Good	H275B	Narrow, Wide	P60 - P220	Norton Adalox Aluminum Oxide	F-wt. Paper	Quality aluminum oxide grain, antistatic coating, and open coat make these an economical choice for all heavy-weight paper belt jobs
Better	H475	Narrow, Wide	P120 - P400	Norton Onyx Silicon Carbide	F-wt. Paper	Sharp silicon carbide and antistatic coating create finer finishes on hard materials and veneers where finish is critical



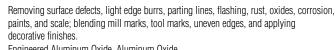
## COATED & NON-WOVEN ABRASIVES Non-Woven Belts

Norton non-woven belts are a combination of strong synthetic mesh and quality abrasive, bonded together by a smear-resistant adhesive. The open construction of non-woven material enables aggressive cutting action and improved surface finish while maintaining its non-loading feature.

Watch for new and improved narrow belt and file belt joints.

#### Applications:

Abrasive Grain: Grit Range: Machine Used:



Engineered Aluminum Oxide, Aluminum Oxide

Extra Coarse (Black), Coarse (Brown), Medium (Maroon), Fine (Green), Very Fine (Blue)

IN-LINE DRUM

SANDER

PORTABLE FILE BELT BELT SANDER SANDER





## Application/Grit Recommendation Guide

		W LAND Y	1. 1. 1. A. M.	
EVTDA COADSE	POADSE	MEDIUM		VERY FINE
EXTRA GUARJE				VENT FINE
•				
	•			
	•			
		•		
		•		
			•	
				•
	EXTRA COARSE		BEST Choice - Vortex Rapid I	EXTRA COARSE COARSE MEDIUM FINE BEST Choice - Vortex Rapid Prep BETTER Choice - Rapid Prep

## Flex Key

LF: Low Flex; Highest Density; Stiffest

RF: Regular Flex; Low Stretch

XF: Extra Flexible; Low Stretch; Exceptional Conformability



Best choice for finishing and blending applications

## VORTEX RAPID PREP ALUMINUM OXIDE

- Patented Vortex grain produces the most consistent cutting and finishing action combining the cutting power of a coarser grit with the finish of finer grits
- Premium high-loft nylon fiber bonded to a strong nylon scrim backing allows a uniformly thick layer of resin bond and grain for extended life, durability, and stiffness
- Proprietary Clean Bond resin technology and open coat guarantee smear-free finishes even on high nickel content alloys and minimize loading on aluminum and other soft metals

Better choice for finishing and blending applications

## RAPID PREP ALUMINUM OXIDE

- Premium aluminum oxide abrasive grain coating provides up to 20% higher cut rate versus other surface conditioning belts
- Durable nylon fiber bonded to a strong Y-weight polyester backing with extremely low stretch is ideal for applications where low-stretch and durability are necessary
- Proprietary Clean Bond resin technology and open coat guarantee smear-free finishes even on high nickel content
  alloys and minimize loading on aluminum and other soft metals









## COATED & NON-WOVEN ABRASIVES Non-Woven Belts

0 - 21 F

File Belts ACAL A 18 184

			GRIT/COLOR:	COARSE	MEDIUM	FINE	VERY FINE
			TIER:	BEST	BEST	BEST	BEST
			TRADENAME:	VORTEX RAPID PREP	VORTEX RAPID PREP	VORTEX RAPID PREP	VORTEX RAPID PREP
			ABRASIVE:	Engineered A/O	Engineered A/O	Engineered A/O	Engineered A/O
NIDTH	LENGTH	FLEX	STD. PKG.	PART #	PART #	PART #	PART #
/4"	18"	XF	24	662611 <b>58548</b>	662611 <b>58558</b>	662611 <b>58578</b>	662611 <b>58583 NS</b>
1/2"	12"	XF	24	662611 <b>58547</b>	662611 <b>58555</b>	662611 <b>58577</b> NS	662611 <b>58582 NS</b>
	18"	XF	24	662611 <b>58549</b>	662611 <b>58561</b>	662611 <b>58579</b>	662611 <b>58584 NS</b>
	24"	XF	24	662611 <b>58550</b>	662611 <b>58565</b>	662611 <b>58580</b>	662611 <b>58585</b>
3/4"	18"	XF	12	662611 <b>58552</b>	662611 <b>58576</b>	662611 <b>58581</b>	662611 <b>58586</b>
			TIER:	BETTER	BETTER	BETTER	BETTER
			TRADENAME:	RAPID PREP	RAPID PREP	RAPID PREP	RAPID PREP
			ABRASIVE:	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide
WIDTH	LENGTH	FLEX	STD. PKG.	PART #	PART #	PART #	PART #
1/4	18	XF	24	662610 <b>11420</b>	662610 <b>12524</b>	666233 <b>33424</b>	666233 <b>33511</b>
	24	XF	24	699573 <b>92606</b>	662610 <b>97565</b>	666233 <b>33425</b>	666233 <b>33512</b>
1/2	12	XF	24	662610 <b>03177</b>	662610 <b>06465</b>	666233 <b>18175</b>	662544 <b>99884</b>
	18	XF	24	662610 <b>55309</b>	662610 <b>55310</b>	666233 <b>33426</b>	662610 <b>55311</b>
	24	XF	24	662610 <b>55312</b>	662610 <b>08972</b>	662544 <b>90859</b>	662610 <b>19876</b>
3/4	18	XF	12	662610 <b>02111</b>	662610 <b>15808</b>	662544 <b>90858</b>	662610 <b>03622</b>
	20-1/2	XF	12	662610 <b>83899</b>	662610 <b>03260</b>		666233 <b>33515 NS</b>
1	18	XF	12	662610 <b>07023</b>	662610 <b>17898</b> NS	666233 <b>33429</b>	666233 <b>33518</b>
	21	XF	12	666233 <b>33412 NS</b>	666233 <b>36005 NS</b>	666233 <b>33430 NS</b>	666233 <b>33519</b>

lorton representative for current order quantities and lead times.

## **Pump Sleeve Belts**

			GRIT/COLOR:	EXTRA COARSE	COARSE	MEDIUM	FINE	VERY FINE
			TIER:	BEST	BEST	BEST	BEST	BEST
			TRADENAME:	VORTEX RAPID PREP				
			ABRASIVE:	Engineered A/O				
WIDTH	LENGTH	FLEX	STD. PKG.	PART #				
3-1/2	15-1/2	LF	8	666233 <b>33725</b>	666233 <b>35042</b>	666233 <b>35118</b>	666233 <b>33665</b>	666233 <b>35139</b>
3-1/2	15-1/2	RF	8		636425 <b>75499</b>	776960 <b>45732</b>	662611 <b>02432</b>	662611 <b>02436</b>
			TIER:	BETTER	BETTER	BETTER	BETTER	BETTER
			TRADENAME:	RAPID PREP				
			ABRASIVE:	Aluminum Oxide				
WIDTH	LENGTH	FLEX	STD. PKG.	PART #				
3-1/2	15-1/2	LF	8	666233 <b>33595</b>	662610 <b>55324</b>	662544 <b>44576</b>	666233 <b>33452</b>	662610 <b>55326</b>





## COATED & NON-WOVEN ABRASIVES Non-Woven Belts

Narrow Belts

					林自然的复数	8 × 3 × 1	A design and the second
			GRIT/COLOR:	COARSE	MEDIUM	FINE	VERY FINE
			TIER:	BEST	BEST	BEST	BEST
				VORTEX RAPID PREP	VORTEX RAPID PREP	VORTEX RAPID PREP	VORTEX RAPID PREP
			ABRASIVE:	-	Engineered A/O	Engineered A/O	Engineered A/O
IDTH	LENGTH	FLEX	STD. PKG.	PART #	PART #	PART #	PART #
	132	RF	8	666233 <b>35032</b>	666233 <b>35100</b>	666233 <b>35080</b>	662611 <b>06894</b>
	48	RF	10	776960 <b>67453</b>	666233 <b>35103</b>	662611 <b>13853</b>	662611 <b>09542</b>
	60	RF	8	666233 <b>33627</b>	636425 <b>54551</b>		666233 <b>33691</b>
	72	RF	8	666233 <b>35036</b>	666233 <b>35105</b>	666233 <b>33653</b>	666233 <b>35134</b>
	132	RF	6	776960 <b>06299</b>	776960 <b>06300</b>	776960 <b>24093</b>	666233 <b>33692</b>
	132	RF	4	776960 <b>06233</b>	776960 <b>06234</b>	666233 <b>33664</b>	666233 <b>33699</b>
	36	RF	6	11030000200	11030000000	0002000004	666233 <b>33701</b>
	72	RF	4	699573 <b>70664</b>	699573 <b>09696</b>	780727 <b>43985</b>	0002000000
	132	RF	2	03337370004	03337303030	666233 <b>33669</b>	
	48	RF	4	662611 <b>02442</b>	666233 <b>35123</b>	000203333003	662611 <b>02435</b>
	40	TH I	TIER:	BETTER	BETTER	BETTER	BETTER
				RAPID PREP	RAPID PREP	RAPID PREP	RAPID PREP
				Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide
VIDTH	LENGTH	FLEX	STD. PKG.	PART #	PART #	PART #	PART #
	30	RF	12			666233 <b>33431</b> NS	
	42			662610 <b>19801</b> NS	666233 <b>36006</b> NS		662610 <b>01972</b> NS
		RF	12		662544 <b>41289</b> NS	666233 <b>33432</b> NS	666233 <b>33521</b> NS
	60	RF	12		0000004540 NO		662610 <b>55412</b>
	64	RF	12	00001101010	666233 <b>01513</b> NS	00054400000 110	662610 <b>55413</b> NS
	72	RF	12	662611 <b>94240</b>	662610 <b>06378</b> NS	662544 <b>93830</b> NS	662610 <b>05583</b>
	132	RF	8	666233 <b>14981</b> NS			
	132	RF	10		662610 <b>11414</b>	662544 <b>36886</b>	666233 <b>33525</b> NS
-1/2	60	RF	8	666233 <b>33415</b> NS	662610 <b>07644</b> NS		666233 <b>03624</b> NS
	34	RF	12	662610 <b>63309</b> NS		666233 <b>33437</b> NS	666233 <b>33529</b> NS
	48	RF	10	662610 <b>06504</b>	662610 <b>06648</b>	666233 <b>33438</b>	666233 <b>33531</b> NS
	60	RF	8	666233 <b>33416</b>	662611 <b>89669</b>	666233 <b>33439</b> NS	666233 <b>33532</b>
	72	RF	8	662610 <b>02571 NS</b>	662610 <b>07757</b> NS	666233 <b>33440</b>	662610 <b>02307</b>
	132	RF	6			662610 <b>69525</b> NS	666233 <b>33533</b>
-1/2	60	RF	6	662544 <b>29365</b>	662544 <b>41491</b>	666233 <b>33441</b> NS	666233 <b>33534</b>
-3/4	15-1/2	LF	10	666233 <b>33417 NS</b>	666233 <b>33508 NS</b>		666233 <b>33535 NS</b>
	10-11/16	LF	12	662610 <b>18076</b> NS	662610 <b>67469</b> NS	666233 <b>33443</b> NS	666233 <b>33536 NS</b>
	18	RF	10	662544 <b>96043</b> NS	662544 <b>28776 NS</b>		662610 <b>19836</b> NS
	21	RF	10	666233 <b>33418 NS</b>	662610 <b>10870 NS</b>	666233 <b>33445 NS</b>	666233 <b>33537 NS</b>
	24	RF	10	66623314158 NS		666233 <b>33446</b> NS	
	72	RF	6	666233 <b>33419 NS</b>	699573 <b>96833</b>	666233 <b>33447</b>	
	80	RF	4	666233 <b>33420 NS</b>	662610 <b>07149 NS</b>		666233 <b>33542 NS</b>
	90	RF	4	666233 <b>33421 NS</b>		666233 <b>33449 NS</b>	666233 <b>33541 NS</b>
	118	RF	4	666233 <b>33422 NS</b>	666233 <b>33510 NS</b>	666233 <b>33450 NS</b>	
	132	RF	4	662544 <b>90470</b>	662610 <b>55322</b>	666233 <b>33451</b>	666233 <b>33543</b> NS
	24	RF	8	662544 <b>95931 NS</b>	662610 <b>31667</b> NS	-	
	36	RF	6		662610 <b>02321</b> NS	666233 <b>33454</b> NS	666233 <b>33546 NS</b>
	132	RF	2	662610 <b>09056</b>	662610 <b>06898</b>	666233 <b>33455</b> NS	666233 <b>33547</b>
	168	RF	2		662610 <b>09174</b> NS		666233 <b>33548</b> NS
	48	RF	4	662610 <b>55330 NS</b>	662610 <b>55331</b>	666233 <b>33457</b>	662610 <b>55332</b> NS

NS Non-Stock, contact your Norton representative for current order quantities and lead times.

If you do not see the Rapid Prep belts you need in our stock offering contact your Norton Representative for made-to-order availability.





## COATED & NON-WOVEN ABRASIVES Cloth Rolls and Sheets

Scouring and light deburring, scale and rust removal, blending and fine sanding, polishing



Engineered for flexibility and fast cutting, cloth sheets and rolls have a longer life than paper. They tear cleanly and straight without shedding and are packed in a protective dispenser to eliminate waste and damage.

Rolls: 1" x 10 yds., 1-1/2" - 2" x 25 yds., 1" - 4" x 50 yds.

lathe turnings, rolls and cylinders, and blending machine tool marks

All purpose, fine finishing, and screen-back

JITTERBUG

SANDER

Categories: Applications:

#### Size Range:

Grit Range: Abrasive Grain: Machine Used:



40-600, coarse, medium, fine

HAND SANDING

Sheets: 9" x 11"

## Cross Reference Guide

	GOOD		
NORTON	Gemini K225	Metal R243	Screen-Bak Q421
3M	011K	211K, 314D	481W, 483W
Hermes	RB317	RB232J	GS91350, GS92400
Klingspor	LS309	KL361, LS309	
Sait/United Abrasives	DA-F	EA-F	Sait-Screen
SIA	2915	2601, 2915, 2936	SIA-Screen
VSM	KK114F	KK505J, KK504X	

### Application/Starting Recommendation Guide

Durability/Stock Removal	Conformability	Waterproof
Fast Cut	Excellent Finish	Load Resistant
Gemini K225	Metal R243	Screen-Bak Durite Q421



Good choice for general-purpose metal and woodworking applications

## GEMINI K225 ALUMINUM OXIDE

- · Premium P-graded aluminum oxide abrasive for greater cut rate on general purpose metalworking application
- · Flexible J-weight backing for superior conformability to complex surfaces and better finishes
- · Advanced full resin bond system for exceptional grain adhesion for longer life



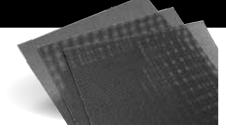
Good choice for small-volume metal and woodworking applications at a low initial price

## METAL R243 ALUMINUM OXIDE

- · Quality P-graded aluminum oxide abrasive grain delivers fast cut rate and consistent finish on metals
- Smooth, flexible J-weight cotton backing provides superior conformability to complex surfaces and better finishes
- Advanced full resin bond system provides exceptional grain adhesion for longer life on aluminum, fiberglass, composites, hard woods and soft woods



## COATED & NON-WOVEN ABRASIVES Cloth Rolls and Sheets



Good choice for sanding softer materials where loading is a major problem such as plastic, copper, brass, plaster, wood, and drywall

## SCREEN-BAK Q421 SILICON CARBIDE

- · P-graded silicon carbide for excellent cutting and non-loading properties
- · Open weave screen for extreme resistance to loading when removing scale, rust and corrosion
- Open mesh design is waterproof and washable, allowing you to rinse and reuse

## **Cloth and Screen Rolls**

		GOOD	GOOD	GOOD	GOOD	GOOD
	TRADENAME:		GEMINI K225	GEMINI K225	GEMINI K225	GEMINI K225
	ABRASIVE:	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide
	BACKING:	J-Weight Cotton	J-Weight Cotton	J-Weight Cotton	J-Weight Cotton	J-Weight Cotton
	SIZE:	1" x 10 yds	1" x 50 yds	1-1/2" x 50 yds	2" x 50 yds	4" x 50 yds
GRIT	STD. PKG.	PART #	PART #	PART #	PART #	PART #
40	1		662610 <b>58716</b> +	662610 <b>58715</b> +	662610 <b>58714</b> +	
50	1		662611 <b>27728</b> +	662611 <b>27730</b> +	662611 <b>27732</b> +	
60	1		662611 <b>27729</b> +	662611 <b>27731</b> +	662611 <b>27733</b> +	
80	1	662611 <b>34298</b>	662611 <b>26276</b>	662611 <b>26288</b>	662611 <b>26299</b>	
100	1	662611 <b>34299</b>	662611 <b>26275</b>	662611 <b>26287</b>	662611 <b>26298</b>	
120	1	662611 <b>34300</b>	662611 <b>26274</b>	662611 <b>26286</b>	662611 <b>26297</b>	662611 <b>27285</b> *
150	1	662611 <b>34301</b>	662611 <b>26273</b>	662611 <b>26285</b>	662611 <b>26296</b>	
180	1	662611 <b>34302</b>	662611 <b>26272</b>	662611 <b>26284</b>	662611 <b>26295</b>	
220	1		662611 <b>26271</b>	662611 <b>26283</b>	662611 <b>26294</b>	
240	1	662611 <b>34303</b>	662611 <b>26270</b>	662611 <b>26282</b>	662611 <b>26293</b>	
280	1		662611 <b>26269</b>	662611 <b>26281</b>	662611 <b>26292</b>	
320	1	662611 <b>34304</b>	662611 <b>26268</b>	662611 <b>26280</b>	662611 <b>26291</b>	
400	1		662611 <b>26267</b>	662611 <b>26279</b>	662611 <b>26290</b>	
600	1		662611 <b>26266</b>	662611 <b>26278</b>	662611 <b>26289</b>	
. 10	60 grit are supplied in a	durable, but flovible V woigh	t ootton booking			

+ 40 - 60 grit, are supplied in durable, but flexible X-weight cotton backing

\* Packaging Standards: 4" Roll Std. Pkg.: 6 rolls

		all a	a a sea	a a contraction of the second	*	()
	TIER:	GOOD	GOOD	GOOD	GOOD	GOOD
	TRADENAME:	METAL R243	METAL R243	METAL R243	SCREEN-BAK Q421	SCREEN-BAK Q421
	ABRASIVE:	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Silicon Carbide	Silicon Carbide
	BACKING:	J-Weight Cotton	J-Weight Cotton	J-Weight Cotton	Mesh	Mesh
	SIZE:	1" x 50 yds	1-1/2" x 50 yds	2" x 50 yds	1-1/2" x 25 yds	2" x 25 yds
	OTHER:			· · · · · · · · · · · · · · · · · · ·	Waterproof	Waterproof
GRIT	STD. PKG.	PART #	PART #	PART #	PART #	PART #
60	1	662611 <b>36178</b>	662611 <b>36190</b>	662611 <b>36203</b>		
80	1	662611 <b>36179</b>	662611 <b>36192</b>	662611 <b>36204</b>	662611 <b>07275</b> *	
100	1	662611 <b>36180</b>	662611 <b>36194</b>	662611 <b>36205</b>		
120	1	662611 <b>36181</b>	662611 <b>36195</b>	662611 <b>36206</b>	662611 <b>07270</b> *	662611 <b>49811</b> *
150	1	662611 <b>36182</b>	662611 <b>36196</b>	662611 <b>36207</b>		
180	1	662611 <b>36186</b>	662611 <b>36199</b>	662611 <b>36208</b>	662611 <b>07265</b> *	
240	1	662611 <b>36187</b>	662611 <b>36200</b>	662611 <b>36209</b>		
320	1	662611 <b>36188</b>	662611 <b>36201</b>	662611 <b>36210</b>		
400	1	662611 <b>36189</b>	662611 <b>36202</b>	662611 <b>36211</b>		

\* Packaging Standards: Screen-Bak Q421 Std. Pkg.: 10 rolls



## COATED & NON-WOVEN ABRASIVES Cloth Rolls and Sheets

Cloth SI	neets	TIER: TRADENAME: ABRASIVE:	GOOD GEMINI K225 Aluminum Oxide	GOOD METAL R243 Aluminum Oxide		GOOD SCREEN-BAK Q421 Silicon Carbide
		BACKING:	J-Weight Cotton	J-Weight Cotton		Mesh
		OTHER:				Waterproof
SIZE (W x L)	GRIT	PKG./CASE	PART #	PART #	PKG./CASE	PART #
9 x 11	40	25/125	662610 <b>58713</b> +			
	50	25/125	662611 <b>01862</b> +			
	60	25/125	662611 <b>01861</b> +			
	80	25/125	662611 <b>26340</b>	662611 <b>79998</b>	25/125	662611 <b>00960</b>
	100	50/250	662611 <b>26339</b>	662611 <b>81503</b>	25/125	662611 <b>00955</b>
	120	50/250	662611 <b>26338</b>	662611 <b>81504</b>	25/125	662611 <b>00950</b>
	150	50/250	662611 <b>26337</b>	662611 <b>81505</b>	25/125	662611 <b>00945</b>
	180	50/250	662611 <b>26336</b>	662611 <b>80005</b>	25/125	662611 <b>00940</b>
	220	50/250	662611 <b>26335</b>		25/125	662611 <b>00935</b>
	240	50/250	662611 <b>26334</b>	662611 <b>81507</b>		
	280	50/250	662611 <b>26333</b>			
	320	50/250	662611 <b>26332</b>	662611 <b>80006</b>	25/125	662611 <b>00920</b>
	400	50/250	662611 <b>26331</b>	662611 <b>81509</b>	25/125	662611 <b>00915</b>
	600	50/250	662611 <b>26330</b>			
	Coarse	25/125				
	Medium	50/250				
	Fine	50/250				

 Fine
 50/250

 + 40 - 60 grit are supplied in durable, but flexible X-weight cotton backing





Paper sheets and rolls are engineered for optimum performance when sanding metal, wood, composites and painted surfaces. The sheets are packed in protective packaging to eliminate waste and permit easy, neat storage.

#### Categories: Applications:

Size Range: Grit Range: Abrasive Grain: Paper Weights: Machine Used: All purpose, wood sanding, stearated (non-loading), waterproof, and heavyweight Light-duty metal sanding, primer sanding, defect removal from painted surfaces, filler sanding, sanding and finishing of composites and fiberglass, bare wood sanding, sanding between sealer coats

Full Sheets, Cut Sheets, File Strips and Rolls 36 – 2500

Ceramic Alumina, Zirconia Alumina, Aluminum Oxide, Silicon Carbide, and Garnet Heavyweight – E; Lightweight – A through D

HAND JITTERBUG SANDING SANDER



SANDING SAND

## SANDING BOARD

#### Material-to-Product Recommendation Guide

	BEST						BETTER		GOOD			
	Blaze A995	Dry Ice A975	A2750P	Black Ice T214	Black Ice T401	A259PS	Durite A475	Blue-Bak T414	Gold Reserve A296	Garnet	TufBak T461	Other
Unfinished Metal	•	•	•						•			
Primed / Painted Surfaces / Between Coats	•	•	•				•		•			
Fiberglass / Composites	•	•	•				•		•			
Bare Wood	•	•	<b>♦</b>							◆ A511, A513, A514		
Clear Coat Sanding				•	•						•	
Sealer Sanding	•	•	•				•		•			
Lacquer Sanding				•	•			•			•	
Wet Sanding				•	•			•			•	
Paint Stripping	•	•	•			•	•					
All Purpose	•	•	•			•						A212 A213 A211

#### **Cross Reference Guide**

NORTON	3M	Hermes	Klingspor	Mirka	SIA	VSM
STEARATED (NON-LOAD	DING)					
Blaze A995	732U, 737U, 755L, 775L	CR116			_	
Dry Ice A975	334U	_	PS36	_	Siaprime 5550	_
A2750P	216U, 255L, 236U, 260L, 334U	VC154-LL	PS33, PS73W	Q-Silver, Royal Micro	1940, 1944,1950	
A259PS	216U, 255L, 236U, 260L, 334U		_	_		
Durite A475	405N, 414N, 415U, 426U, 435U	SF168	PL35, PS14	CaratFlex, PolarStar	1748	CP131A
Gold Reserve A296	216U, 236U, 316U, 315U, NX	VC154-LL	PS33, PS73W	Q-Silver, Royal Micro, Bulldog Gold	19,401,950	MP10
WATERPROOF						
Blue Ice T214	213Q	WAFlex28	_	_	1913, 1951, 1600	
Blue Ice T401	401Q, 414Q, 486Q	WSFlex16	PL35	Waterproof (A)	_	CP918A
Blue-Bak T414	413Q	WSFlex 16	PS14	Waterproof (A)		CP918A/C
TufBak T461	431Q	WSFlex 18	PS14		1727	CP918A/C
ALL PURPOSE/WOOD						
A211	230U, 240N, 346U	_	_	_	_	
A212	210N	_	PL31	_	_	
A213	230N		PL31			
Garnet A511	110N		PS10		1400	
Garnet A513	130N	GCAB				
Garnet A514	140N	GCAB		_		_
HEAVYWEIGHT PAPER						
BlueFire H875P	740I, 745I, 750U, 751U, 751I	BW110	PS36	Royal CRS. Cut	1820,1919, 1948	KP510E, KP709



EINER (EINIQUINO)

### Application/Grit Recommendation Guide

COARSER (STOCK REMOVAL

	SER (	STOCK	REMO	VAL)															FINE	R (FIN	SHIN
36 Rough	40 hing to Ir	60 ntermedia	80 ate	100	120	150	180	220	240	280	320	360	400	500	600	800	1000	1200	1500	2000	2500
			Interm	ediate to	Finishi	ומ															
									Fine Fi	nishing											
																Ultra F	ine Finis	hing			
Rec	omr	mone																			
		nenc	led I		Ŭ	Weię		F.	WT.	D.	.w/T	ſ	`-W/T		3-W/T		\_\//T				
	est / Str		led I	Back H-W	Ŭ	Weię F-\		E-	WT	D	-WT	(	C-WT		3-WT		A-WT	Mo	st Flexil		

## Paper Rolls



#### Best choice for fast cut rate and maximum dust extraction

## BLAZE A995 MULTI-AIR CYCLONIC CERAMIC ALUMINA

- P-graded next-generation ceramic aluminum oxide abrasive for fastest cut rate and longest life with innovative spiral hole design to optimize dust extraction
- Proprietary D-weight Polyester-reinforced, flexible latex-saturated backing for 100% improvement in tear strength and edge durability providing longer life in all applications
- Waterbased, non-loading (No-Fil) stearate resists clogging and increases roll life; hook and loop back for easy
  mounting and changing



## DRYICE A975 CERAMIC ALUMINA

- P-graded, 100% SG ceramic alumina abrasive delivers fastest cut rate and longest life of any paper roll; available in Multi-Air Cyclonic version with laser-cut, spiral, vacuum-hole design to maximizes dust extraction
- Unique fiber reinforced, flexible B-or C- Weight latex saturated paper backing for 50% 60% improvement in tear strength while retaining flexibility; perforated for easy sizing
- · Water-based non-pigmented stearate No-Fil coating provides improved load resistance and no color transfer to work



Better choice for high performance dry sanding applications

## A2750P ALUMINUM OXIDE

- Premium P-graded, heat treated, toughened aluminum oxide abrasive delivers superior life, fast cut rate, consistent finish
- Unique fiber reinforced, flexible B-weight latex saturated backing provides 50% 60% improvement in tear strength while retaining flexibility
- Water-based, non-pigmented stearate No-Fil coating provides maximum load resistance; available in Multi-Air Cyclonic version for maximum dust collection



## Good choice and value for dry sanding and finishing aluminum, fiberglass, composites, hard woods and soft woods

## GOLD RESERVE A296 ALUMINUM OXIDE

- · P-graded premium aluminum oxide abrasive produces a quick, cool cut and a more consistent surface finish
- · Strong C-weight paper backing resists tearing while staying conformable and flexible
- · Water-based, non-loading No-Fil stearate coating minimizes clogging and increases disc life



### Paper Rolls continued

Hook and Loop Paper Rolls Multi-Air Cyclonic					
TIER:	BEST	BEST	BEST	BEST	BETTER
TRADENAME:	BLAZE A995 NO-FIL Multi-Air Cyclonic	BLAZE A995 NO-FIL Multi-Air Cyclonic	DRY ICE A975 NO-FIL Multi-Air Cyclonic	DRY ICE A975 NO-FIL Multi-Air Cyclonic	A2750P NO-FIL Multi-Air Cyclonic
ABRASIVE:	Ceramic Alumina	Ceramic Alumina	Ceramic Alumina	Ceramic Alumina	Aluminum Oxide
BACKING WEIGHT:	D-Weight.	D-Weight.	C- & B-Weight	C- & B-Weight	B-Weight
BACKING ATTACHMENT:	Hook & Loop	Hook & Loop	Hook & Loop	Hook & Loop	Hook & Loop
OTHER:	P-Graded; Perforated	P-Graded; Perforated	P-Graded; Perforated	P-Graded; Perforated	P-Graded; Perforated
SIZE:	2-3/4" x 13 yd	2-3/4" x 9 yd	2-3/4" x 13 yd	4-1/2" x 13 yd	2-3/4" x 13 yd
GRIT PKG./CASE	PART #	PART #	PART #	PART #	PART #
40 1/4		699573 <b>65500</b>			
80 1/4	699573 <b>08899</b>		636425 <b>06113</b>	662611 <b>56064</b>	666233 <b>90523</b>
120 1/4	699573 <b>08900</b>		636425 <b>06114</b>	662611 <b>56065</b>	666233 <b>90522</b>
150 1/4	699573 <b>08901</b>		636425 <b>06117</b>		666233 <b>90521</b>
180 1/4	699573 <b>08902</b>		636425 <b>06118</b>	662611 <b>56067</b>	666233 <b>90520</b>
220 1/4	699573 <b>08903</b>		636425 <b>06119</b>	636425 <b>04663</b>	666233 <b>90519</b>
240 1/4			636425 <b>06120</b>	662611 <b>56068</b>	
320 1/4			636425 <b>06121</b>	662611 <b>56070</b>	666233 <b>90518</b>
400 1/4			636425 <b>06122</b>	662611 <b>56071</b>	666233 <b>90517</b>
500 1/4			636425 <b>06123</b>		
600 1/4		0.44	636425 <b>06124</b>		

2-3/4" wide hook and loop paper rolls are perforated at 2-3/4" and 4-1/2" wide rolls are perforated every 4-1/2" which allow use on all standard lengths of hand blocks and file boards. Additional grit sizes available, contact your Norton rep for more details.

Hook and Loop Paper Rolls



TIER: BEST TRADENAME: DRY ICE A975 NO-FIL ABRASIVE: Ceramic Alumina BACKING WEIGHT: C- & B-Weight BACKING ATTACHMENT: Hook & Loop

BACKING WEIGHT:	C- & B-Weight
ACKING ATTACHMENT:	Hook & Loop
OTHER:	P-Graded; Perforated
SIZE:	2-3/4" x 13 yd
PKG./CASE	PART #
1/4	636425 <b>06261</b>
1/4	636425 <b>06259</b>
1/4	636425 <b>06258 NS</b>
1/4	636425 <b>06257</b>
1/4	636425 <b>06256</b>
1/4	636425 <b>06255</b>
1/4	666233 <b>29518</b>
1/4	666233 <b>29547</b>
1/4	666233 <b>29548</b>

2-3/4" wide hook and loop paper rolls are perforated every 2-3/4" which allows use on all standard lengths of hand blocks and file boards.

Additional grit sizes available, contact your Norton rep for more details.

NS Non-Stock, contact your Norton representative for current order quantities and lead times.



## Paper Rolls continued

Sens Adhe	(Pressure sitive esive) er Rolls				6	6	6	6	6
	TIER:	BEST	BEST	BEST	BETTER	BETTER	BETTER	BETTER	GOOD
	TRADENAME:	DRY ICE A975 No-Fil	DRY ICE A975 No-Fil	DRY ICE A975 No-Fil	A275 OP No-Fil	A275 OP No-Fil	A275 OP No-Fil	A275 OP No-Fil	GOLD RESERVE A296 NO-FIL
	ABRASIVE:	Ceramic Alumina	Ceramic Alumina	Ceramic Alumina	Aluminum Oxide				
	BACKING WEIGHT:	C-Weight.	C-Weight.	B-Weight.	B-Weight.	B-Weight.	B-Weight.	B-Weight.	C-Weight
BACK	ING ATTACHMENT:	PSA	PSA	PSA	PSA	PSA	PSA	PSA	PSA
	OTHER:	P-Graded	P-Graded	P-Graded	P-Graded	P-Graded	P-Graded	P-Graded	P-Graded
	SIZE:	2-3/4" x 25 yd	2-3/4" x 30 yd	2-3/4" x 45 yd	2-3/4" x 25 yd	2-3/4" x 30 yd	2-3/4" x 45 yd	4-1/2 x 10 yd	2-3/4" x 25 yd
GRIT	PKG./CASE	PART #	PART #	PART #	PART #	PART #	PART #	PART #	PART #
80	1/5	662611 <b>49566</b>			662611 <b>31691</b>			662611 <b>31697</b>	636425 <b>06153</b>
100	1/5					662611 <b>31690</b>		662611 <b>31696</b>	
120	1/5		662611 <b>49564</b>			662611 <b>31689</b>		662611 <b>31695</b>	636425 <b>06152</b>
150	1/5			662611 <b>49563</b>			662611 <b>31688</b>	662611 <b>31694</b>	636425 <b>06151</b>
180	1/5			662611 <b>49562</b>			662611 <b>31687</b>	662611 <b>31693</b>	636425 <b>06150</b>
220	1/5			662611 <b>49561</b>			662611 <b>31686</b>	662611 <b>31692</b>	636425 <b>06149</b>
240	1/5						662611 <b>31685</b>		
320	1/5			662611 <b>49558</b>			662611 <b>31683</b>		636425 <b>06148</b>
400	1/5			662611 <b>49557</b>			662611 <b>31681</b>		636425 <b>06147</b>
600	1/5						662611 <b>31679</b>		

Additional attachment options available as non-stock, contact your Norton rep for more details.

## **Roll Accessories**



#### PSA Roll Dispenser

- · Heavy-duty wire dispenser has a vinyl coating to protect the work surface
- · Accommodates two 2-3/4" PSA rolls; stackable for multi-grit operations. Attach to wall or mount on cabinet

DESCRIPTION	STD. PKG.	PART #
PSA Roll Dispenser	1	636425 <b>42773</b>

#### PSA/Hook & Loop Sanding Blocks

- Ergonomically-shaped flexible foam blocks used with 2-3/4" rolls, fit comfortably in your hand
- Firm block produces a truly flat surface
- The soft block is designed for flat surfaces and contours

	BACK	ING ATTACHMEN	T: PSA	Hook & Loop
SIZE	DESCRIPTION	STD. PKG.	PART #	PART #
2-3/4 x 5	Soft	5	636425 <b>42090</b>	636425 <b>42092</b>
2-3/4 x 5	Firm	5	636425 <b>42091</b>	636425 <b>42093</b>
2-3/4 x 7-3/4	Soft	5		636425 <b>42095</b>
2-3/4 x 7-3/4	Firm	5	636425 <b>42094</b>	



### Paper File Strips

Better choice for soft material applications

## BLUEFIRE H875P ZIRCONIA ALUMINA

- · Strong zirconia alumina plus abrasive provides 2 3 times life over aluminum oxide products
- Strong E-weight paper, synthetically-coated for excellent durability and chip resistance plus superior bond system
  optimizes grain adhesion and extends product life
- Non-stearated (no anti-loading agents); non-contamination often required for prime auto and aerospace paint applications

Paper File Strips PSA (Pressure Sensitive Adhesive) and Non-PSA

Sensitive								349				
and Non-	PSA		Carlos Car						23/152		China March	
		TIER:	BETTER	BETTER	BETTER	BETTER		BETTER	BETTER		BETTER	GOOD
	TRA	ADENAME:	A2750P No-Fil	A2750P No-Fil	A2750P No-Fil	A2750P No-Fil		BLUEFIRE H875P NO-FIL	BLUEFIRE H875P NO-FIL		BLUEFIRE H875P NO-FIL	GOLD RESERVE A296 NO-FIL
		ABRASIVE:		A/0	A/0	A/0	_	Z/A	Z/A		Z/A	A/0
			B-Weight	B-Weight	B-Weight	B-Weight	_	E-Weight	E-Weight		E-Weight	C-Weight
BACKII	VG ATTA	ACHMENT:		PSA	Hook/Loop	Hook/Loop Vac	_	Non-PSA	PSA	_	Hook/Loop	Hook/Loop
			P-Graded	P-Graded	P-Graded	P-Graded						
SIZE (W x L)	GRIT	PKG./ Case	PART #	PART #	PART #	PART #	PKG./ Case	PART #	PART #	PKG./ Case	PART #	
2-3/4 x 16	100	50/500				662611 <b>31657</b>						
., .	120	50/500				662611 <b>31656</b>						
	180	50/500				662611 <b>31654</b>						
2-3/4 x 16-1/2	36						50/250		662611 <b>23610</b>	25/125	662611 <b>23616</b>	
	40						50/250		662611 <b>23609</b>	25/125	662611 <b>23615</b>	
	80	50/500		662611 <b>31640</b>	662611 <b>31646</b>		50/250		662611 <b>23608</b>	25/125	662611 <b>23614</b>	636425 <b>06237</b> *
	100	50/500		662611 <b>31639</b>	662611 <b>31645</b>							636425 <b>06238</b> *
	120	50/500			662611 <b>31644</b>							636425 <b>06239</b> *
	150	50/500		662611 <b>31637</b>	662611 <b>31643</b>							636425 <b>06240</b> *
	180	50/500		662611 <b>31636</b>	662611 <b>31642</b>							636425 <b>06241</b> *
	220	50/500			662611 <b>31641</b>							636425 <b>06242</b> *
2-3/4 x 17-1/2	36							662611 <b>23622</b>				
	40							662611 <b>23621</b>				
	80	50/500	662611 <b>31652</b>					662611 <b>23620</b>				
	100	50/500	662611 <b>31651</b>				50/250	662611 <b>26512</b>				
	120	50/500	662611 <b>31650</b>									
	150	50/500	662611 <b>31649</b>									
	180	50/500	662611 <b>31648</b>				50/250	662611 <b>26511</b>				
	220	50/500	662611 <b>31647</b>									
• • • •	0 0	0 0 0										
0000	0 0	0 0 0	2-3/4 X 16 FILE	STRIPS								

2-3/4 X 16 FILE STI \* 25/125

### Sanding Boards





#### PSA/Non-PSA Sanding Board

- This sanding board has a cushioned surface
- Spring clips mounted at each end securely hold 2-3/4" x 16-1/2" PSA file strips and 2-3/4" x 17-1/2" non-PSA file strips

#### Hook and Loop and Non-PSA Sanding Board

- Lightweight, rugged design for easy sanding of plastic fillers
- Spring clips mounted at each end securely hold 2-3/4" x 16-1/2" hook and loop file strips and 2-3/4" x 17-1/2" non-PSA file strips
- · Air file shoe eliminates the need for clips. The quick-change backing positively locks and unlocks for fast use.

DESCRIPTION	STD. PKG.	PART #
PSA/Non-PSA File Strip Sanding Board	6	636425 <b>42724</b>
Hook and Loop/Non-PSA File Strip Sanding Board	5	636425 <b>52836</b>
Hook and Loop Air File Shoe	5	636425 <b>52835</b>



### Stearated (Non-Loading) 9" x 11" Sheets



Best choice for moderate material removal

## A259PS NO-FIL ALUMINUM OXIDE

- Premium heat-treated abrasive offers faster cut and long sanding life
- · Open coat, non-pigmented, water-based stearate coating prevents color transfer and minimzes loading
- Increased backing weight, fiber-reinforcement and latex saturation offers better grain retention and tear-resistance yet is highly flexible for easy folding and unfolding

The better choice for sanding painted surfaces, composites, plastics or any material that tends to load

## A2750P NO-FIL ALUMINUM OXIDE

- Premium, P-graded, heat-treated aluminum oxide abrasive for consistent surface finish, exceptional performance on all surfaces and coatings
- Unique fiber-reinforced, B-weight latex-saturated backing for 50 60 percent improvement in tear strength, exceptional flexibility, can be folded without cracking
- Non-pigmented, water based stearate (anti-clog) coating, open coat for best resistance to clogging and loading during sanding

The better choice for gel coats, hard composite substrates, abrasion-resistant coatings, and woodworking applications

## DURITE A475 NO-FIL SILICON CARBIDE

- · P-graded, silicon carbide abrasive for easy penetration of the hardest surfaces
- Water based stearate, non-pigmented, No-Fil coating resists loading for the longest usable product life; no color transfer to work
- · Fiber-reinforced, latex paper backing provides flexibility and resistance to tearing



## Good choice for finishing painted surfaces, composites, plastics, or any material that tends to load

## GOLD RESERVE A296 NO-FIL ALUMINUM OXIDE

- · P-graded premium aluminum oxide abrasive produces a quick, cool cut and a more consistent scratch pattern
- · Water-based, non-loading (No-Fil) stearate resists clogging and increases life
- · Strong C-weight latex/paper backing resists tearing while staying conformable and flexible



### Stearated (Non-Loading) 9" x 11" Sheets continued

9 x 11 Paper	Shee		JOBPACK			
		HER:	BEST	BETTER	BETTER DURITE A475	GOOD Gold Reserve A296
	Ti	RADENAME:	A259PS No-Fil	A2750P No-Fil	NO-FIL	NO-FIL
		ABRASIVE:	Aluminum Oxide	Aluminum Oxide	Silicon Carbide	Aluminum Oxide
	BACKI	NG WEIGHT:	C- & B-Weight	B-Weight	B-Weight	C-Weight
		OTHER:	P-Graded	P-Graded	P-Graded	P-Graded
SIZE (W x L)		PKG./				
	GRIT	CASE	PART #	PART #	PART #	PART #
9 x 11	80	50/250	076607 <b>68174</b> *	662611 <b>31634</b>	662544 <b>87393</b>	636425 <b>97878</b>
	100	100/500	076607 <b>68173</b> *	662611 <b>31633</b>	662544 <b>87394</b>	636425 <b>97877</b>
	120	100/500	076607 <b>68172</b> *	662611 <b>31632</b>	662544 <b>87395</b>	636425 <b>97876</b>
	150	100/500	076607 <b>68171</b> *	662611 <b>31631</b>	662544 <b>87396</b>	636425 <b>97875</b>
	180	100/500	076607 <b>68168</b> *	662611 <b>31630</b>	662544 <b>87397</b>	636425 <b>97874</b>
	220	100/500	076607 <b>68167</b> *	662611 <b>31629</b>	662544 <b>87398</b>	636425 <b>97873</b>
	240	100/500		662611 <b>31628</b>	662544 <b>87399</b>	636425 <b>97872</b>
	280	100/500		662611 <b>31627</b>		
	320	100/500	076607 <b>68166</b> *	662611 <b>31626</b>	662544 <b>87400</b>	636425 <b>97871</b>
	400	100/500	076607 <b>68165</b> *	662611 <b>31624</b>		636425 <b>97870</b>
	500	100/500		662611 <b>31623</b>		
	600	100/500		662611 <b>31622</b>		
	800	100/500		662611 <b>31621</b>		
	1000	100/500		662611 <b>31620</b>		
	1200	100/500		662611 <b>31619</b>		
	1500	100/500		662611 <b>31618</b>		

\* Packaging Standards: A259PS Job Packs: 20 sheets per pack / 10 packs per standard package for a total of 200 sheets

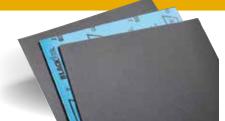
### Rubber Hand Sanding Blocks

• Resilient rubber blocks that conform well to mild contours and flat surfaces





### Waterproof 9" x 11" Sheets



#### Best choice for superior cut and life in wet applications

## BLACK ICE T214 ALUMINUM OXIDE WATERPROOF

- Premium, P-graded, heat-treated aluminum oxide abrasive for ultimate cut and life in wet applications
- · Strong resin bond for longer life in wet applications
- High-strength B-weight waterproof latex paper backing is extremely flexible, environmentally stable, and resists humidity-caused curling

#### Best choice for superior finish in wet applications



- Premium, JIS graded ultra-fine silicon carbide abrasive provides the ultimate finish in wet applications
- · Strong resin bond for longer life in wet applications
- High-strength B-weight waterproof latex paper backing is extremely flexible, environmentally stable, and resists humidity-caused curling



Better choice for wet finishing applications

## BLUE-BAK T414 SILICON CARBIDE

- · Sharp, ANSI graded silicon carbide abrasive for exceptional finishes in wet applications
- · Strong resin bond for longer life in wet applications
- High-strength B-weight waterproof latex paper backing is extremely flexible, environmentally stable, and resists humidity-caused curling



#### Good choice for medium material removal in wet applications

## **TUFBAK T461 SILICON CARBIDE**

- · ANSI graded silicon carbide abrasive for fast cutting with excellent finish in wet applications
- · Advanced resin bond system for excellent flexibility and abrasive adhesion
- Strong, waterproof C-weight backing is ideal for more aggressive applications while being environmentally stable, resists product curl in humidity



#### Waterproof 9" x 11" Sheets continued

9 x 11 Paper Sh	ieets	7/50			M	
				BEST	BETTER	GOOD
		TRADENAME:	BLACK ICE T214	BLACK ICE T401	BLUE-BAK T414	TUFBAK T461
		ABRASIVE:		Silicon Carbide	Silicon Carbide	Silicon Carbide
		BACKING WEIGHT:		B-Weight	B-Weight	C-Weight
		-	P-Graded	JIS Graded	ANSI Graded	ANSI Graded
SIZE (W x L)	GRIT	PKG./CASE	PART #	PART #	PART #	PART #
9 x 11	60	50/250				662611 <b>01175</b>
	80	50/250				662611 <b>01170</b>
	100	50/250				662611 <b>01165</b>
	120	50/250				662611 <b>01160</b>
	150	50/250				662611 <b>01155</b>
	180	50/250				662611 <b>01150</b>
	220	50/250	662611 <b>39389</b>		662611 <b>39367</b>	
	240	50/250	662611 <b>39388</b>		662611 <b>39366</b>	662611 <b>30331</b>
	280	50/250			662611 <b>39365</b>	
	320	50/250	662611 <b>39386</b>		662611 <b>39364</b>	662611 <b>30332</b>
	360	50/250			662611 <b>39363</b>	
	400	50/250	662611 <b>39385</b>		662611 <b>39362</b>	662611 <b>30333</b>
	500	50/250	662611 <b>39384</b>		662611 <b>39361</b>	
	600	50/250	662611 <b>39383</b>		662611 <b>39360</b>	662611 <b>30334</b>
	800	50/250	662611 <b>39382</b>			
	1000	50/250		662611 <b>39381</b>		
	1200	50/250		662611 <b>39380</b>		
	1500	50/250		662611 <b>39379</b>		
	2000	50/250		662611 <b>39378</b>		
	2500	50/250		662611 <b>39377</b>		

### Waterproof Sanding Blocks - with "Grabbing" Power



Dual Density Wet Sanding Block

- No adhesive required: simply wrap a 5-1/2" x 9" (9" x 11" cut in half) sheet around the block
- The dense side is for more aggressive blocking, while the soft side is for color sanding
- Equalizes sanding pressure for fine grit applications

Holey Block

- No adhesive required: simply wrap a 5-1/2" x 9" (9" x 11" cut in half) sheet around the block
- A rugged, semi-rigid, multi-purpose sanding block engineered for flat to medium curved surfaces
- A tactical hole pattern side provides numerous cutting edges to create a 30% faster cut rate
- The plain side provides firmness and a comfortable, easy-to-hold surface

DESCRIPTION	STD. PKG.	PART #
Wet Sanding Block	12	636425 <b>03728</b>
Holey Block	8	636425 <b>03729</b>



#### All-Purpose 9" x 11" Paper Sheets



#### Good choice for your wood, metal or composite sanding projects

## A211/A212/A213 ALUMINUM OXIDE

- P-graded, aluminum oxide grain, open-coat provides aggressive, long-lasting cutting action
- Use for dry, general purpose hand sanding on hardwood, metal, and composites
- Available in multiple backing weights: A212 A-weight; A213 C-weight, A211 D-weight

#### Good choice for use on soft woods such as pine



## A513/A511 GARNET

- · Natural garnet abrasive is ideal for soft woods, such as pine, and produces an excellent, consistent finish
- Use dry on bare wood prior to coating
- Available in two backing weights: A511 A-wt. and A513 C-wt. for heavy-duty to light-duty hand sanding

9 x 11 Paper		ets	I	V	V	JOBPACK	11	11	JOBPACK
		TIER:	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
	7	RADENAME:	A211	A213	A212	MULTISAND A213/A212	A513	A511	WOODSAND A513/A511
		ABRASIVE:	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Garnet	Garnet	Garnet
	BACK	ING WEIGHT:	D-Weight	C-Weight	A-Weight	D-, C- & A-Weight	D- & C-Weight	A-Weight	D-, C- & A-Weight
		OTHER:	P-Graded	P-Graded	P-Graded	P-Graded			
SIZE (W x L)									
	GRIT	PKG./CASE		PART #	PART #	PART #	PART #	PART #	PART #
9 x 11	36	25/125	662611 <b>00335</b>						
	40	25/125	662611 <b>00330</b>						
	50	50/250	662611 <b>00325</b>						
	60	50/250		662611 <b>00320</b>			662611 <b>01560</b>		
	80	50/250		662611 <b>00315</b>			662611 <b>01555</b>	662611 <b>01505</b>	076607 <b>01584</b> *
	100	100/500		662611 <b>00295</b>		076607 <b>00358</b> *	662611 <b>01535</b>	662611 <b>01500</b>	076607 <b>01583</b> *
	120	100/500		662611 <b>00290</b>		076607 <b>00357</b> *	662611 <b>01530</b>	662611 <b>01495</b>	076607 <b>01582</b> *
	150	100/500		662611 <b>00285</b>		076607 <b>00356</b> *	662611 <b>01525</b>	662611 <b>01490</b>	076607 <b>01581</b> *
	180	100/500			662611 <b>00245</b>	076607 <b>00355</b> *		662611 <b>01489</b>	076607 <b>01580</b> *
	220	100/500			076607 <b>00156</b>	076607 <b>00354</b> *		662611 <b>01488</b>	076607 <b>01579</b> *
	Asst+	100/500				076607 <b>00365</b> *			

\* Packaging Standards: Job Packs: 25 sheets per pack / 10 packs per standard package for a total of 250 sheets

+ Assorted contains 6 each of 60, 100, 150 grit and 7 each of 220 grit

#### 3-2/3 x 9 Paper Cut Sheet

Paper Cu	it She	eets		
		TIER:	GOOD	GOOD
		TRADENAME:	GOLD RESERVE A296 NO-FIL	A213
		ABRASIVE:	Aluminum Oxide	Aluminum Oxide
		BACKING WEIGHT:	C-Weight	C-Weight
		OTHER:	P-Graded	P-Graded
SIZE (W x L)	GRIT	PKG./CASE	PART #	PART #
3-2/3 x 9	60	100/100		662611 <b>02925</b>
	80	100/100	780727 <b>48788</b>	662611 <b>02920</b>
	100	100/100		662611 <b>02900</b>
	180	100/100	780727 <b>48540</b>	
	220	100/100	780727 <b>48789</b>	



## COATED & NON-WOVEN ABRASIVES Film Sheets

### Hook and Loop Cut Sheets - Perforated

Best choice for easy sanding of hard-to-reach areas

## NORTON SUPERFLEXIBLE FILM

- Durable yet flexible film backing conforms better to surfaces and contours, preventing "over sanding" or "burn through"
- · Anti-loading stearate for optimum performance and long life
- Consistent scratch pattern and even finish



### Norton Sanding Pads for SuperFlexible Film

The pads are made using very soft foam, specifically for hook and loop sheets and discs. The sanding pad's structure minimizes aggressive scratches and reduces peeling, reducing the need to change the backing pad frequently.

Soft Sanding Pads

6-11/16 x 5-1/8

P1500

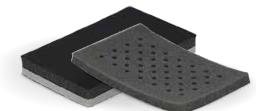
P1200

P800

P600

P400

PART #	APPLICATION	PKG/CS QTY
<b>Soft Sanding Pad</b>		
780727 <b>42353</b>	Manual sanding of hard-to-reach areas	8/1



#### Rigid/Soft Sanding Pads

PART #	APPLICATION	PKG/CS QTY					
<b>Rigid/Soft Sandin</b>	Rigid/Soft Sanding Pad						
780727 <b>42355</b>	Manual sanding of larger areas	4/1					









-

Surface finishing rolls are made of a non-woven nylon web impregnated with abrasive grain and resin bond.

#### Applications:

**Abrasive Grain:** Grit Range: **Roll Features:** 

Machine Used:

Light- to heavy-duty cleaning, deburring, blending, polishing, and finishing of metal, wood,

composite, plastics, stone, solid surface and painted surfaces.

Aluminum Oxide, Silicon Carbide

- Medium (M), Fine (F), Very Fine (VF), Ultra Fine (UF), Micro Fine (MF)
- · Economical alternative to cut pads · Can be cut to specific sizes





### Application/Grit Recommendation Guide

MORE AGGRESSIVE, ROUGHER FINISH

LESS AGGRESSIVE, FINER FINISH

HIGH STRENGTH
Maroon
High Strength
AO
Medium 100 - 150
4
Extra Coarse
<ul> <li>Moderate deburring and surface blending</li> </ul>

					TIER:	BEST	BETTER
	00100	DEOODIDTION	400400/5	GRIT	STD.	D107 //	
SIZE (W x L)	COLOR	DESCRIPTION	ABRASIVE	SIZE	PKG.	PART #	PART #
Non-Woven Rolls							
4" x 30 Ft.	Maroon	High Strength Roll	A/0	Μ	3	662610 <b>06358 NS</b>	
	Dark Tan	740 Heavy-Duty Roll	A/0	Μ	3		662610 <b>10081</b>
	Maroon	644 General Purpose Fine Roll	A/0	F	4		662610 <b>58364</b>
	Maroon	High Strength Very Fine Roll	A/0	VF	4	662610 <b>06373</b>	
	Maroon	777 General Very Fine Roll	A/0	VF	4		662610 <b>58361</b>
	Maroon	747 General Purpose Plus Roll	A/0	VF	4		662610 <b>51701</b>
	Gray	851 General Cleaning Roll	S/C	VF	4		662610 <b>58360</b>
	Gray	635 Clean & Finish Roll	S/C	UF	5		662610 <b>58357</b>
5" x 30 Ft.	Maroon	High Strength Roll	A/0	М	2	662610 <b>05182</b>	
	Maroon	747 General Purpose Plus Roll	A/0	VF	3		662610 <b>16430</b>
	Maroon	High Strength Very Fine Roll	A/0	VF	3	662610 <b>04281</b>	
	Maroon	777 General Very Fine Roll	A/0	VF	3		662610 <b>58376</b>
	Gray	851 General Cleaning Roll	S/C	VF	3		662610 <b>58377</b>
2" x 15 Ft. Handy Roll Pack	Assorted	1 each A/O Fine, A/O VF, SC MF	-	-	1		662610 <b>08108</b>

NS Non-Stock, contact your Norton representative for current order quantities and lead times.



### COATED & NON-WOVEN ABRASIVES Abrasive Sponges



Flexible, abrasive sanding sponges for a wide variety of curved, contoured or flat surface applications on wood, metal, paint, plastic, ceramics and drywall.

Applications: Benefits: Light stock removal, sanding sealer and wash-coats, touch-up or repair of primer, sanding contours and intricate shapes, and finishing

Can be used wet or dry

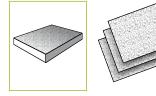
- - Clog resistant, washable, reusable
  - · Easy to use, can be folded without cracking
  - ConformableGenerate a consistent surface finish

Machine Used:



HAND SANDING

### Why Choose Abrasive Sponges Versus Conventional Sheets?



#### Eliminate Clogging

- The combination of flexible foam backing material and abrasive grit adhesion continually releases sanded material
- Any clogging can be washed out
- Pressure Control
- Foam backing allows optimum pressure distribution to prevent sanding through surfaces
- Pressure spots are eliminated
   providing even surface pattern

#### Adapt to Contours

- Flexible foam allows adaptability to contours, shapes or areas of limited access
- No folding or buckling results in an even pattern without scratching

FINER

FINER

### Surface Finishing Chart – Contour Sponges versus Sheets

0	$\sim$	Λ		C	c	5
	U	А	n	0	ŗ	٦

SHEETS	P150	P180	P220	P280	P320	P400	P500	P600	P800	P1000	P1200	P1500	P2000
SPONGES	Medium 60												
			Fine 100										
					Extra Fine 1	xtra Fine 150							
							Super Fine	180					
										20			
											Micro Fine	280/320	

#### Surface Finishing Chart – Sponges versus Sheets

COARSER

														<b></b>
SHEETS	P80	P100	P120	P150	P180	P220	P280	P320	P400	P500	P600	P800	P1000	P1200
SPONGES	Extra Coars	se 36												
			Coarse 60											
					Medium 80	) - 120								
							Fine 120 -	150						
									Very Fine 1	80 - 220				
													Micro Fine	280 - 320

#### **Cross Reference Guide**

	BETTER	GOOD	GOOD	GOOD	GOOD	GOOD
NORTON	SoftTouch	Contour	Small Area	Profile	Sealer Sanding	Flexible
3M	Softback	Contour	Full Size	High Flexibility	Woodworking	Pro Pads
Hermes	Single Side	-	Four Sided	-	Two Sided	-
Klingspor	_	-	-	-	Foam Sanding Pad	-
SIA	Flat Pad	-	Standard Block	-	Standard Pad	-



### **COATED & NON-WOVEN ABRASIVES Abrasive Sponges**

For hand-sanding or finishing flat, curved, contoured and hard-to-reach areas on wood, metal, composites, paint and solid surfaces

### SOFTTOUCH CONTOUR SPONGES – COATED 1 SIDE

4-

- Superior flexibility
- Premium foam substrate provides for an extremely smooth and uniform sanded surface

IZE (W x L x T)	GRIT	STD. PKG.	PART #
-1/2 x 5-1/2 x 3/16	60 Medium	80	076607 <b>03074</b>
	100 Fine	80	076607 <b>03075</b>
	180 Super Fine	150	076607 <b>03076</b>
	220 Ultra Fine	80	076607 <b>03077</b>
	280 Micro Fine	80	076607 <b>03078</b>



#### Good for sanding small diameters and contours

#### CONTOUR SPONGES – COATED 1 SIDE

• Thin, flexible; good for sanding small diameters and contours such as ceramics spindles, turnings and railings

	SIZE (W x L x T)	GRIT	STD. PKG.	PART #
CS,	4-1/2 x 5-1/2 x 3/16	100 Fine	100	076607 <b>02257</b>
		150 Extra Fine	100	076607 <b>02256</b>
		220 Ultra Fine	100	076607 <b>02255</b>



#### Good for a wide variety of materials and sanding applications where moderate flexibility is needed

## SMALL AREA GENERAL PURPOSE SPONGES – COATED 4 SIDES

· Medium to firm density open cell polyurethane foam provides uniform support and moderately aggressive cutting action while generating a smooth surface

SIZE (W x L x T)	GRIT	STD. PKG.	PART #	BULK PKG.	PART #
4 x 2-3/4 x 1	36/80 Ex. Coarse/Med	24	076607 <b>49505</b>	250	076607 <b>04735</b>
	80/80 Med/Med	24	076607 <b>49507</b>	250	076607 <b>01875</b>
	80/120 Med/Fine	24	076607 <b>49504</b>	250	076607 <b>02600</b>
	120/120 Fine/Fine	24	076607 <b>49506</b>		



#### Good for corners and flat surfaces on wood, metal, plastic and paint

PROFILE SPONGES – CC	)ATED 3 SID	ES		
<ul> <li>Ideal for cabinet sanding of raised profile doors</li> </ul>	SIZE (W x L x T)	GRIT 100 Modium	STD. PKG.	PART # 636425 <b>36313</b>
prome doors	4 x 2-3/4 x 1/2	100 Medium	500	6364



#### Good for sanding primers, sealers and between coats on furniture and cabinets

#### SEALER SANDING SPONGES – COATED 2 SIDES

· Very flexible; silicon carbide abrasive for sanding primers, sealers and between coats on furniture and cabinets

SIZE (W x L x T)	GRIT
4-3/4 x 3-3/4 x 1/2	36 Extra Coars
	60 Coarse
	100 Medium

PART # BULK PKG. 250 636425**02538** 250 636425**52870** 636425**52869** 250 220 VeryFine 636425**52868** 250



#### Ideal for final sanding of surfaces, primer sanding, and between coats sanding

### FLEXIBLE ABRASIVE SPONGES – COATED 1 SIDE

Best initial price point for abrasive sponges

SIZE		STD.		BULK	
(W x L x T)	GRIT	PKG.	PART #	PKG.	PART #
3 x 4 x 1/2	60 Coarse	48	076607 <b>04068</b>	108	076607 <b>01110</b>
	80 Medium	48	076607 <b>04067</b>	108	076607 <b>04070</b>
	100 Medium	48	076607 <b>04066</b>	108	076607 <b>00950</b>
	150 Fine	48	076607 <b>04065</b>	108	076607 <b>00949</b>
	220 Very Fine			108	076607 <b>04069</b>



### COATED & NON-WOVEN ABRASIVES Non-Woven Hand Pads and Sponges



### Application/Grit Recommendation Guide

MORE AGGRESSIVE, ROUGHER FINISH

LESS AGGRESSIVE, FINER FINISH

									and the set		
PRODUCT #:	#740	#746	#644	#747	#796	#635	#748	THIN-FLEX VF	THIN-FLEX UF	THIN-FLEX BP	#456
COLOR:	Dark Tan	Gray	Maroon	Maroon	Green	Gray	Gray	Maroon	Gray	Gold	White
DESCRIPTION:	Heavy Duty	Blending	GP – Fine	GP Plus – Very Fine	Scouring	Clean & Finish	Final Shine	Cleaning	Cleaning	Blend Prep	Cleaning
ABRASIVE:	AO	SC	AO	AO	AO	SC	SC	AO	SC	AO	Non-Abrasive
GRIT SIZE:	Medium 100 - 150	Medium 100 - 150	Fine 180 - 220	Very Fine 240 - 360	Very Fine 240 - 360	Ultra Fine 400 - 600	Micro Fine 800 - 1200	Very Fine 240 - 360	Ultra Fine 400 - 600	Micro-Fine 800 - 1200	Non-Abrasive
STEEL WOOL EQUIVALENT:	4 Extra Coarse	3 Coarse	2 Medium Coarse	1 Medium	0 Fine	00 Very Fine	00 Very Fine	00 Very Fine	000 Extra Fine	000 Extra Fine	0000 Super Fine
APPLICATIONS:	<ul> <li>Smear-free Clean Bond technology</li> <li>2X life</li> <li>Most durable and aggressive cutting pad</li> <li>Heavy-duty removal</li> <li>» rust</li> <li>» oxidation</li> <li>Deburring</li> </ul>	<ul> <li>Blending and deburring</li> <li>welds</li> <li>» aluminum</li> <li>» stainless</li> </ul>	<ul> <li>Cleaning and deburring</li> <li>machinery</li> <li>metal parts</li> <li>plastic</li> <li>solid surface</li> <li>stone</li> </ul>	<ul> <li>Light cleaning, deburring and finishing</li> <li>machinery</li> <li>metal parts</li> <li>plastic</li> <li>solid surface</li> <li>stone</li> </ul>	<ul> <li>Removing stains, marks, rust, corrosion or oxidation from stainless equipment</li> <li>Light cleaning of metal surfaces</li> </ul>	<ul> <li>Light cleaning and finishing of most surfaces</li> <li>» steel, aluminum</li> <li>» denibbing plastic</li> <li>» scuffing acrylics</li> </ul>	<ul> <li>Final finishing</li> <li>» final rub on wood</li> <li>» final blend on metal</li> <li>» final finish on plastics and acrylics</li> </ul>	<ul> <li>Maximum flexibility for consistent finishes</li> <li>Cleaning blending, finishing, and deburring in woodwork, metalwork, MRO, and synthetic applications</li> </ul>	<ul> <li>Maximum flexibility for consistent finishes</li> <li>Cleaning blending, finishing, and deburring in woodwork, metalwork, MRO, and synthetic applications</li> </ul>	<ul> <li>Fine cleaning</li> <li>Fine polishing (most surfaces)</li> <li>Top coat finishing (water-based and solvent)</li> </ul>	<ul> <li>Scratch-free cleaning</li> <li>metal</li> <li>fiberglass</li> <li>stone</li> <li>solid surface</li> <li>ceramic</li> <li>Wood</li> <li>high- lighting</li> <li>rubbing</li> </ul>

## Cross Reference Guide

	COARSER										
NORTON	#740	#746	#644	#747/847	#796	#635	#748	Thin-Flex VF	Thin Flex UF	#456	<i>F</i>
3M	7440	7446	64659	7447/8447 Production Hand Pad	96	64660	7448	Multi-Flex Maroon	Multi-Flex Gray	7445	
Camel	Tan			Maroon	Green		Grey	_	_	White	
Mirka		—	—	Maroon/Red VF	—	—	—	Mirlon Total Maroon	Mirlon Total Gray	—	
Sait	Brown	_	_	Maroon	Green		Gray	_	_	_	
SIA	6912 Brown	6712 Grey	_	6912 Maroon	6312 Green	_	_	_	—		
Standard	HD-Tan AO	_	_	GP-Maroon VF	Green-AO	HP-VF	UF Gray	—		Cleanin White	ng





## COATED & NON-WOVEN ABRASIVES Non-Woven Hand Pads and Sponges

					TIER:	BEST	BETTER
SIZE (W x L)	COLOR	DESCRIPTION	ABRASIVE	GRIT SIZE	STD. PKG.	PART #	PART #
Hand Pads							
4-1/2 x 9	Maroon	Thin Flex Cleaning Pad	A/0	VF	25	666233 <b>98062</b>	
	Grey	Thin Flex Cleaning Pad	S/C	UF	25	666233 <b>98063</b>	
6 x 9	Dark Tan	740 Heavy-Duty Pad	A/0	Med	40	662610 <b>74000</b>	
	Gray	746 Blending Pad	S/C	Med	40		662610 <b>74600</b>
	Maroon	777 General Purpose Very Fine Pad	A/0	VF	60		662610 <b>77700</b>
	Maroon	747 General Purpose Plus Pad	A/0	VF	60	662610 <b>74700</b>	
	Maroon	847 General Purpose Plus Perforated Pad	A/0	VF	60	662610 <b>84700</b>	
	Green	796 Scouring Pad	A/0	VF	60		662610 <b>79600</b>
	Lt. Green	696 Food Pro Pad	A/0	VF	60		662610 <b>69600</b>
	Gray	851 General Cleaning Pad	S/C	VF	40		662610 <b>85100</b>
	Gray	635 Clean & Finish Pad	S/C	UF	60		662610 <b>63500</b>
	Gray	748 Final Shine Pad	S/C	MF	60		662610 <b>74800</b>
	White	456 Cleaning Pad	None	-	60		662610 <b>45600</b>
Hand Pad Holder							
3-1/4 x 5-1/2	N/A	Hand Pad Holder			10		662610 <b>47583</b>



Hand Pad Holder



### THIN and FLEXIBLE: Perfect for Tight Spots

Norton Bear-Tex Thin-Flex High-Performance Hand Pads

- Achieve performance benefits of a coarse and fine grain product in one hand pad; fast cut and definitively better finish than competing pads
- Extremely thin and conformable; ideal for deburring, cleaning, blending, and finishing contoured surfaces and tight spaces
- · Special coated web design for superior and constant cutting action without added effort from user
- · Versatile; ideal for woodworking, metalworking, maintenance operations, and synthetics fabrication



### COATED & NON-WOVEN ABRASIVES Foam Hand Pads

FINER

#### **Rotolo Foam Sanding Pads**

#### Application/Grit Recommendation Guide

#### COARSER

120	150	180	220	240	280	320	400	500	600	800	1000
Cleaning/R	lepairing										
			Final Sandin	g							
						Feather Edging	J				
								Basecoat Sar	nding		
										Clearcoat Sa	nding



#### The better choice for fine sanding flat and curved surfaces

## A2750P NO-FIL ROTOLO FOAM ROLLS

- Premium, P-graded, heat-treated aluminum oxide abrasive for consistent surface finish, exceptional performance on all surfaces and coatings
- Foam backing is perfect for hand sanding primer without leaving finger marks; 50% 60% improvement in tear strength versus conventional paper rolls; perforated for easy sizing
- Non-pigmented, water-based stearate No-Fil coating, open coat for best resistance to clogging and loading during sanding

		IIER:	BETTER
		TRADENAME:	A2750P ROTOLO
		ABRASIVE:	Aluminum Oxide
		OTHER:	P-Graded
SIZE (W x L)	GRIT SIZE	ROLLS/STD. PKG.	PART #
4-1/2" x 82'	120	2	780727 <b>35316</b>
	150	2	780727 <b>57584</b>
	180	2	780727 <b>57599</b>
	220	2	780727 <b>57600</b>
	320	2	666233 <b>57606</b>
	400	2	666233 <b>57608</b>
	500	2	666233 <b>57611</b>
	600	2	666233 <b>57612</b>
	800	2	666233 <b>57613</b>
	1000	2	666233 <b>57616</b>

DETTER



Perforated every 5-1/2"



### COATED & NON-WOVEN ABRASIVES Flexible Diamond-Coated Hand Pads

Diamond coated hand pads: shaping, rapid stock removal, touch-up and repair on ceramics, stone, marble, glass, composites and hard materials; polishing of dies and molds Quadroflex diamond hand pads: surface conditioning, repairs, and removing flash and burrs

Norton flexible diamond coated hand pads combine the durability and aggressiveness of diamond, with a flexible backing.

on aircraft composites and windmill blades

#### **Applications:**

Size Range: Grit Range: Abrasive Types: Machine Used:

3-1/2" x 2-1/8" 60 - 1500 Diamond

> HAND SANDING



Better choice for shaping, rapid stock removal, surface conditioning, touch-up, repair, and polishing

# FLEXIBLE DIAMOND-COATED HAND PADS – CONVENTIONAL AND QUADROFLEX CURVED

- Durable yet lightweight conformable backing is adaptable to a variety of shapes and conditions with long lasting
  performance; offers a uniform finish for improved surface quality
- Can be used wet or dry; color-coded by grit size for easy identification
- Conventional hand pads with precision dot pattern for an aggressive, consistent, fast cut rate and reduced dust and loading; Quadroflex curved hand pads offer ergonomic advantages and longest life for lowest overall total cost





			TIER	BETTER	BETTER
			TRADENAME:	DIAMOND COATED HAND PADS	QUADROFLEX CURVED DIAMOND COATED HAND PADS
			ABRASIVE:	Diamond	Diamond
SIZE (L x W)	COLOR	MESH	STD. PKG.	PART #	PART #
3-1/2 x 2-1/8	Green	60	1	662603 <b>06360</b>	690141 <b>21517</b>
	Black	120	1	662603 <b>06361</b>	690141 <b>21518</b>
	Red	200	1	662603 <b>06362</b>	690141 <b>23529</b>
	Yellow	400	1	662603 <b>05852</b>	690141 <b>23530</b>
	White	800	1	662603 <b>06363</b>	690141 <b>23531</b>
	Blue	1500	1	662603 <b>06364</b>	
	Kit (one each	of above)	1	662603 <b>07720</b>	

## power... In the palm of Your hand

Portable Tools and the specialty abrasive products to go along with them. Access hard-to-reach areas with ease with the Norton line of specialty products.

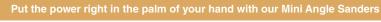




### PORTABLE TOOLS AND SPECIALTIES Mini Angle Sander

Put the world right in the palm of your hand with our 2" and 3" Norton Mini Angle Sanders. Small, compact enough to get into those hard-to-reach areas, and powerful enough to finish the job fast and efficiently.

Specifications for:	2" Mini Angle Air Sander	3" Mini Angle Air Sander
Weight of tool:	1.6 lbs. (0.742kg)	1.8 lbs. (0.816kg)
Compressed air:	6.2 bar (90psi)	6.2 bar (90psi)
Maximum permissible operating pressure:	6.2 bar (90psi)	6.2 bar (90psi)
Horsepower:	.45	.9
Free speed:	22,000 rpm	20,000 rpm
Air consumption @90psi:	85 liters/min (3 CFM)	116 liters/min (4.1 CFM)
Noise characteristic value in accordance with EN ISO 15744 (ISO 15744):		
A-weighted sound pressure level at workstation	87.3 dB	83.2 dB
A-weighted sound power level	98.3 dB	94.2 dB
Peak C-weighted instantaneous sound pressure level     at workstation	<130 dB	<130 dB
Measurement uncertainty (Standard):	3.00 m/s <sup>2</sup>	5.92 m/s <sup>2</sup>
Vibration value according to EN ISO 28927-3:	0.84 m/s <sup>2</sup>	1.09 m/s <sup>2</sup>
Recommended lubrications:	Air oil 20#	Air oil 20#
Sanding tool specifications:	Pad Size 2" Collet	Pad size 3" Collet
Applications and suitability:	Collet Chuck 1/4" (6mm) Surface preparation, grind wel finishing applications.	Collet Chuck 1/4" (6mm) ds, spot sanding and light-duty



## MINI ANGLE SANDERS

- A double-bearing spindle generates superb concentricity, reducing vibrations allowing for longer use and finer finishes
- Finesse your projects by having the ultimate control in both precision and power with the speed regulator
- · Get better tool handling along with reduced fatigue with the ergonomic and streamlined non-slip grip

DESCRIPTION	STD. PKG.	PART #
Mini Angle Sanders and Kits		
2" Mini Angle Sander	1	662611 <b>50076</b>
2" Kit Includes:	1	662611 <b>50077</b>
• 1 – 2" Sander		
<ul> <li>25 – 2" 36 Grit Blaze R980P 3-Ply TR Discs (66261162318)</li> </ul>		
<ul> <li>50 – 2" Medium Grit Rapid Prep Non-Woven TR Discs (66261009190)</li> </ul>		
<ul> <li>1 – 2" Medium Density Back-Up Pad (66261055103)</li> </ul>		
3" Mini Angle Air Sander	1	699573 <b>82154</b>
3" Kit Includes:	1	699573 <b>82155</b>
• 1 – 3" Sander		
<ul> <li>25 – 3" 36 Grit Blaze R980P 3-Ply TR discs (66261162328)</li> </ul>	and the second se	
<ul> <li>25 – 3" Medium Grit Rapid Prep Non-Woven TR discs (66261017522)</li> </ul>		
• 1 – 3" Medium Density Back-Up Pad (662610 <b>55105</b> )		

### PORTABLE TOOLS AND SPECIALTIES Mini Flap Discs

Mini-flap discs are ideal for use in tight spaces. They feature layered flaps which wear away evenly during use exposing new abrasive grain. The lightweight plastic backing helps to absorb vibration. They can help eliminate the conventional 2-step process in grinding edges and removing welds and rust.

Grinding, stock removal, edge chamfering/beveling, weld blending, deburring/deflashing,

#### **Applications:**

Size Range: **Grit Range: Abrasive Grain: Abrasive Flaps: Attachment: Machine Used:** 

rust removal, blending, cleaning, and finishing in small areas or tight spots. 2" and 3" Quick-Change 36 - 120 Ceramic Alumina, Zirconia Alumina Polyester TR (Type III) and TS (Type II) Backing Plate Material: Extra Heavy-Duty Plastic





NDRTDN

SAINT-GOBAIN

#### Best choice for beveling, blending, deburring, and stock removal in tight spaces

## BLAZE R980P CERAMIC ALUMINA

- Premium ceramic alumina abrasive grain lasts 50% 200% longer than many flap discs on stainless steel, cobalt, chrome, Inconel, titanium and other hard-to-grind materials
- Flexible, high-strength, plastic backing plates absorb vibration for optimized ergonomics
- Y-weight polyester flaps with a supersize grinding aid significantly improve life, grain retention, and fray resistance while providing a cool, noticeably faster cut rate

Better choice for blending, deburring, and stock removal in tight places

## **BLUEFIRE R860 ZIRCONIA ALUMINA**

- High-performance zirconia alumina abrasive for aggressive cut and long life
- · Flexible, high-strength, plastic backing plates absorb vibration for optimized ergonomics
- · Polyester flaps for improved durability and minimal loading on aluminum



TIER: TRADENAME: ABRASIVE: FLAP: (ING MATERIAL: ATTACHMENT: STD. PKG.	Ceramic Alumina Polyester Extra Heavy-Duty Plastic	BETTER BLUEFIRE R860 Zirconia Alumina Polyester Extra Heavy-Duty Plastic TR (Type III)	BEST BLAZE R980P Ceramic Alumina Polyester Extra Heavy-Duty Plastic TS ( Type II)	BETTER BLUEFIRE R860 Zirconia Alumina Polyester Extra Heavy-Duty Plastic TS (Type II)
ABRASIVE: FLAP: (ING MATERIAL: ATTACHMENT:	Ceramic Alumina Polyester Extra Heavy-Duty Plastic	Zirconia Alumina Polyester Extra Heavy-Duty Plastic	Ceramic Alumina Polyester Extra Heavy-Duty Plastic	Zirconia Alumina Polyester Extra Heavy-Duty Plastic
FLAP: (ING MATERIAL: ATTACHMENT:	Polyester Extra Heavy-Duty Plastic	Polyester Extra Heavy-Duty Plastic	Polyester Extra Heavy-Duty Plastic	Polyester Extra Heavy-Duty Plastic
(ING MATERIAL: ATTACHMENT:	Extra Heavy-Duty Plastic	Extra Heavy-Duty Plastic	Extra Heavy-Duty Plastic	Extra Heavy-Duty Plasti
ATTACHMENT:		/ /		
	TR (Type III)	TR (Type III)	TS ( Type II)	TS ( Type II)
STD. PKG.	- CB-	2		10 ( 1) ( 1)
STD. PKG.		(E)	$\bigcirc$	$\bigcirc$
	PART #	PART #	PART #	PART #
10	776960 <b>90145</b>	776960 <b>90165</b>		776960 <b>90175</b>
10	776960 <b>90146</b>	776960 <b>90166</b>		776960 <b>90176</b>
10	776960 <b>90147</b>	776960 <b>90167</b>	776960 <b>90157</b>	776960 <b>90177</b>
10	776960 <b>90148</b>	776960 <b>90168</b>	776960 <b>90158</b>	776960 <b>90178</b>
10	776960 <b>90149</b>	776960 <b>90169</b>	776960 <b>90159</b>	776960 <b>90179</b>
10	776960 <b>90150</b>	776960 <b>90170</b>	776960 <b>90160</b>	776960 <b>90180</b>
10	776960 <b>90151</b>	776960 <b>90171</b>	776960 <b>90161</b>	776960 <b>90181</b>
10	776960 <b>90152</b>	776960 <b>90172</b>	776960 <b>90162</b>	776960 <b>90182</b>
10	776960 <b>90153</b>	776960 <b>90173</b>	776960 <b>90163</b>	776960 <b>90183</b>
10	776960 <b>90154</b>	776960 <b>90174</b>	776960 <b>90164</b>	776960 <b>90184</b>
	MAX. RPM	STD. PKG.	TR (TYPE III)	TS (TYPE II)
	10 10	10         77696090153           10         77696090154	10         77696090153         77696090173           10         77696090154         77696090174           MAX. RPM         STD. PKG.	10         77696090153         77696090173         77696090163           10         77696090154         77696090174         77696090164           MAX. RPM         STD. PKG.         TR (TYPE III)

1





ndustrial	Market -	Full-Line	

2" and 3" Medium Density Back Up Pads

30,000

08834168539

08834164922





Tool-free, twist-on and -off fastening systems make fast work of disc changes to maximize productivity by minimizing downtime.

#### **Applications:**

**Size Range: Grit Range: Abrasive Grain: Backing: Cloth Flex:** Attachment: **Back-up Pads: Machine Used:** 

Fiber and NorKut trimmable hard plastic discs: welding, grinding and blending; heavy metal removal; light deburring and finishing Cloth discs: light- to medium-pressure grinding; blending, leveling and finishing applications; for use on contours or flat surfaces Diamond: Grinding ceramic, glass, composites, carbide and ceramic coatings, fiberglass, and reinforced plastics 3/4" - 4" diameter 24 - 320 Ceramic Alumina, Zirconia Alumina, Aluminum Oxide, Silicon Carbide, Diamond Fiber, cloth, or polymer 3-ply (more aggressive), 2-ply (standard), Type TS (II), Type TR (III), and Type TP (I) Rubber with hardness variations for different applications



MINI ANGLE SANDER

### Coated Abrasive Quick-Change Disc Availability

#### Fiber

- The most heavy-duty discs with resin over resin construction on heavy-duty vulcanized fiber backing
- Premium grain for applications from heavy stock removal to surface blending

#### NorKut

- Unique polymer backing resists cracking and breakage and can be cut down up to the 1" core
- Use the cores to grind "pinch" welds and other hard-to-reach areas



#### Diamond

Unique, aggressive, diamond grain pattern on a flexible cloth backing

#### **Cloth 3-Plv**

These heavy-duty, 3-ply polyester laminate construction discs are the most aggressive and durable cloth discs on the market

#### **Cloth 2-Ply**

Our standard 2-ply laminate construction creates an aggressive and durable cloth disc for flat surfaces

#### Quick-Change Attachment Systems and Cross Reference Guide

Each system enables quick, safe disc changes, reducing downtime and operating expenses.

#### Type TS (Type II)

· Features a turn-on/turn-off style fastener · Fastener is made of metal





#### Type TR (Type III)

- · Features a roll-on/roll-off style fastener
- · Fastener is made of plastic





· Fastener is made of nylon



NORTON	TS (Type II)	TR (Type III)	TP (Type I)	
3M	Roloc TS/TSM	Roloc TR	Roloc TP	
Standard	TS (SocAtt)	TR (Lockit)	TP (ClickOn)	
Superior	Type S	Type R	-	
Arc	Type S	Type R	Туре Р	
Pferd	Type CD	Type CDR	-	
Sait	SAIT-LOK	SAIT-LOK-R	-	
Camel	Turn On	Roll On	-	
Klingspor	QMC	QRC	-	
Garryson	Type S	Type R	_	





#### Material/Application-to-Product Recommendation Guide

	BEST	BETTER		GOOD	
	Blaze R980P	BlueFire R887D	BlueFire R860	Gemini R766	Merit R422
Stainless Steel / Titanium / Super Alloys	•	•		•	
Mild Carbon Steel / Welds			•	•	
Ferrous Metals / Cast Iron			•	•	
Brass / Bronze / Aluminum			•	•	
Paint / Glue / Adhesive				•	
Concrete / Stone / Fiberglass					•

### Application/Grit Recommendation Guide

COARSER (GRINDING)

24	36	40	50	60	80	100	120	150	180	240	320
Heavy Stock R	emoval										
	Medium Stock	Removal									
	Edge Chamferi	ng/Beveling									
		Weld Removal									
			Heavy Deburri	ng							
				Blending							
					Light Deburrin	g					
							Cleaning				
									Finishing		

### Cross Reference Guide

4

TOTAL PERFORMANCE

	BEST		BETTER	GOOD	
Abrasive	Ceramic Alumina	Ceramic Alumina	Zirconia Alumina	Aluminum Oxide	Silicon Carbide
Backing	Fiber	Cloth	Cloth	Cloth	Cloth
-	BlazeX F970, Blaze F980	Blaze R980P	BlueFire R860, R887D	Gemini R766	Merit R422
3M	782C, 785C, 787C, 982C, 985C, 987C, 988C	963G/H, 966F, 967F, 997F, 984F, 784F, 947A	561D	361F, 363F	421A, 441D, 461F
Standard	Ceramic, Ceramic Pro	Ceramic Pro, Ceramic	Zirconia	A/O Extra, A/O Pro	Silicon Carbide
Superior	—	Ceramic G.A.	Premium Zirc	A/O with Grinding Aid	
Arc			Zirconia/Y Standard	A/O/X Plus Coolant	
Pferd	CO, CO Cool	Ceramic	ZA Z	Aluminum Oxide A-Plus, Aluminum Oxide A-INOX-FORTE	Silicon Carbide SiC
Sait	7S,7A, 9S		Z	3A	C-W
Camel	Ceramic		Zirconia AO		_
Klingspor	CS570, FS966	CS610	Alumina Zirconia	_	CS333X
Garryson	—	Ceramic	_	_	



FINER (FINISHING)

**INITIAL PRICE** 

->>





Best choice for stainless steel, titanium, and super alloys

## BLAZEX F980 CERAMIC ALUMINA

- Improved ceramic alumina micro-fracturing grain constantly exposes sharper grain edges to significantly increase cut rate and life over competitive blended/low-ratio ceramic alumina discs
- · Strong fiber backing for strength and tear resistance
- · Supersized design for stainless steel and hard-to-grind materials

#### For tough applications and stainless steel

## BLAZE F980 CERAMIC ALUMINA FIBER

- 100% ceramic grain constantly exposes sharper edges to deliver highest productivity at lowest overall costs vs. competitive lower-ratio ceramic discs
- Strong fiber backing, heavier and more rigid than conventional cloth discs, adds strength and tear resistance, and allows additional pressure for better results when grinding difficult materials
- Advanced self-lubricating grain treatment provides coolest cut and significantly faster cut rates; excels on hard-to-grind materials like 300 and 400 Series stainless and exotic alloys



#### Best choice for carbon steel and other soft-to-grind materials

## BLAZEX F970 CERAMIC ALUMINA FIBER

- Improved ceramic alumina micro-fracturing grain constantly exposes sharper grain edges to significantly increase cut rate and life over competitive blended/low-ratio ceramic alumina discs
- Heavier fiber backing for additional strength and tear resistance
- · Non-supersized design for carbon steel and soft-to-grind materials

		TIER:	BEST	BEST	BEST
		TRADENAME:	BLAZEX F980	BLAZE F980	BLAZEX F970
		ABRASIVE:	Ceramic Alumina	Ceramic Alumina	Ceramic Alumina
			Fiber – Heavy Duty	Fiber – Heavy Duty	Fiber – Heavy Duty
		OTHER:	Supersize	Supersize	-
		ATTACHMENT:	TR (Type III)	TR (Type III)	TR (Type III)
			Ì	) B	٨
SIZE (D)	GRIT	STD. PKG.		PART #	
2	24	25		776960 <b>90139</b>	
	36	25	662610 <b>58704</b>		780727 <b>09008</b>
	50	25		662610 <b>58705</b>	78072709009
	60	25		662610 <b>58706</b>	780727 <b>09010</b>
	80	25		662610 <b>58707</b>	780727 <b>09011</b>
3	24	25		776960 <b>90140</b>	
	36	25	662610 <b>58708</b>		780727 <b>09012</b>
	50	25		662610 <b>58709</b>	780727 <b>09013</b>
	60	25		662610 <b>58711</b>	780727 <b>09014</b>
	80	25		662610 <b>58712</b>	780727 <b>09015</b>

#### Quick-Change back-up pads shown at the end of the Quick-Change Disc section.

### TECH TIP

Use the new next generation Norton BlazeX F970 fiber quick-change discs for carbon steel jobs.





Best choice for tough applications, titanium, super alloys, and stainless steel (3-ply) or contoured surfaces (2-ply)

## BLAZE R980P CERAMIC ALUMINA

- 100% ceramic grain constantly exposes sharper edges to deliver highest productivity at lowest overall costs vs. competitive lower-ratio ceramic discs
- Improved resin bond system maximizes grain retention for longer product life
- Advanced self-lubricating grain treatment provides coolest cut with significantly faster cut rates while minimizing loading on hard-to-grind materials

Better choice for soft metals, wood, stainless steel, and carbon

## BLUEFIRE R860 ZIRCONIA ALUMINA

- Premium, versatile, self-sharpening zirconia grain provides aggressive cut and up to 30% longer life versus competitive zirconia discs
- · 2-ply polyester backing for improved durability and reducing loading on aluminum
- Durable Y-weight, polyester waterproof backing stands up to demanding applications: high-pressure and hard-to-grind exotic alloys



Better choice for stainless steel, titanium and other exotic alloys

## BLUEFIRE R887D ZIRCONIA ALUMINA

- Self-sharpening, zirconia alumina abrasive with supersized grinding aid provides cooler cut, and longer life on hard-to-grind materials
- Durable, Y-weight, 2-ply polyester waterproof blend back stands up to these demanding applications
- Minimized heat build-up allows these discs to outlast conventional aluminum oxide and zirconia alumina discs in many applications

#### Good choice when initial price is the primary consideration

## GEMINI R766 ALUMINUM OXIDE

- Versatile aluminum oxide abrasive for aggressive cut and longer life than competitive aluminum oxide discs
- Durable Y-weight 2-ply polyester backing and coating for additional life and faster cut rate on moderately-demanding applications
- · Good choice when initial price is the primary purchasing consideration



#### Good choice for non-ferrous materials

## MERIT R422 SILICON CARBIDE

- · Sharp, silicon carbide abrasive provides high initial cut and penetration to resist loading on soft metals
- Strong, X-weight, 2-ply cotton backing construction for extended durability and reduced edge wear
- · When completion time is important, sharp silicon carbide abrasive gets non-ferrous blending jobs done quickly



### Ceramic Alumina Quick-Change Cloth Discs

			0 50 50 5			49 13
			91 G 10 54	36	6	
			0 0 0 50		Anton	Real I
				\$ 36 -		
		TIER:	BEST	BEST	BEST	BEST
		TRADENAME:	BLAZE R980P	BLAZE R980P	BLAZE R980P	BLAZE R980P
		ABRASIVE:	Ceramic Alumina	Ceramic Alumina	Ceramic Alumina	Ceramic Alumina
		BACKING:	Polyester	Polyester	Polyester	Polyester
			3-Ply Heavy-Duty	3-Ply Heavy-Duty	2-Ply Standard	2-Ply Standard
		OTHER:	Supersize	Supersize	Supersize	Supersize
			TS (Type II)	TR (Type III)	TS (Type II)	TR (Type III)
		ATTACHMENT:		Ì		Ì
SIZE (D)	GRIT	STD. PKG.	PART #	PART #	PART #	PART #
1-1/2	36	100	662611 <b>62307</b>	662611 <b>62308</b>	636425 <b>95401</b>	
	50	100	662611 <b>62309</b>	662611 <b>62310</b>		
	60	100	662611 <b>62311</b>	662611 <b>62312</b>	636425 <b>95447</b>	636425 <b>95468</b>
	80	100	662611 <b>62313</b>	662611 <b>62314</b>	636425 <b>95450</b>	
	120	100	662610 <b>43379</b>	662610 <b>43380</b>	662610 <b>43416</b>	
2	36	25	662611 <b>62317</b>	662611 <b>62318</b>	636425 <b>95452</b>	636425 <b>95470</b>
	50	25	662611 <b>62319</b>	662611 <b>62320</b>	636425 <b>95456</b>	636425 <b>95472</b>
	60	25	662611 <b>62321</b>	662611 <b>62322</b>	636425 <b>95458</b>	636425 <b>95476</b>
	80	25	662611 <b>62323</b>	662611 <b>62324</b>	636425 <b>95459</b>	636425 <b>95478</b>
	100	25	662610 <b>43382</b>	662610 <b>43383</b>		662610 <b>43419</b>
	120	25	662610 <b>43384</b>	662610 <b>43386</b>	662610 <b>43420</b>	662610 <b>43421</b>
3	36	25	662611 <b>62327</b>	662611 <b>62328</b>	636425 <b>95460</b>	636425 <b>95479</b>
	50	25	662611 <b>62329</b>	662611 <b>62330</b>	636425 <b>95462</b>	636425 <b>95480</b>
	60	25	662611 <b>62331</b>	662611 <b>62332</b>	636425 <b>95463</b>	636425 <b>95481</b>
	80	25	662611 <b>62333</b>	662611 <b>62334</b>	636425 <b>95464</b>	636425 <b>95493</b>
	100	25	662610 <b>43389</b>	662610 <b>43390</b>		662610 <b>43423</b>
	120	25	662610 <b>43391</b>	662610 <b>43392</b>	662610 <b>43424</b>	662610 <b>43425</b>

#### Quick-Change back-up pads shown at the end of the Quick-Change Disc section.



### Quick-Change Test Kit "D"

- Part # 088341**65001**
- Includes 150 discs, assorted grits, in 1", 2", and 3" diameters and 3" back-up pads
- Primarily aluminum oxide cloth quick-change discs
- Several zirconia alumina and aluminum oxide FlexEdge discs are included





### Zirconia Alumina Quick-Change Cloth Discs

				( Constant		ALC: NO	A 10 10 10 10 10 10 10 10 10 10 10 10 10
			10.19				
			A DO B		10 00 F		
		TIER:	BETTER	BETTER	BETTER	BETTER	BETTER
		TRADENAME:	BLUEFIRE R860	BLUEFIRE R860	BLUEFIRE R887D	BLUEFIRE R887D	BLUEFIRE R887D
		ABRASIVE:	Zirconia Alumina				
		BACKING:	Polyester 2-Ply Standard				
		OTHER:		, ,	Supersize	Supersize	Supersize
		ATTACHMENT:	TS (Type II)	TR (Type III)	TS (Type II)	TR (Type III)	TP (Type I)
			$\bigcirc$		$\overline{\bigcirc}$	Ì	
ZE (D)	GRIT	STD. PKG.	PART #				
	50	100				088341 <b>67095 NS</b>	088341 <b>67011 NS</b>
	60	100	662611 <b>38608</b>			088341 <b>67096 NS</b>	088341 <b>67012 NS</b>
	80	100	662611 <b>38607</b>			088341 <b>67097</b>	088341 <b>67013 NS</b>
	120	100				088341 <b>67099</b>	088341 <b>67015 NS</b>
-1/2	36	100	662611 <b>38624</b>	662611 <b>21041</b>			
	50	100				088341 <b>67102</b>	088341 <b>67018 NS</b>
	60	100	662611 <b>38621</b>	662611 <b>21043</b>	088341 <b>67061</b>	088341 <b>67103</b>	088341 <b>67019 NS</b>
	80	100	662611 <b>38620</b>	662611 <b>21044</b>	088341 <b>67062</b>	088341 <b>67104</b>	
	120	100				088341 <b>67106</b>	
	24	100	662611 <b>38638</b> *	662611 <b>38672</b> *			
	36	100	662611 <b>38637</b> *	662611 <b>38671</b>	088341 <b>67065</b>	088341 <b>67107</b>	088341 <b>67023</b>
	40	100			088341 <b>67066</b>	088341 <b>67108</b>	
	50	100	662611 <b>38635</b> *	662611 <b>38670</b> *	088341 <b>65583</b>	088341 <b>67109</b>	088341 <b>67025</b>
	60	100	662611 <b>38634</b> *	662611 <b>21048</b> *	088341 <b>67068</b>	088341 <b>67110</b>	088341 <b>67026</b>
	80	100	662611 <b>38633</b> *	662611 <b>21049</b> *	088341 <b>67069</b>	088341 <b>67111</b>	088341 <b>67027</b>
	120	100			088341 <b>67071</b>	088341 <b>67113</b>	088341 <b>67029</b>
	24	50	662611 <b>38665</b> *	662611 <b>38675</b> *			
	36	50	662611 <b>38664</b> *	662611 <b>38674</b> *	08834167072	088341 <b>67114</b>	088341 <b>67030</b>
	40	50	00001100000	00001100020*	08834167073	00004105440	00004405000
	50	50	662611 <b>38662</b> *	662611 <b>38673</b> *	08834167074	088341 <b>67116</b>	08834167032
	60	50	662611 <b>38661</b> *	662611 <b>21053</b> *	08834167075	08834167117	08834167033
	80	50	662611 <b>38660</b> *	662611 <b>21054</b> *	08834167076	08834167118	088341 <b>67034</b>
	120	50			08834167078	088341 <b>67120</b>	
	36	50	00001100001*		088341 <b>67079</b>		
	50	50	662611 <b>38681</b> *				00004107040 NO
	60	50	662611 <b>37343</b> *		000041C7000 NO	STY B	088341 <b>67040</b> NS
	80	50	662611 <b>38679</b> *		08834167083 NS	10 -	
Chandara	120	50			088341 <b>67085</b> NS	and the second second	

\* Standard Package = 25 discs

NS Non-stock, contact your Norton representative for current order quantities and lead-times.

#### BlueFire R860

Proprietary new grain shape and chemistry for faster cutting and longer life on a wide range of materials.



### Aluminum Oxide Quick-Change Cloth Discs

			40		10 20 2
			40-40		
		TIER:	GOOD	GOOD	GOOD
		TRADENAME:	GEMINI R766	GEMINI R766	GEMINI R766
		ABRASIVE:	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide
		BACKING:	Polyester	Polyester	Polyester
			2-Ply Standard	2-Ply Standard	2-Ply Standard
		ATTACHMENT:	TS (Type II)	TR (Type III)	TP (Type I)
				( <sup>B</sup> )	
	ODIT		DADT #	DADT #	DADT #
ize (d) /4	GRIT 40	STD. PKG. 100	PART #	PART #	PART # 699573 <b>99739</b>
/4	50	100	699573 <b>99604</b>		699573 <b>99740</b>
	60	100	699573 <b>99605</b>	699573 <b>99673</b>	699573 <b>99741</b>
	80	100	699573 <b>99606</b>	699573 <b>99674</b>	699573 <b>99742</b>
	36	100	699573 <b>99614</b>	699573 <b>99682</b>	699573 <b>99750</b>
	40	100	03337333014	03337333002	699573 <b>99751</b>
	50	100	699573 <b>99616</b>		699573 <b>99752</b>
	60	100	699573 <b>99617</b>	699573 <b>99685</b>	699573 <b>99753</b>
	80	100	699573 <b>99618</b>	699573 <b>99686</b>	699573 <b>99754</b>
	100	100	699573 <b>99619</b>	699573 <b>99687</b>	699573 <b>99755</b>
	120	100	699573 <b>99620</b>	699573 <b>99688</b>	699573 <b>99756</b>
	180	100	699573 <b>99622</b>	699573 <b>99690</b>	699573 <b>99758</b>
	240	100	699573 <b>99623</b>	699573 <b>99691</b>	699573 <b>99759</b>
-1/2	36	100	699573 <b>99626</b>	699573 <b>99694</b>	699573 <b>99762</b>
	40	100	699573 <b>99627</b>	699573 <b>99695</b>	699573 <b>99763</b>
	50	100	699573 <b>99628</b>	699573 <b>99696</b>	699573 <b>99764</b>
	60	100	699573 <b>99629</b>	699573 <b>99697</b>	699573 <b>99765</b>
	80	100	699573 <b>99630</b>	699573 <b>99698</b>	699573 <b>99766</b>
	100	100	699573 <b>99631</b>	699573 <b>99699</b>	
	120	100	699573 <b>99632</b>	699573 <b>99700</b>	699573 <b>99768</b>
	150	100			699573 <b>99769</b>
	180	100	699573 <b>99634</b>	699573 <b>99702</b>	699573 <b>99770</b>
	240	100	699573 <b>99635</b>	699573 <b>99703</b>	
2	24	100	699573 <b>99637</b>	699573 <b>99705</b>	699573 <b>99773</b>
	36	100	699573 <b>99638</b>	699573 <b>99706</b>	699573 <b>99774</b>
	40	100	699573 <b>99639</b>	699573 <b>99707</b>	699573 <b>99775</b>
	50	100	699573 <b>99640</b>	699573 <b>99708</b>	699573 <b>99776</b>
	60	100	699573 <b>99641</b>	699573 <b>99709</b>	699573 <b>99777</b>
	80	100	699573 <b>99642</b>	699573 <b>99710</b>	699573 <b>99778</b>
	100	100	699573 <b>99643</b>	699573 <b>99711</b>	699573 <b>99779</b>
	120	100	699573 <b>99644</b>	699573 <b>99712</b>	699573 <b>99780</b>
	150	100	699573 <b>99645</b>	699573 <b>99713</b>	699573 <b>99781</b>
	180	100	699573 <b>99646</b>	699573 <b>99714</b>	699573 <b>99782</b>
	240	100	699573 <b>99647</b>	699573 <b>99715</b>	699573 <b>99783</b>
	320	100	699573 <b>99648</b>	699573 <b>99716</b>	699573 <b>99784</b>
3	24	50	699573 <b>99649</b>	699573 <b>99717</b>	699573 <b>99785</b>
	36	50	699573 <b>99650</b>	699573 <b>99718</b>	699573 <b>99786</b>
	40	50	699573 <b>99651</b>	699573 <b>99719</b>	699573 <b>99787</b>
	50	50	699573 <b>99652</b>	699573 <b>99720</b>	699573 <b>99788</b>
	60 80	50 50	699573 <b>99653</b>	699573 <b>99721</b>	699573 <b>99789</b>
			699573 <b>99654</b>	699573 <b>99722</b>	699573 <b>99790</b> 699573 <b>99791</b>
	100 120	50	699573 <b>99655</b>	699573 <b>99723</b>	
	120	50 50	699573 <b>99656</b> 699573 <b>99657</b>	699573 <b>99724</b> 699573 <b>99725</b>	699573 <b>99792</b>
	180	50	699573 <b>99658</b>	699573 <b>99726</b>	600573 <b>0070<i>4</i></b>
	240	50	699573 <b>99659</b>	699573 <b>99726</b> 699573 <b>99727</b>	699573 <b>99794</b> 699573 <b>99795</b>
	320	50	699573 <b>99660</b>	699573 <b>99728</b>	699573 <b>99796</b>
1	36	50	699573 <b>99661</b>	699573 <b>99729</b>	00001000100
r	50	50	033313 <b>3300 I</b>	699573 <b>99731</b>	
	60	50	699573 <b>99664</b>		699573 <b>99800</b>
	80	50	0000100000	699573 <b>99733</b>	

#### Quick-Change back-up pads shown at the end of the Quick-Change Disc section.



#### Silicon Carbide Quick-Change Cloth Discs

			0		
		TIER:	GOOD	GOOD	GOOD
		TRADENAME:	MERIT R422	MERIT R422	MERIT R422
		ABRASIVE:	Silicon Carbide	Silicon Carbide	Silicon Carbide
		BACKING:	Cotton Standard	Cotton Standard	Cotton Standard
		ATTACHMENT:	TS (Type II)	TR (Type III)	TP (Type I)
				Ì	
IZE (D)	GRIT	STD. PKG.	PART #	PART #	PART #
	40	100	088341 <b>65252 NS</b>	088341 <b>64275 NS</b>	
	60	100	088341 <b>65254</b>	088341 <b>64163</b> NS	088341 <b>62168 NS</b>
	80	100	088341 <b>65255</b>	088341 <b>66155</b> NS	088341 <b>62169</b> NS
	120	100		088341 <b>64837</b> NS	088341 <b>62171 NS</b>
	180	100	088341 <b>65259 NS</b>	088341 <b>67313 NS</b>	088341 <b>62173 NS</b>
	40	50	088341 <b>65267</b> NS	088341 <b>64277</b> NS	
	60	50		088341 <b>64850 NS</b>	
	80	50		088341 <b>66159 NS</b>	088341 <b>62188 NS</b>
	120	50	088341 <b>65272 NS</b>	088341 <b>66160 NS</b>	088341 <b>62190 NS</b>
	180	50		088341 <b>68177</b> NS	

Quick-Change back-up pads shown at the end of the Quick-Change Disc section.

NS Non-stock, contact your Norton representative for current order quantities and lead-times.

#### Specialty Quick-Change Discs

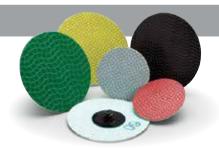


Better choice for hard-to-grind areas where flexibility is not required

## NORKUT ZIRCONIA ALUMINA POLYMER

- Durable zirconia alumina grain is resin bonded to a unique polymer backing which resists cracking and breaking; can be trimmed to the 1 Inch core
- Used with a quick change mandrel: 7/16-20 threaded for hand-held pneumatic grinders or 1/4 inch mandrel for automotive drills
- · Use for deburring and blending; use the core to grind pinch welds and other hard-to-reach areas

		TIER:	BETTER			
		TRADENAME:	NORKUT			
		ABRASIVE:	Zirconia Alumina			
		BACKING:	Extra HD Polymer		TIER:	BETTER
		ATTACHMENT:	Threaded Hole		ATTACHMENT:	Threaded Hole
SIZE (D)	GRIT	STD. PKG.	PART #	SIZE (D)	STD. PKG.	PART #
NorKut Discs				Mandrels		
3	24	20	636425 <b>03656</b>	7/16-20 Mandrel	5	636425 <b>03659</b>
	36	20	636425 <b>03657</b>	1/4" Mandrel	5	636425 <b>03660</b>
	50	20	636425 <b>03658</b>			



Better choice for improved cut rate and finish on ceramics, glass, fiberglass, composites, carbide, and other tough metals and coatings

## D7210 DIAMOND QUICK-CHANGE TR (TYPE III)

- Unique, durable diamond abrasive pattern increases life and lowers costs versus standard coated and diamond discs; color-coded backing for easy grit/application identification
- · Removes rust and scale on other material; producing metallurgical stamps and coupons

			7	<i>IER:</i> BETTER
SIZE (D)	COLOR	MESH	STD. PKG.	PART #
<b>Flexible Dia</b>	mond Coate	d Quick-Chang	e TR (Type III) D	liscs
2	Green	60	12	662603 <b>11778</b>
	Black	120	12	662603 <b>11779</b>
	Red	200	12	662603 <b>11780</b>
	Yellow	400	12	662603 <b>11781</b>
	White	800	12	662603 <b>11782</b>

			TIE	R: BETTER
SIZE (D)	COLOR	MESH	STD. PKG.	PART #
<b>Flexible Di</b>	amond Coated	l Quick-Chang	e TR (Type III) Dis	SCS
3	Green	60	12	662603 <b>11783</b>
	Black	120	12	662603 <b>11784</b>
	Yellow	400	12	662603 <b>11786</b>



Non-woven quick-change discs are a combination of strong synthetic mesh and quality abrasives, bonded together by a smear-resistant adhesive. The open construction of the non-woven material enables aggressive cutting action and improved surface finish while maintaining its non-loading feature.

#### **Applications:**

Size Range: Grit Range: Abrasive Grain: Attachment: Back-up Pads: Machine Used: Medium-light stock removal, beveling, deburring/deflashing, rust removal, blending, cleaning and finishing, polishing, and decorative finishing 3/4" – 4" diameter X-Coarse, Coarse, Medium, Fine, Very Fine, Super Fine Ceramic Alumina, Engineered Aluminum Oxide, Aluminum Oxide, Silicon Carbide Quick-Change Type TR (Type III), Type TS (Type II) Rubber with hardness variations for different applications



#### Quick-Change Attachment Systems and Cross Reference Guide

Each system enables quick, tool-free, safe disc changes, reducing downtime and operating expenses.

#### Type TS (Type II)

• Features a turn-on/turn-off style fastener



#### Type TR (Type III)

- Features a roll-on/roll-off style fastener
- Fastener is made of plastic



NORTON	TS	TR	
3M	Roloc TS/TSM	Roloc TR	
Standard	TS (SocAtt)	TR (Lockit)	
Superior	Type S	Type R	
Arc	Type S	Type R	
Pferd	Type CD	Type CDR	
Sait	SAIT-LOK	SAIT-LOK-R	
Camel	Turn On	Roll On	
Klingspor	QMC	QRC	
Garryson	Type S	Type R	

#### Application/Grit Recommendation Guide

MOST AGGRESSIVE

LEAST AGGRESSIVE

	D 11011					
NORTON	Rapid Strip	Vortex Rapid Blend	Vortex Rapid Prep	Rapid Prep	HS Buffing, Buffing	Rapid Polish
		Deburring & Blending				
Scale Removal	First Choice					
Stock Removal	First Choice	Second Choice				
Heavy Deburring	Second Choice	First Choice				
Light Deburring		First Choice	Second Choice			
Light Finishing			First Choice	Second Choice		
Blending			First Choice	Second Choice		
Cleaning			Second Choice	First Choice		
Finishing				First Choice	Second Choice	
Polishing						First Choice







## Cross Reference Guide

HEAVY/LIGHT DEBURRING

LIGHT DEBURRING/BLENDING/CLEANING/FINISHING

	BEST	BETTER	BEST	BETTER	BEST	BETTER	BEST
NORTON	Blaze Rapid Strip	Rapid Strip	Vortex Rapid Blend	Rapid Blend, Deburring & Blending	Vortex Rapid Prep	Rapid Prep	HS Buffing
3M	Clean and Strip XT PRO,	Clean & Strip Clean Strip XT	Deburr and Finish PRO	EXL Unitized	SE	Surf Cond, SL	_
	Clean and Strip XT PRO Extra Cut						
Standard	_	Cleaning Disc	-	500-900 Series Unitized	_	FE, GP, RC	Buff & Blend - HS, Buff & Blend
Fiberal/SIA	-	-	-	-	_	Meteor, Type B & C	_
Superior	-	Type R	-	XL Unitized	-	FD, GD, CC	HS, HD A/O
Arc	-	Arcstrip	-	-	-	Surface Cond	Blend & Finish
Pferd	_	Policlean	-	_	-	Finishing Disc - Hard & Soft	_
Sait	_	SAIT-Strip	-	-	-	HD, GP	Sand-Light Blending
Camel	_	EZ Strip - Black	_	_	_	_	-
Klingspor	-	-	_	-	-	-	-
Garryson	-	-	-	-	-	Surface Cond	-
Bibielle	_	Strip-It Black	_	BUR Unitized	_	DCR	_

#### Abrasive/Grit/Density Key

ABRASIVE	SILICON CARE	IDE		ALUM	CERAMIC ALUMINA	
	SHARPER, FIN	ER/BRIGHTER SCRAT	CH PATTERN	MORE DUI	RABLE, LONGER LAST	TING, POLISHED FINISH
GRIT SIZE	XC (50)	C (60-80)	M (100-150)	F (180-220)	VF (240-360)	SF (400-600)
	FASTER, AGGF	RESSIVE CUT, ROUGH	ER FINISH		REDUCED C	UT RATE, FINER FINISH
DENSITY	2					9
	SOFT, OPEN, C	ONFORMABLE, LESS	BURNING/LOADING	HARDER, MORE	DURABLE, FASTER CU	ITTING, BETTER FINISH





### **Quick-Change Stripping Discs**



Best choice for removing coatings on a variety of substrates, such as wood, metal and plastics

## BLAZE RAPID STRIP CERAMIC ALUMINA

- Blaze ceramic grain cuts 2X faster than competitive discs; leaves a thoroughly cleaned surface, ensuring excellent
  adhesion in subsequent processes such as coating, painting and soldering
- Open web construction for minimal loading; great alternative to wire brushes
- · Rapid Strip material provides a unique combination of aggressive performance, long life, and improved finish



## RAPID STRIP SILICON CARBIDE

- · Sharp silicon carbide abrasive provides fast aggressive cutting action
- Open web construction for minimal loading; great alternative to wire brushes
- Advanced resin bond prevents shedding, snagging, gouging, and rework

			-		
		TIER:			BETTER
			BLAZE RAPID STRIP		RAPID STRIP
		ABRASIVE:	Ceramic Alumina		Silicon Carbide
		GRADE:	XC		XC
		ATTACHMENT:	TR (Type III)	_	TR (Type III)
			Ì		I A A A A A A A A A A A A A A A A A A A
SIZE (DIAMETER)	MAX. RPM	STD. PKG.	PART #	STD. PKG.	PART #
2	15,500	25	666233 <b>03912</b>	10	662610 <b>13402</b>
3	12,000	25	662610 <b>96557</b>	10	662610 <b>13403</b>
4 TR+	8,000	5	666233 <b>03921</b> *	5	662610 <b>16580</b> *

\*TR+ attachment show in the group image above

Quick-Change back-up pads shown at the end of this section.





### 3D Unified Quick-Change Deburring & Blending Discs



#### Best technology for heavy deburring and finishing

## BLAZE RAPID BLEND CERAMIC ALUMINA

- Blaze SG ceramic alumina grain provides quickest cut rate and up to 8X longer life than competitive aluminum oxide discs
- · Superior resin chemistry resists shedding when used on sharp edges; ideal for deburring
- Abrasive is distributed throughout the entire disc (top, bottom and side) so all three faces can be used versus competitive discs with one bottom layer of abrasive

Best choice for weld blending, polishing and deburring

## VORTEX RAPID BLEND ALUMINUM OXIDE

- Patented Vortex agglomerated aluminum oxide grain provides the cutting power of a coarser grit with the finish of finer grits
- · Special resin bond for consistent performance with no smearing
- Abrasive is distributed throughout the entire disc (top, bottom and side) so all three faces can be used versus
  competitive discs with one bottom layer of abrasive



#### Better choice for light deburring, blending, and cleaning

## RAPID BLEND NEX ALUMINUM OXIDE

- · Quality aluminum oxide delivers durability and long life
- · Resin formula delivers smear-free finishes
- Abrasive is distributed throughout the entire disc (top, bottom and side) so all three faces can be used versus competitive discs' one bottom layer of abrasive

### TECH TIP

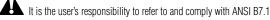
#### **3D** Construction

• The 3D construction means the abrasive is distributed throughout the entire disc (top, bottom and side) so all three faces can be used versus discs with one single bottom layer of abrasive.











How to Grind & Blend in One Step! Non-Woven Discs **youtube.com/watch?v=FgSLez3MKj8** 





#### 3D Unified Quick-Change Deburring & Blending Discs

	ied Quick-Cha ng & Blending		Discs		TIED	0	
				TDAD	TIER: FNAMF	BEST Blaze Rapid Blend	BEST Vortex Rapid Blend
				110.10		Ceramic Alumina	
				=		TS (Type II)	Engineered Aluminum Oxide TS (Type II)
				ATTAU	I IIVILIVI.		
SIZE				MAX.	STD.	<i>"</i>	
(D x T)	ABRASIVE	GRIT	DENSITY	RPM	PKG.	PART #	PART #
1 x 1/4	Ceramic Alumina	XC	1	35,000	100	666233 <b>13920</b>	
1-1/2 x 1/4	Ceramic Alumina	XC	1	35,000	80	666233 <b>13922</b> NS	
2 x 1/8	Aluminum Oxide	С	5	30,000	40		662611 <b>32884</b>
	Aluminum Oxide	С	8	30,000	40		662611 <b>32885</b>
2 x 1/4	Ceramic Alumina	XC	1	22,000	25	666233 <b>13925</b>	
	Aluminum Oxide	С	5	30,000	60		662611 <b>32886</b>
	Aluminum Oxide	С	8	30,000	60		662611 <b>32887</b>
	Aluminum Oxide	М	1	22,000	25		662544 <b>97070</b>
3 x 1/8	Aluminum Oxide	С	5	22,000	40		662611 <b>32890</b>
	Aluminum Oxide	С	8	22,000	40		662611 <b>32891</b>
3 x 1/4	Ceramic Alumina	XC	1	15,000	25	666233 <b>13931</b>	
	Aluminum Oxide	С	5	22,000	40		662611 <b>32894</b>
	Aluminum Oxide	С	5	22,000	40		662611 <b>32895</b>
	Aluminum Oxide	М	1	15,000	25		662544 <b>97069</b>

For unified wheels with arbor holes or spindle mounts, see the Non-woven Unified Wheel section. Quick-Change back-up pads shown at the end of this section.

NS Non-stock, contact your Norton representative for current order quantities and lead-times.

#### 3D Unified Quick-Change Deburring & Blending TR Discs

Deburriı	ng & Blending	, TR	Discs			$\bigcirc$	0	
				TDAG		BEST	BEST	BETTER
							VORTEX RAPID BLEND	RAPID BLEND NEX
						Ceramic Alunima	Engineered Aluminum Oxide	Aluminum Oxide
				ALIAL	HIVIEN I.	TR (Type III)	TR (Type III)	TR (Type III)
						Ì	٩	Ì
SIZE				MAX.	STD.			
(D x T)	ABR.		DENSITY	RPM	PKG.	PART #	PART #	PART #
1 x 1/4	Ceramic Alumina	XC	1	35,000	100	666233 <b>13919</b>		
1-1/2 x 1/4	Ceramic Alumina	XC	1	35,000	80	666233 <b>13921</b> NS		
2 x 1/8	Aluminum Oxide	C	5	30,000	40		662611 <b>32882</b>	
	Aluminum Oxide	С	8	30,000	40		662611 <b>32883</b>	
	Aluminum Oxide	М	4-6	22,000	60		662544 <b>25632</b> NS	
	Aluminum Oxide	М	7-9	22,000	60		662544 <b>33509</b> NS	
2 x 3/16	Aluminum Oxide	М	2-3	22,000	60		662544 <b>28236</b> NS	
2 x 1/4	Ceramic Alumina	XC	1	22,000	25	666233 <b>13923</b>		
	Aluminum Oxide	С	7-9	22,000	60			662610 <b>14921</b>
	Aluminum Oxide	М	1	22,000	25		662544 <b>97067</b>	
	Aluminum Oxide	М	2-3	22,000	60		662544 <b>28237</b>	662610 <b>14897</b>
	Aluminum Oxide	Μ	4-6	22,000	60		662544 <b>13660</b>	662610 <b>14911</b>
	Aluminum Oxide	М	7-9	22,000	60		662544 <b>33510</b>	662610 <b>14935</b>
	Silicon Carbide	F	2	22,000	60			662610 <b>14889</b>
	Silicon Carbide	F	3	22,000	60			662610 <b>17306</b>
3 x 1/8	Aluminum Oxide	С	5	22,000	40		662611 <b>32888</b>	
	Aluminum Oxide	С	8	22,000	40		662611 <b>32889</b>	
	Aluminum Oxide	М	4-6	15,000	40		662610 <b>93556</b>	
	Aluminum Oxide	Μ	7-9	15,000	40		662610 <b>90909</b>	
3 x 3/16	Aluminum Oxide	М	7-9	15,000	40		662544 <b>28239 NS</b>	
3 x 1/4	Ceramic Alumina	XC	1	15,000	25	666233 <b>13930</b>		
	Aluminum Oxide	С	5	22,000	40		662611 <b>32892</b>	
	Aluminum Oxide	С	8	22,000	40		662611 <b>32893</b>	
	Aluminum Oxide	С	7-9	15,000	40			662610 <b>14922</b>
	Aluminum Oxide	Μ	1	15,000	25		662544 <b>97068</b>	
	Aluminum Oxide	Μ	2-3	15,000	40		662544 <b>28238</b>	662610 <b>14898</b>
	Aluminum Oxide	М	4-6	15,000	40		662544 <b>13661</b>	662610 <b>14912</b>
	Aluminum Oxide	Μ	7-9	15,000	40		662544 <b>06395</b>	662610 <b>14936</b>
	Aluminum Oxide	F	4-6	15,000	40			662610 <b>15419</b>
	Silicon Carbide	F	2	15,000	40			662610 <b>14890</b>
	Silicon Carbide	F	3	15,000	40			662610 <b>16005</b>
NO Month								

NS Non-stock, contact your Norton representative for current order quantities and lead-times.



#### **Quick-Change Surface Preparation Discs**



Best choice for aggressive stock removal and blending in one step

## RAPID PREP XHD

- Coarse and Medium discs solve your most aggressive stock removal and blending challenges, remove weld lines, weld spatter, weld discoloration and blend surfaces in a single step
- Improve cut control and surface blending over traditional coated discs with our unique combination of a conformable fiber matrix and premium ceramic grain
- XHD Coarse discs for aggressive weld removal and surface blending on steels and Medium discs on softer metals/ alloys

		ABRA	TIER: BEST NAME: RAPID PREP XHD ASIVE: Ceramic Alumina MENT: TR (Type III)
SIZE (DIAMETER)	MAX. RPM	STD. PKG.	PART #
Coarse			
2	20,000	50	662611 <b>70271</b>
3	18,000	25	662611 <b>70273</b>
4	12,000	25	662611 <b>70274</b>
Medium			
2	20,000	50	662611 <b>70285</b>
3	18,000	25	662611 <b>70286</b>
4	12,000	25	662611 <b>70287</b>





### **Quick-Change Surface Preparation Discs**



#### Best choice for finishing and blending applications

### VORTEX RAPID PREP

- Proprietary engineered Vortex aluminum oxide abrasive grain and coating method combine maximum cutting speed with the consistent finish of finer grits to reduce process times by 50+% by combining multiple grit sequences to 1 step
- Premium high-loft nylon fiber bonded to a strong nylon scrim backing allows a thick layer of resin bond and grain for extended life and provides added durability and stiffness
- Proprietary Clean Bond resin technology guarantees smear-free finishes even on high nickel content alloys and reduces loading on aluminum and other soft metals

Better choice for finishing and blending applications

## RAPID PREP ALUMINUM OXIDE

- Quality aluminum oxide abrasive grain coating provides up to 20% higher cut rate and 50% better performance than competitive products
- Thick layer of grain throughout the product extends life; grain does not sit on top of fibers as it does with other competitive products
- Proprietary Clean Bond resin technology guarantees smear-free finishes even on high nickel content alloys and reduces loading on aluminum and other soft metals

		TIER:	BEST	BETTER	BEST	BETTER
		TRADENAME:	VORTEX RAPID PREP	RAPID PREP	VORTEX RAPID PREP	RAPID PREP
		ABRASIVE:	Engineered A/O	Aluminum Oxide	Engineered A/O	Aluminum Oxide
		ATTACHMENT:	TR (Type III)	TR (Type III)	TS (Type II)	TS (Type II)
			- P	- P		
				9	$\bigcirc$	$\bigcirc$
SIZE (DIAM.)	MAX. RPM	STD. PKG.	PART #	PART #	PART #	PART #
xtra Coarse						
3/4	25,000	50	666233 <b>25001</b>	666233 <b>40002</b>	666233 <b>35324</b>	
	25,000	50	666233 <b>25004</b>		666233 <b>25003</b>	666233 <b>40006</b>
-1/2	20,000	50	666233 <b>25007</b>	666233 <b>40011</b>	666233 <b>25006</b>	666233 <b>40010</b>
)	20,000	50	666233 <b>35326</b>	662610 <b>16373</b>	666233 <b>35325</b>	662610 <b>17819</b>
}	18,000	25	666233 <b>35327</b>	662610 <b>16994</b>	666233 <b>25010</b>	662610 <b>17818</b>
1	12,000	25	666233 <b>35329</b>	662610 <b>16374</b>		
Coarse						
3/4	25,000	50	666233 <b>25013</b>	666233 <b>40021</b>	666233 <b>35410</b>	662610 <b>95015</b>
	25,000	50	666233 <b>25015</b>	666233 <b>40023</b>	666233 <b>35537</b>	662610 <b>24310</b>
-1/2	20,000	50	666233 <b>35411</b>	662610 <b>47579</b>	666233 <b>25017</b>	666233 <b>40026</b>
2	20,000	50	666233 <b>35414</b>	662610 <b>09191 NS</b>	666233 <b>35413</b>	662610 <b>09183</b>
	18,000	25	666233 <b>35417</b>	662610 <b>09194</b>	666233 <b>35416</b>	662610 <b>09186</b>
	12,000	25	666233 <b>35419</b>	662610 <b>08822</b>		
ledium						
3/4	25.000	50	666233 <b>25020</b>	666233 <b>40032</b>	666233 <b>35420</b>	662544 <b>28059</b>
	25,000	50	666233 <b>35422</b>	662544 <b>82331</b>	666233 <b>35421</b>	662544 <b>82327</b>
-1/2	20.000	50	666233 <b>35424</b>	662544 <b>82332</b>	666233 <b>35423</b>	662544 <b>82328</b>
·/ =	20,000	50	666233 <b>35427</b>	66261009190*	666233 <b>35426</b>	662610 <b>09182</b>
}	18,000	25	666233 <b>35430</b>	662610 <b>17522</b>	666233 <b>35429</b>	662610 <b>09185</b>
•	12,000	25	666233 <b>35432</b>	662610 <b>08821</b>	00020000120	662610 <b>55350</b>
ine	12,000	20	00020000102	00201000021		00201000000
3/4	25,000	50	666233 <b>25026</b>	666233 <b>40058</b>	666233 <b>25025</b>	
// T	25,000	50	666233 <b>25029</b>	666233 <b>40064</b>	666233 <b>25028</b>	666233 <b>40062</b>
-1/2	20,000	50	666233 <b>25032</b>	666233 <b>40070</b> NS	666233 <b>25031</b>	666233 <b>40068</b>
)	20,000	50	666233 <b>25035</b>	666233 <b>40077</b>	666233 <b>25034</b>	666233 <b>40074</b>
	18,000	25	666233 <b>25038</b>	666233 <b>40085</b>	666233 <b>25037</b>	666233 <b>40082</b>
, 1	12,000	25	666233 <b>25041</b>	666233 <b>40092</b>	0002032007	000200-0002
/ery Fine	12,000	25	00020020041	00023340032		
3/4	25,000	50	666233 <b>25044</b>	666233 <b>40044</b>	666233 <b>25043</b>	666233 <b>40042</b>
0/4	25,000	50	666233 <b>25047</b>	662544 <b>82339</b>	666233 <b>25046</b>	662544 <b>82335</b>
-1/2	20,000	50	666233 <b>25050</b>	662544 <b>82340</b>	666233 <b>25049</b>	662544 <b>82336</b>
	20,000	50	666233 <b>35433</b>	662610 <b>09189</b> *	666233 <b>25052</b>	662544 <b>82337</b>
3	18,000	25	666233 <b>35437</b>	662610 <b>09192</b>	666233 <b>35436</b>	662610 <b>09184</b>
1	12,000	25		666233 <b>40053</b>		
Super Fine	00.000	50		00001001100		
2	20,000	50		662610 <b>91459</b>		
3	18,000 ard package.	25		662610 <b>91460</b>	for current order quantities and	





### Quick-Change Buffing/Polishing Discs



Best choice for light removal of paint or rust

## HIGH STRENGTH BUFFING DISCS

- Aluminum oxide grain delivers a combination of consistent cut rate and uniform finish
- Tough yet conformable high-strength discs are smear-proof and resist tearing on burrs and sharp edges
- Our strongest non-woven buffing and polishing disc

#### Better choice for finishing to a mirror like shine



#### • Quick-change discs with premium quality pressed hardened felt for polishing to a mirror like finish

• Use with our without polishing compound

RAPID POLISH

Soft padding is Ideal for final finishing with no vibration



#### Good choice for light removal of rust, coatings or oxidation

## MERIT BUFFING/POLISHING DISCS

- This aluminum oxide grain and resin bond combination produce a smooth cut rate and smear-free, uniform finish
- Non-woven nylon fibers are laminated to tough yet conformable nylon backing that resists tearing on burrs and sharp edges
- · Designed for light removal of coatings oxidation or rust without affecting the base product

			TIED.	BEST	BEST	GOOD	GOOD			BETTER
		TRAE	ENAME:	HIGH-STRENGTH	HIGH-STRENGTH	MERIT BUFFING/ Polishing	MERIT BUFFING/ Polishing			RAPID POLISH
		AE	RASIVE:	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide			Felt
		B	ACKING:			Nylon Laminated	Nylon Laminated			
		ATTAC	HMENT:	TR (Type III)	TS (Type II)	TR (Type III)	TS (Type II)			TR (Type III)
				٩		Ì				Ì
0.75 (0)	0.017	MAX.	STD.	D.D.T. //				MAX.	STD.	
SIZE (D)	GRIT	RPM	PKG.	PART #	PART #	PART #	PART #	RPM	PKG.	
1-1/2	M	20,000	100			088341 <b>66368</b>	088341 <b>66392</b>			
	F	20,000	100			088341 <b>66369</b>				
2	С	18,000	50	776960 <b>00149</b>		088341 <b>61649</b>	088341 <b>66394</b>			
	М	18,000	50	088341 <b>64064</b>	088341 <b>64244</b> NS	088341 <b>66303</b>	088341 <b>66395</b>	-	50	088341 <b>64407</b>
	F	18,000	50			088341 <b>66304</b>	088341 <b>66396</b>			
	VF	18.000	50	088341 <b>63987 NS</b>	088341 <b>64245</b> NS	088341 <b>66305</b>	088341 <b>66405</b>			
						0000440464	088341 <b>66397</b>			
3	С	12,000	25	776960 <b>00150</b>		088341 <b>61651</b>				
3	C M		25 25	776960 <b>00150</b> 088341 <b>64065</b>	088341 <b>64252 NS</b>	08834166308	08834166398	-	50	088341 <b>64408</b>
3		12,000			088341 <b>64252</b> NS			-	50	088341 <b>64408</b>

NS Non-stock, contact your Norton representative for current order quantities and lead times.

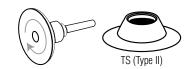
#### See page 80 for Rapid Polish Compound Stick.

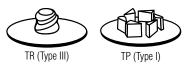


### PORTABLE TOOLS AND SPECIALTIES Quick-Change Disc Accessories

### Quick-Change Back-up Pads

- · Hard density pads are for aggressive cutting action
- Medium density pads are for all-purpose applications
- Soft density pads are used for contours and fine finishing work





DENSITY			TS (TYPE II)	TR (TYPE III)	TP (TYPE I)
••••	40,000	1	662610 <b>54014 NS</b>		662610 <b>54013 NS</b>
Medium	40,000	1	088341 <b>64206</b>	088341 <b>64038</b>	088341 <b>64001</b>
Medium	40,000	1	088341 <b>64651</b>	088341 <b>64037</b>	088341 <b>64002</b>
Hard	30,000	1	08834164622		08834163996 NS
Medium	30,000	1	08834164146	08834161174	08834164003
Hard	30,000	1	08834164624	08834164643	08834163997
Medium	30,000	1	08834164198	08834164922	088341 <b>64004</b>
Soft	30,000	1	08834161625	08834164641	088341 <b>63949</b> NS
Hard	20,000	1	08834161626	08834164036	08834163998
Medium	20,000	1	08834164113	08834164949	08834164005
Soft	20,000	1	08834164626	088341 <b>64644 NS</b>	088341 <b>63948 NS</b>
Medium	15,000	1	08834164135	08834164655	
Medium	8,000	1		636425 <b>55106</b>	
k-Change Back	-up Pads				VENDIBLE
Medium	30,000	5	666233 <b>41082</b>	666233 <b>41083</b>	
Medium	20,000	5		666233 <b>41085</b>	
	Medium Hard Medium Hard Medium Soft Medium Soft Medium Medium <b>K-Change Back</b> Medium	Back-up Pads         40,000           Medium         40,000           Medium         40,000           Medium         40,000           Hard         30,000           Medium         30,000           Medium         30,000           Medium         30,000           Medium         30,000           Medium         30,000           Soft         20,000           Medium         20,000           Soft         20,000           Medium         15,000           Medium         8,000           K-Change Back-up Pads           Medium         30,000	DENSITY         RPM         PKG.           Back-up Pads         40,000         1           Medium         40,000         1           Medium         40,000         1           Hard         30,000         1           Medium         20,000         1           Medium         20,000         1           Medium         20,000         1           Medium         15,000         1           Medium         15,000         1           Medium         8,000         1           K-Change Back-up Pads         Medium         30,000	DENSITY         RPM         PKG.         TS (TYPE II)           Back-up Pads         40,000         1         66261054014 NS           Medium         40,000         1         08834164206           Medium         40,000         1         08834164206           Medium         40,000         1         08834164651           Hard         30,000         1         08834164622           Medium         30,000         1         08834164146           Hard         30,000         1         08834164198           Soft         30,000         1         08834161625           Hard         20,000         1         08834161626           Medium         20,000         1         08834164133           Soft         20,000         1         08834164135           Medium         15,000         1         08834164135           Medium         8,000         1         4834164135           Medium         8,000         1         4834164135           Medium         8,000         1         4834164135           Medium         8,000         1         4834164135           Medium         30,000         5         66623341	DENSITY         RPM         PKG.         TS (TYPE II)         TR (TYPE III)           Back-up Pads         40,000         1         66261054014 NS           Medium         40,000         1         08834164206         08834164038           Medium         40,000         1         08834164206         08834164037           Hard         30,000         1         08834164622         08834164037           Medium         30,000         1         08834164624         08834164643           Medium         30,000         1         08834164624         08834164643           Medium         30,000         1         08834164125         08834164643           Medium         30,000         1         0883416125         08834164641           Hard         20,000         1         0883416125         08834164641           Hard         20,000         1         0883416125         08834164036           Medium         20,000         1         0883416426         08834164036           Medium         20,000         1         0883416413         088341644949           Soft         20,000         1         0883416426         0883416444 NS           Medium         15,000

All Quick-Change back-up pads have a 1/4" solid steel shank.

NS Non-stock. Contact your Norton representative for current order quantities and lead times.

Vendible back-up pad Std. Pkg. Qtys: 1 pad per pack; 5 packs per carton. Order in multiples of 5.

#### **Replacement Medium Density Rubber Pads** for Quick-Change TP (Type I) Back-up Pads

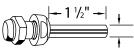
· When the rubber pad has worn away, but the steel components of your quick-change back-up are still serviceable, order these replacement rubber pads.

SIZE (D)	MODEL #	STD. PKG.	PART #				
Quick-Change Replacement Rubber Back-up Pads							
3/4	RR75	1	088341 <b>64008 NS</b>				
4	RR40	1	088341 <b>64013 NS</b>				
NO Marcala	0	and the first factor and the state of the st	and the state of the state of the state				

NS Non-stock. Contact your Norton representative for current order quantities and lead-times.

#### **Replacement Assemblies and Shanks for** Quick-Change Back-up Pad

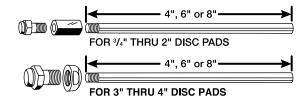
· Assemblies replace all the steel components of a quick-change back-up pad. This shank replaces the screw-in 1/4" solid steel shank only.



088341 <b>64016 NS</b>
088341 <b>64303</b>

NS Non-stock. Ask your Norton representative for current order quantities and lead-times

### Extension Mandrels and Assembly

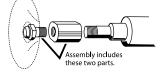


DIAMETER	MODEL #	LENGTH	STD. PKG.	PART #
Extension	Mandrels and Ass	embly – TP (T	(ype I)	
3/4 - 2	EMN-14	4"	1	088341 <b>64017 NS</b>
3/4 - 2	EMN-16	6"	1	088341 <b>64018 NS</b>
3/4 - 2	EMN-18	8"	1	088341 <b>64019</b> NS
3 - 4	EMN-34	4"	1	088341 <b>64020 NS</b>
3 - 4	EMN-36	6"	1	088341 <b>64026</b> NS
3 - 4	EMN-38	8"	1	088341 <b>64021</b> NS
			• • •	

All extension mandrels are non-stock, Contact your Norton representative for current order quantities and lead-times.

#### **MNA-1** Pad Adapters

· Convert a TP (Type I) back-up pad 1/4" diameter solid shank to a threaded shank

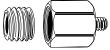


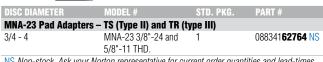
DISC DIAMETER	MODEL NO.	STD. PKG.	PART #
<b>MNA-1 Pad Adapte</b>	ers – TP (Type I)		
3/4 - 2	MNA 1/4-20 THD.	1	088341 <b>61176 NS</b>
3/4 - 2	MNA 3/8-24	1	088341 <b>64055 NS</b>
3/4 - 2	MNA 5/8-11	1	088341 <b>63001</b> NS
3 - 4	MNA 1/4-20	1	088341 <b>63002 NS</b>

MNA 5/8-11 08834164028 NS 3 - 4 1 All pad adapters are non-stock. Contact your Norton representative for current order quantities and lead-times.

### **MNA-23 Pad Adapters**

- · For use on a right angle grinder: convert TS (Type II) and TR (Type III) back-up pad 1/4" diameter solid shanks to threaded shanks.
- The larger 5/8"-11 adapter (for 4-1/2" discs) is used alone to convert to a 5/8"-11 thread.
- The 3/8"-24 insert (for 4" discs) is screwed into the 5/8"-11 adapter to create a 3/8"-24 thread adapter.





NS Non-stock. Ask your Norton representative for current order quantities and lead-times

### 1/4" Diameter Extension Mandrel

USE WITH TP (TYPE I), TS (TYPE II), TR (TYPE III)							
MODEL NO.	LENGTH	STD. PKG.	PART #				
1/4" Diameter Extension Mandrel 1/4-20 Thread							
EM-144	4"	1	088341 <b>54185</b>				
EM-146	6"	1	088341 <b>54186</b>				
EM-148	8"	1	088341 <b>54187</b>				





### PORTABLE TOOLS AND SPECIALTIES **Die Grinder**

Our new Norton pneumatic die grinder quickly and comfortably accomplishes many portable applications without changing machines - including jobs for abrasive specialties (cartridge and spiral rolls...), small diameter flap wheels, mounted points, and carbide burrs.

Veight of tool:	1.4 lbs.
Compressed air:	6.2 bar (90psi)
Naximum permissible operating pressure:	6.2 bar (90psi)
Recommended operating pressure:	6.2 bar (90psi)
lorsepower:	0.9HP
ree speed:	25,000 rpm
lir consumption @90psi:	85 I/min (3 CFM)
loise characteristic value in accordance with :N ISO 15744 (ISO 15744):	
A-weighted sound pressure level at workstation	87.3 dB
<ul> <li>A-weighted sound power level</li> </ul>	98.3 dB
Peak C-weighted instantaneous sound pressure level     at workstation	< 130 dB
<ul> <li>Measurement uncertainty (Standard)</li> </ul>	3 dB
/ibration value according to EN ISO 28927-12:	3.00 m/s <sup>2</sup>
Aeasurement uncertainty (Standard):	0.84 m/s <sup>2</sup>
lecommended lubrications:	Air drill oil 20#
anding tool specifications:	Pad Size 2" Collet
	Chuck 1/8" (3 mm) and 1/4" (6 mm)
Applications and suitability:	Final surface finishing, chamfering, deburring of architectural millwork, sheet metal and surface prep, zinc casting, aluminum products, injection molds, etc.; general sanding and polishing.



#### Put the power right in the palm of your hand with our die grinder

## PNEUMATIC DIE GRINDER

Vi

- Comfortable during prolonged use thanks to vibration-limiting technology, ergonomic design, and streamlined non-slip grip
- Adaptable to the needs of each job with speed regulation and two collet inserts in 1/8" and 1/4"
- Compatible with many accessories including cartridge rolls, spiral rolls, square pads, cross pads, overlap slotted discs, flap wheels, mounted points and carbide burrs

DESCRIPTION	STD. PKG.	PART #
Norton Pneumatic Die Grinder		
Single Die Grinder with 1/8" and 1/4" collets	1	699573 <b>08000</b>
Die Grinder Kit*	1	699573 <b>08001</b>
Kit includes:		

1 die grinder with 1/8" and 1/4" collets 100 - 3/8" x 1-1/2" x 1/8", 80 grit Merit R228 cartridge rolls (08834180232) 1- M9 cartridge roll mandrel (08834181209) 10 - 1" x 1" x 1/4" shank, 60 grit Blaze R920 flap wheels (662611**51170**)

- 5-1" x 1" W220, 1/4" x 1-1/2" spindle Gemini 38A60-P mounted points (61463624566)
- 1-1/2" x 1" SF5 Double-Cut carbide burr (69957308021)



How to Use a Pneumatic Die Grinder रे nortonsga.us/44yj2 Or Visit 🗞 nortonsga.us/diegrinder





### PORTABLE TOOLS AND SPECIALTIES Cartridge Rolls



Cartridge rolls are strips of abrasive cloth rolled and glued to form a solid shape that is designed to break down during use and reveal the next layer of abrasive. A valuable abrasive tool for reaching into corners, where larger diameter tools cannot work

#### **Applications:**

Stock Shapes: Grit Range: Abrasive Grain: Backing: Construction: Maximum RPM:

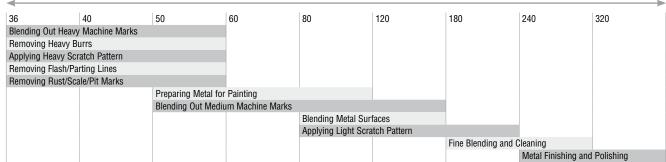
Machine Used:

Used on inside surfaces and inside corners where other abrasive shapes cannot reach. Typically these are used on high-speed air grinders and are always mounted on a mandrel. Ideal for flash removal, polishing or removing machine tool marks, and edge breaking. Cartridge rolls, half-glued 36 - 320 Ceramic Alumina, Aluminum Oxide X-weight cotton, X-weight poly-cotton All cartridge roll part numbers shown are resin bond, half-glued. Quarter and full glue are also available for quotation as made-to-order products. 1/8" to 1/2" – 23,000 5/8" to 1" – 18,000 1" to 1-1/2" – 15,000 DIE GRINDER

### Application/Grit Recommendation Guide

COARSER (GRINDING)

FINER (FINISHING)





Best choice for hard-to-grind materials including super alloys (cobalt, inconel, and titanium) and stainless steel

## BLAZE R920 CERAMIC ALUMINA

- Premium ceramic alumina abrasive grain provides greatest productivity with significantly faster cut rates; resists wear resulting in 50% – 300% longer life; supersized for cool cutting
- X-weight cotton cloth provides extended durability, conformability, and superior wear resistance; strong resin bond system provides good grain retention and life
- · Constructed of rolled and half-glued abrasive strips that break down to expose next layer of abrasive

Better choice for accessing tight areas and where long life & fast cut are required

## PINK R928 CERAMIC ALUMINA

- Excellent option for reaching into corners and small areas, ceramic grain provides better performance than aluminum oxide or zirconia alumina alternatives
- · Improved resin bond system provides longer life; supersized for cool cutting
- Versatile X-weight poly cotton backing for flexibility and life

## Good starting specification for flash removal, polishing, or removing machine tool marks and edge breaking on all types of metal

## MERIT R228 ALUMINUM OXIDE

- · Quality aluminum oxide abrasive delivers long life
- X-weight cotton cloth provides extended durability, conformability, and superior wear resistance; strong resin bond system provides good grain retention and life
- · Constructed of rolled and half-glued abrasive strips that break down to expose next layer of abrasive

### PORTABLE TOOLS AND SPECIALTIES olls

Cartridge R	

		TIER:	BEST	BETTER
		TRADENAME:	BLAZE R920	PINK R928
		ABRASIVE:	Ceramic Alumina	Ceramic Alumina
		OTHER:	Supersize	Supersize
SIZE (D x L x H )	GRIT	STD. PKG.	PART #	PART #
1/4 x 1-1/2 x 1/8	60	100	662611 <b>94384</b>	699573 <b>39765</b>
Use M-9 Mandrel	80	100	662611 <b>94394</b>	699573 <b>39766</b>
	120	100	662611 <b>94397</b>	699573 <b>39767</b>
3/8 x 1-1/2 x 1/8	60	100	662611 <b>94392</b>	699573 <b>39768</b>
Use M-9 Mandrel	80	100	662611 <b>94395</b>	699573 <b>39769</b>
	120	100	662611 <b>94398</b>	699573 <b>39770</b>
1/2 x 1-1/2 x 1/8	60	100	662611 <b>94393</b>	699573 <b>39771</b>
Use M-9 Mandrel	80	100	662611 <b>94396</b>	699573 <b>39772</b>
	120	100	662611 <b>94399</b>	699573 <b>39774</b>

NORTON

SAINT-GOBAIN



TRADENAME: MERIT R228

		ABRASIVE:	Aluminum Oxide
SIZE (D x L x H )	GRIT	STD. PKG.	PART #
3/16 x 3/4 x 3/32	80	100	088341 <b>80005</b>
3/16 x 1 x 3/32	60	100	088341 <b>80023</b>
Use M-2E Mandrel	80	100	088341 <b>80024</b>
	100	100	088341 <b>80025</b>
	120	100	088341 <b>80026</b>
	150	100	088341 <b>80027</b>
	180	100	088341 <b>80028</b>
	240	100	088341 <b>80030</b>
1/4 x 3/4 x 1/8	80	100	088341 <b>80043</b>
Use M-3 or M-7 Mandrel			
1/4 x 1 x 1/8	50	100	088341 <b>80060</b>
Use M-4 or M-8 Mandrel	60	100	088341 <b>80061</b>
	80	100	088341 <b>80062</b>
	100	100	088341 <b>80063</b>
	120	100	088341 <b>80064</b>
	150	100	088341 <b>80065</b>
	180	100	088341 <b>80066</b>
	320	100	088341 <b>80070</b>
1/4 x 1-1/2 x 1/8	50	100	088341 <b>80079</b>
Use M-9 Mandrel	60	100	088341 <b>80080</b>
	80	100	088341 <b>80081</b>
	100	100	088341 <b>80082</b>
	120	100	088341 <b>80083</b>
	150	100	088341 <b>80084</b>
	180	100	088341 <b>80085</b>
	320	100	088341 <b>80089</b>
1/4 x 2 x 1/8	80	100	088341 <b>80100</b>
Use M-10 Mandrel	120	100	088341 <b>80102</b>
5/16 x 1 x 1/8	80	100	088341 <b>80138</b>
Use M-4 or M-8 Mandrel	120	100	088341 <b>80140</b>
5/16 x 1-1/2 x 1/8 Use M-9 Mandrel	80	100	088341 <b>80157</b>

Some part numbers are non-stock; contact your Norton representative for status, order quantities and lead-times.

Continued

#### Refer to the back of this section for mandrels.

	TIER:	
		MERIT R228
	ABRASIVE:	Aluminum Oxide
GRIT	STD. PKG.	PART #
120	100	088341 <b>80197</b>
60	100	088341 <b>80213</b>
80	100	088341 <b>80214</b>
100	100	088341 <b>80215</b>
120	100	088341 <b>80216</b>
150	100	088341 <b>80217</b>
180	100	088341 <b>80218</b>
240	100	088341 <b>80220</b>
36	100	088341 <b>80228</b>
40	100	088341 <b>80229</b>
50	100	088341 <b>80230</b>
60	100	088341 <b>80231</b>
80	100	088341 <b>80232</b>
100	100	088341 <b>80233</b>
120	100	088341 <b>80234</b>
180	100	088341 <b>80236</b>
240	100	088341 <b>80238</b>
320	100	088341 <b>80240</b>
60	100	088341 <b>80250</b>
80	100	088341 <b>80251</b>
120	100	08834180253
50	100	088341 <b>80287</b>
60	100	088341 <b>80288</b>
80	100	088341 <b>80289</b>
120	100	088341 <b>80291</b>
150	100	08834180292
180	100	08834180293
240	100	08834180295
	120           60           80           100           120           150           240           36           40           50           60           80           100           120           180           240           36           60           80           120           180           240           320           60           80           120           50           60           80           120           50           60           80           120           50           60           80           120           50           60           80           120           50           60           80           120           150	TRADENAME: ABRASIVE:           GRIT         STD. PKG.           120         100           60         100           80         100           120         100           120         100           120         100           120         100           120         100           120         100           150         100           180         100           240         100           50         100           100         100           120         100           180         100           240         100           120         100           120         100           120         100           120         100           120         100           120         100           120         100           120         100           120         100           120         100           150         100





## PORTABLE TOOLS AND SPECIALTIES Cartridge Rolls



		TIER:	GOOD
		TRADENAME:	MERIT R228
		ABRASIVE:	Aluminum Oxide
SIZE (D x L x H )	GRIT	STD. PKG.	PART #
1/2 x 1-1/2 x 1/8	40	100	088341 <b>80305</b>
Use M-9 Mandrel	50	100	088341 <b>80306</b>
	60	100	088341 <b>80307</b>
	80	100	088341 <b>80308</b>
	100	100	088341 <b>80309</b>
	120	100	088341 <b>80310</b>
	150	100	088341 <b>80311</b>
	180	100	088341 <b>80312</b>
	240	100	088341 <b>80314</b>
	320	100	088341 <b>80316</b>
1/2 x 2 x 1/8	60	100	088341 <b>80326</b>
Use M-10 Mandrel	80	100	088341 <b>80327</b>
	120	100	088341 <b>80329</b>
1/2 x 2 x 3/16	60	100	088341 <b>80350</b>
Use M-17 Mandrel	80	100	088341 <b>80653</b>
	120	100	088341 <b>80338</b>
5/8 x 1 x 3/16 Use M-15 Mandrel	80	100	088341 <b>80364</b>
5/8 x 1-1/2 x 1/8	60	100	088341 <b>80275</b>
Use M-9 Mandrel	80	100	088341 <b>80789</b>
5/8 x 1-1/2 x 3/16	60	100	088341 <b>80382</b>
Use M-16 Mandrel	80	100	088341 <b>80383</b>
5/8 x 2 x 1/8	60	100	088341 <b>82505</b>
Use M-10 Mandrel	80	100	088341 <b>81080</b>
5/8 x 2 x 3/16	60	100	088341 <b>80401</b>
Use M-10 Mandrel	80	100	088341 <b>80402</b>
3/4 x 1 x 1/8 Use M-8 Mandrel	80	100	088341 <b>80469</b>
3/4 x 1 x 3/16	80	100	088341 <b>80459</b>
Use M-15 Mandrel	120	100	088341 <b>80461</b>

		TIER:	
		TRADENAME:	MERIT R228
	<b>ODIE</b>	ABRASIVE:	Aluminum Oxide
SIZE (D x L x H )	GRIT	STD. PKG.	PART #
3/4 x 1-1/2 x 1/8 Use M-9 Mandrel	60	100	08834180490
USE IVI-9 IVIAIIUIEI	80	100	08834180527
0/41.1/00/10		100	08834180487
3/4 x 1-1/2 x 3/16 Use M-16 Mandrel	50	100	08834180476
USE IVI-TO IVIAIIUTEI	60	100	08834180477
	80	100	08834180478
	120	100	08834180480
0/4 4 4/0 4/4	180	100	08834180482
3/4 x 1-1/2 x 1/4	60	100	088341 <b>80489</b>
100/box 400/case Use M-21 Mandrel	80	100	08834180358
USe IVI-21 IVIAIIUTEI	120	100	08834180488
	150	100	088341 <b>82807</b>
3/4 x 2 x 1/8 Use M-10 Mandrel	60	100	088341 <b>80791</b>
3/4 x 2 x 3/16	40	100	088341 <b>80494</b>
Use M-17 Mandrel	60	100	088341 <b>80496</b>
	80	100	088341 <b>80497</b>
	100	100	088341 <b>80498</b>
	120	100	088341 <b>80499</b>
3/4 x 2 x 1/4	60	100	088341 <b>80506</b>
Use M-22 Mandrel	80	100	088341 <b>81297</b>
	100	100	088341 <b>80509</b>
	120	100	088341 <b>80507</b>
1 x 1-1/2 x 1/8 Use M-9 Mandrel	80	100	088341 <b>80584</b>
1 x 1-1/2 x 1/4	60	100	088341 <b>80587</b>
Use M-21 Mandrel	80	100	08834180583
1 x 2 x 3/16	60	100	08834180591
Use M-17 Mandrel	80	100	08834180592
1 x 2 x 1/4	60	100	088341 <b>80603</b>
Use M-22 Mandrel	80	100	088341 <b>80606</b>

Some part numbers are non-stock; contact your Norton representative for status, order quantities and lead-times. Continued

Refer to the back of this section for mandrels.



### PORTABLE TOOLS AND SPECIALTIES Spiral Rolls



Spiral rolls are strips of abrasive cloth rolled and glued to form a solid shape that is designed to break down during use and reveal the next layer of abrasive.

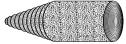
Applications:Used on inside surfaces and inside corners where other abrasive shapes cannot reach.<br/>Typically these are used on high-speed air grinders and are always mounted on a mandrel.<br/>Ideal for flash removal, polishing, or removing machine tool marks, and edge breaking.Shapes:Full taper (all stock part numbers), half taper, and sidewall taper<br/>Grit Range:<br/>36 - 240Abrasive Grain:Ceramic Alumina, Aluminum Oxide<br/>Backing:<br/>X-weight cotton, X-weight poly cottonConstruction:All spiral roll part numbers shown are full tapered, resin bond, half glued<br/>Half-tapered and sidewall-tapered are available for quotation as made-to-order products<br/>Quarter and full glue are also available for quotation as made-to-order productsMaximum RPM:1/8" to 1/2" - 23,000<br/>5/8" to 1" - 18,000<br/>1" to 1-1/2" - 15,000



#### Full Taper

- Especially useful for grinding/polishing of channels, fillets and radii, and deburring small holes
- Full taper used when the area to be finished is hard to reach with a full cartridge roll
- · The tapered roll conforms to smaller areas
- Fits into irregular concaves, contours, channels

All part numbers shown are full tapered



#### Half Taper

• Used when the area to be finished is not narrow but a beginning point on the roll is needed

DIE GRINDER

- The portion of the roll that is not tapered is then used to finish off the sides
- Available for quotation as made-to-order products



#### Sidewall Taper

- The portion of the roll that is tapered guides the roll down to the area to be finished
- The sidewall then finishes off the sides Available for quotation as made-to-order products

FINER (FINISHING)

### Application/Grit Recommendation Guide

COARSER (GRINDING)

36 40	50	60	80	120	180	240	320
Blending Out Heavy Ma	achine Marks						
Removing Heavy Burrs							
Applying Heavy Scratch	n Pattern						
Removing Flash/Parting	g Lines						
Removing Rust/Scale/F	Pit Marks						
	Preparing	Metal for Painting					
	Blending (	Out Medium Machine Mark	(S				
			Blending Metal Su	rfaces			
			Applying Light Sci	atch Pattern			
					Fine Blending and (		
						Metal Finishing and	l Polishing



### PORTABLE TOOLS AND SPECIALTIES Spiral Rolls



Best choice for hard-to-grind materials including super alloys (cobalt, inconel, and titanium) and stainless steel

## BLAZE R920 CERAMIC ALUMINA

- See significantly faster, cooler, burn-free results on the toughest jobs from the premium, sharp, longest-lasting ceramic abrasive grains and advanced grinding aid lubricant; supersized for cool cutting
- X-weight cotton cloth provides extended durability, conformability, and superior wear resistance; strong resin bond system provides good grain retention and life
- Full taper construction consisting of rolled and half-glued abrasive strips that break down to expose next layer of abrasive

Better choice for accessing tight areas and where long life and fast cut are required

## PINK R928 CERAMIC ALUMINA

- Excellent option for reaching into corners and small areas, ceramic grain provides better performance than aluminum oxide or zirconia alumina alternatives
- · Improved resin bond system provides longer life; superiszed for fast cutting
- · Versatile X-weight poly cotton backing for flexibility and life



## Good choice for cooler grinding/polishing of channels, fillets and radii, and deburring small holes at a low initial price

## MERIT R228 ALUMINUM OXIDE

- Quality aluminum oxide abrasive delivers long life
- X-weight cotton cloth provides extended durability, conformability, and superior wear resistance; strong resin bond system provides good grain retention and life
- Full taper construction consisting of rolled and half-glued abrasive strips that break down to expose next layer of abrasive



PORTABLE TOOLS AND SPECIALTIES
Spiral Rolls

			0up013120	0up013120	
SIZE (D x L x H )	GRIT	STD. PKG.	PART #	PART #	PART #
3/8 x 1 x 1/8	60	100			088341 <b>81714</b>
Jse M-8 Mandrel	80	100			088341 <b>81715</b>
	120	100			088341 <b>81717</b>
3/8 x 1-1/2 x 1/8	60	100	662611 <b>94481</b>	699573 <b>39775</b>	088341 <b>81724</b>
Jse M-9 Mandrel	80	100	662611 <b>94490</b>	699573 <b>39785</b>	088341 <b>81708</b>
	120	100	662611 <b>94491</b>	699573 <b>39787</b>	088341 <b>81727</b>
	180	100			088341 <b>81709</b>
/2 x 1 x 1/8	60	100			088341 <b>81734</b>
Jse M-8 Mandrel	80	100			088341 <b>81735</b>
	120	100			088341 <b>81737</b>
/2 x 1-1/2 x 1/8	50	100			088341 <b>81743</b>
Jse M-9 Mandrel	60	100	662611 <b>94484</b>	699573 <b>39790</b>	088341 <b>81744</b>
	80	100	662611 <b>94492</b>	699573 <b>39791</b>	088341 <b>81745</b>
	100	100			088341 <b>81746</b>
	120	100	662611 <b>94495</b>	699573 <b>39792</b>	088341 <b>81747</b>
	180	100			088341 <b>81749</b>
	240	100			088341 <b>81750</b>
/2 x 2 x 1/8	60	100			088341 <b>81754</b>
Jse M-10 Mandrel	80	100			088341 <b>81755</b>
	120	100			088341 <b>81757</b>
5/8 x 1-1/2 x 1/8 Jse M-9 Mandrel	100	100			088341 <b>81776</b>
5/8 x 1-1/2 x 3/16 Jse M-16 Mandrel	80	100			088341 <b>81444</b>
3/4 x 1-1/2 x 1/8 Jse M-9 Mandrel	80	100			088341 <b>80886</b>
/4 x 1-1/2 x 3/16	60	100			088341 <b>81808</b>
Jse M-16 Mandrel	80	100			088341 <b>81809</b>
	120	100			088341 <b>81811</b>
3/4 x 2 x 3/16 Jse M-17 Mandrel	60	100			088341 <b>81820</b>
x 1-1/2 x 1/8 Jse M-9 Mandrel	60	100		699573 <b>39790</b>	088341 <b>81240</b>
x 2 x 3/16	60	100			088341 <b>81878</b>
Jse M-17 Mandrel	80	100			08834181879

TIER: BES

TRADENAME: BLAZE R920 ABRASIVE: Ceramic Alumina OTHER: Supersize BETTER

Supersize

PINK R928 Ceramic Alumina GOOD

MERIT R228

Aluminum Oxide

Refer to the back of this section for mandrels.





### PORTABLE TOOLS AND SPECIALTIES Square & Cross Pads, Overlap Slotted Discs

Square pads, cross pads and overlap slotted discs are all used on high-speed pneumatic tools for deburring, blending, cleaning, and polishing applications. All of these abrasive specialties are designed for applications in small, tight, hard-to-access locations on parts that are being finished.

Benefits:	Variety of shapes and sizes to fit application and part geometry Shapes provide flexibility for the application, while eliminating aggressiveness of the sanding action				
	Cross pads allow visibility of the surface whi material is removed	ile sanding, to ensure correct amount of			
Grit Range:	50 - 180				
Abrasive Grain:	Ceramic Alumina, Aluminum Oxide				
Backing:	X-weight cotton, X-weight poly-cotton				
Construction	Standard quick-change eyelet for easy mounting and removal on quick-change mandrel minimizes downtime; Mandrel use increases range and versatility				
Maximum RPM:	1" Diameter – 25,000	3" Diameter – 12,000 to 14,000			
	1-1/2" to 2" Diameter - 18,000 to 23,000	4" Diameter - 8,000 to 12,000			
	2-1/2" Diameter - 14,000 to 18,000	5" to 6" Diameter – 5,500 to 7,500			
Machine Used:					

DIE GRINDER

### Application/Grit Recommendation Guide

COARSER (GRINDING)

FINER (FINISHING)

						;
50	60	80	100	120	150	180
Light Stock Removal						
	Edge Chamfering/Bevelin	Ig				
	Blending					
		Deburring/Deflashing				
				Cleaning		
					Finishing	



Best choice for hard-to-grind materials including super alloys (cobalt, inconel, and titanium) and stainless steel

## BLAZE R920 CERAMIC ALUMINA

- See significantly faster, cooler, burn-free results on the toughest jobs from the sharp, longest-lasting ceramic abrasive grains and advanced supersize grinding aid for cool cutting
- X-weight cotton cloth provides extended durability, conformability, and superior wear resistance; strong resin bond system provides good grain retention and life
- Corners wear down consistently, exposing fresh abrasive; as these become round, they become less aggressive and run even smoother, with less stock removal – to retain workpiece shape



Better choice for accessing tight areas and where long life & fast cut are required

## PINK R928 CERAMIC ALUMINA

- Excellent option for reaching into corners and small areas, ceramic grain provides better performance than aluminum oxide and zirconia alternatives
- Improved resin bond system provides longer life; supersized for cool cutting
- Versatile X-weight poly cotton backing for flexibility and life

#### Good for most ID deburring and polishing applications

## MERIT R228 ALUMINUM OXIDE

- Versatile, quality aluminum oxide abrasive grain ensures good cut rate
- X-weight cotton cloth provides extended durability, conformability, and superior wear resistance; strong resin bond system provides good grain retention and life
- Corners wear down consistently, exposing fresh abrasive; as these become round, they become less aggressive and run even smoother, with less stock removal – to retain workpiece shape



## PORTABLE TOOLS AND SPECIALTIES Square & Cross Pads, Overlap Slotted Discs



#### **Square Pads**



- Corners wear down consistently exposing fresh abrasive; the pad becomes round for less aggressive stock removal
  - · Grind almost as fast as hard wheels, but are much smoother and easier to control
  - · For quick blending of channels, fillets, corners, or spotting flat surfaces

				•	e	0 0
			TIER:	BEST	BETTER	GOOD
			TRADENAME:	BLAZE R920	PINK R928	MERIT R228
			ABRASIVE:	Ceramic Alumina	Ceramic Alumina	Aluminum Oxide
			OTHER:	Supersize	Supersize	
SIZE (L x W x T)	EYELET	GRIT	STD. PKG.	PART #	PART #	PART #
l x 1 x 6 ply	8-32	80	100			088341 <b>84826</b>
x1x8ply		80	100			08834184124
1-1/2 x 1-1/2 x 1/2	1/4-20	60	100			088341 <b>84463</b>
		80	100			088341 <b>84125</b>
2 x 2 x 1/2	1/4-20	60	100	662611 <b>94520</b>	699573 <b>40138</b>	
		80	100	662611 <b>94552</b>		08834184397
		120	100	662611 <b>94554</b>	699573 <b>40141</b>	
2 x 2 x 3/4	1/4-20	80	100			08834184394
3 x 3 x 1/4	1/4-20	60	100	662611 <b>94531</b>		
		120	100	662611 <b>94556</b>		
3 x 3 x 1/2	1/4-20	50	100			088341 <b>82152</b>
		60	100	662611 <b>94528</b>	699573 <b>40146</b>	088341 <b>82057</b>
		80	100	662611 <b>94557</b>		08834184336

Some part numbers are non-stock; contact your Norton representative for status, order quantities and lead-times.

Refer to the back of this section for mandrels.



### PORTABLE TOOLS AND SPECIALTIES Square & Cross Pads, Overlap Slotted Discs



#### **Cross Pads**



- . The shape of cross pads enables you to see through to the contact area, and provides greater flexibility than square pads to conform to variable internal diameters
- Used for close-tolerance polishing of small radii and channels, deburring, and finishing of bell-mouth configurations
- All pads are furnished with standard quick-change eyelet, as listed
- · Plain hole sizes must be specified and are available for quotation as made-to-order products

					0	0 0
				TIER:	BEST	GOOD
				TRADENAME:	BLAZE R920	MERIT R228
				ABRASIVE:	Ceramic Alumina	Aluminum Oxide
				OTHER:	Supersize	
SIZE (L x W x T)	PLY	EYELET	GRIT	STD. PKG.	PART #	PART #
3/4 x 3/4 x 3/8	8	3-48	80	100		08834185578
1 x 1 x 3/8	8	3-48	60	100		088341 <b>84943</b>
			80	100		08834185519
			100	100		088341 <b>84195</b>
			120	100		088341 <b>85164</b>
1-1/2 x 1-1/2 x 1/2	8	8-32	60	100	662611 <b>94496</b>	08834184258
			80	100	662611 <b>94508</b>	088341 <b>84465</b>
			100	100		08834182196
			120	100	662611 <b>94511</b>	088341 <b>82148</b>
2 x 2 x 1/2	8	8-32	60	100		08834182156
·			80	100		088341 <b>82157</b>
			120	100		08834182132
2 x 2 x 3/4	8	8-32	60	100	662611 <b>94502</b>	08834184128
			80	100	662611 <b>94513</b>	08834184194
			120	100	662611 <b>94516</b>	
2-1/4 x 2-1/4 x 1/2	8	8-32	80	100		08834184402
2-1/2 x 2-1/2 x 3/4	8	8-32	80	100		08834184206
3 x 3 x 1	8	1/4-20	60	100	662611 <b>94504</b>	088341 <b>82135</b>
			80	100	662611 <b>94549</b>	08834184119
			120	100	662611 <b>94551</b>	088341 <b>84116</b>
3 x 3 x 1	8	1/4-20	60	100		
	10	1/4-20	80	100		088341 <b>82140</b>
	8	1/4-20	120	100		
3 x 3 x 1-1/2	10	1/4-20	80	100		088341 <b>82184</b>
4 x 4 x 1	8	1/4-20	60	100		088341 <b>84142</b>
			80	100		088341 <b>84135</b>
			120	100		088341 <b>84377</b>

\* Pink R928 3 x 3 x 1 are 8 ply.

Ceramic Alumina and Alumina Oxide cross pads are also available upon request as made-to-order products.

Some part numbers are non-stock; contact your Norton representative for status, order quantities and lead-times.

Refer to the back of this section for mandrels.



# Square & Cross Pads, Overlap Slotted Discs

### **Overlap Slotted Discs**



#### **Overlap Slotted Discs**

- · Used for deburring and polishing radii, holes and cylinder walls
- Our "2 to a set" configuration cuts on the inward motion only
- The "4 to a set" configuration, assembled back to back, cuts on both the inward and outward motions
- All discs are furnished with standard quick-change eyelet
- Plain hole sizes must be specified and are available for quotation as made-to-order products

				•	
			TIER:	BEST	GOOD
			TRADENAME:	BLAZE R920	MERIT R228
			ABRASIVE:		Aluminum Oxide
			OTHER:	Supersize, 2 Per Set	2 Per Set
DIA.	EYELET	GRIT	STD. PKG.	PART #	PART #
1	8-32	60	100		088341 <b>84346</b>
		80	100		088341 <b>84019</b>
		100	100		088341 <b>84224</b>
		120	100		088341 <b>84151</b>
1-1/4	8-32	60	100		088341 <b>84270</b>
		80	100		088341 <b>84065</b>
		100	100		088341 <b>84291</b>
		120	100		088341 <b>84084</b>
1-1/2	8-32	60	100	662611 <b>95051</b>	088341 <b>84066</b>
		80	100	662611 <b>95368</b>	088341 <b>84079</b>
		100	100		088341 <b>84279</b>
		120	100		088341 <b>86035</b>
1-3/4	8-32	60	100		088341 <b>84655</b>
		80	100		088341 <b>84042</b>
2	8-32	60	100	662611 <b>95054</b>	
		80	100	662611 <b>95055</b>	088341 <b>84076</b>
		100	100		088341 <b>84145</b>
		120	100	662611 <b>95056</b>	
2-1/2	8-32	80	100		088341 <b>84444</b>
3	1/4-20	60	100	662611 <b>95057</b>	08834184041
		80	100	662611 <b>95058</b>	088341 <b>84077</b>
		100	100		088341 <b>84082</b>
		120	100		088341 <b>84344</b>
4	1/4-20	60	100		088341 <b>84000</b>
		120	100		08834185155
4-1/2	1/4-20	100	100		088341 <b>84431</b>

All overlap slotted discs are available (made-to-order) reinforced with a fiber washer

Ceramic Alumina and Alumina Oxide overlap slotted discs are also available upon request as made-to-order products. Some part numbers are non-stock; contact your Norton representative for status, order quantities and lead-times.

### Quick-Change Mandrels for Overlap Slotted Discs, Square and Cross Pads

CROSS PAD SIZE DIA.	SQUARE PAD SIZE DIA.	OVERALL LENGTH	MODEL NO.	THD. SIZE	PART #
1/4, 3/8, and 1/2 wide		2-1/2	MM48-4	3-48	088341 <b>83162</b>
3/4, 1 wide	Up thru 1-1/2 sq. x 1/2 thick	3	MM32-4	8-32	088341 <b>83163</b>
	2 sq. x 1/4 or 3/8 thick	4	MM-32-4-4	8-32	088341 <b>21680</b>
		6	MM-32-4-6	8-32	088341 <b>21681</b>
All pads 2-1/2 x 1-1/2 and larger	2 sq. x 1/4 or 1/2 thick and larger	3	MM20-4	1/4-20	088341 <b>83164</b>

For overlap slotted discs, choose a mandrel with the same thread size as the disc



QUICK-CHANGE MANDREL



EXTENDED MANDREL



### PORTABLE TOOLS AND SPECIALTIES Spiral Bands

Best product for blending and polishing contours when smooth running is a primary concern. Used for finishing hard-to-reach areas, removing parting lines, imperfections, and burrs on all surfaces.

Spiral construction avoids shadow marks and provides smooth, chatter-free cutting action.

Achieves close tolerances when finishing curved, contoured, and hard-to-reach areas. Fast cutting and removes toughest metal. Bands are easily removed and replaced.

#### **Benefits:**

Grit Range: Abrasive Grain: Backing: Other: Machine Used:

24 - 320 Ceramic Alumina, Aluminum Oxide X-weight cotton Use with rubber expanding drum



# Application/Grit Recommendation Guide

COARSER (GRINDING)

FINER (FINISHING)

24	36	40	50	60	80	120	180	240	320
Heavy Stoc	k Removal								
	Blending Ou	It Heavy Machine M	Marks						
	Removing H	leavy Burrs							
	Applying He	avy Scratch Patter	n						
	Removing F	lash/Parting Lines							
	Removing F	Rust/Scale/Pit Mark	S						
			Preparing	Metal for Painting					
			Blending Out Medium Machine Ma		ie Marks	rks			
					Blending M	etal Surfaces			
					Applying Li	ght Scratch Pattern			
							Fine Blendin	ig and Cleaning	
								Metal Finishi	ing and Polishing



Best choice for hard-to-grind materials including super alloys (cobalt, inconel, and titanium) and stainless steel

# BLAZE R920 CERAMIC ALUMINA

- See significantly faster, cooler, burn-free results on the toughest jobs from the next-generation of sharp, longest-lasting ceramic abrasive grains and advanced grinding aid lubricant
- · Advanced, full resin bond system designed to promote exceptional grain retention for additional product life
- X-weight cotton backing and spiral construction avoid shadow marks and provide smooth, chatter-free cutting action

#### Good starting specification for all types of metal

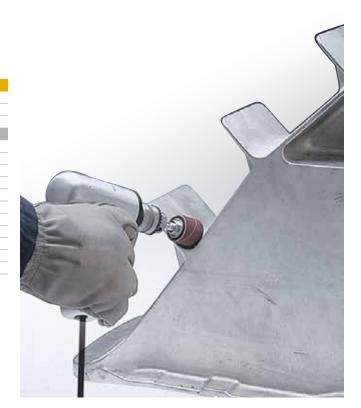


# MERIT R228 ALUMINUM OXIDE

- · Tough and durable quality aluminum oxide abrasive removes tough metal
- · X-weight cotton backing and spiral construction avoid shadow marks and provide smooth, chatter-free cutting action
- · Achieves close tolerances on curved, contoured, and hard-to-reach areas

Industrial Market - Full-Line

# PORTABLE TOOLS AND SPECIALTIES Spiral Bands







			TIER: BEST
		TRA	Dename: Blaze R920
		A	BRASIVE: Ceramic Alumina
			OTHER: Supersize
SIZE (D x W)	GRIT	STD. PKG.	PART #
1/2 x 1	80	100	662611 <b>46014</b>
3/4 x 1	60	100	662611 <b>46017</b>
	80	100	662611 <b>46018</b>
1x1	60	100	662611 <b>46021</b>
	80	100	662611 <b>46022</b>
1-1/2 x 1-1/2	60	100	662611 <b>46025</b>
	80	100	662611 <b>46026</b>
2 x 2	60	100	662611 <b>46029</b>
	80	100	662611 <b>46030</b>
3 x 3	60	50	662611 <b>46033</b>
	80	50	662611 <b>46034</b>



			TIER	GOOD
			TRADENAME	MERIT R228
			ABRASIVE	Aluminum Oxide
		STOCK	NON-STOCK	
SIZE (D x W)	GRIT	PKG. QTY.	MOQ	PART #
1 x 1	36	100/box	300	088341 <b>96072</b>
	40	100/box	300	088341 <b>96073</b>
	50	100/box	300	088341 <b>96184</b>
	60	100/box	300	088341 <b>96075</b>
	80	100/box	300	088341 <b>96074</b>
	120	100/box	300	088341 <b>96177</b>
1 x 1-1/2	36	100/box	200	088341 <b>96525</b>
1 x 2	80	100/box	200	088341 <b>96268</b>
1 x 3	36	100/box	100	088341 <b>96665</b>
	50	100/box	100	088341 <b>97688</b>
	60	100/box	100	08834196676
	120	100/box	100	088341 <b>96197</b>
1-1/2 x 1-1/2	36	100/box	200	088341 <b>96164</b>
	50	100/box	200	088341 <b>96176</b>
	60	100/box	200	088341 <b>96091</b>
	80	100/box	200	088341 <b>96165</b>

Some part numbers are non-stock; contact your Norton representative for status, order quantities and lead-times.

Continued



			TIER:	GOOD
			TRADENAME:	MERIT R228
			ABRASIVE:	Aluminum Oxide
		STOCK	NON-STOCK	
SIZE (D x W)	GRIT	PKG. QTY.	MOQ	PART #
3/8 x 1	80	100/box	300	088341 <b>96645</b>
1/2 x 1/2	50	100/box	300	088341 <b>96228</b>
	80	100/box	300	088341 <b>96179</b>
	100	100/box	300	088341 <b>96189</b>
	120	100/box	300	088341 <b>96069</b>
	180	100/box	300	088341 <b>96209</b>
1/2 x 1	36	100/box	300	088341 <b>96591</b>
	60	100/box	300	088341 <b>96212</b>
	80	100/box	300	088341 <b>96215</b>
1/2 x 2	80	100/box	200	08834196669
3/4 x 3/4	60	100/box	300	088341 <b>96168</b>
	80	100/box	300	088341 <b>96161</b>
3/4 x 1	36	100/box	300	088341 <b>96261</b>
	50	100/box	300	088341 <b>96515</b>
	60	100/box	300	08834196070
	80	100/box	300	088341 <b>96071</b>
	120	100/box	300	08834196219
3/4 x 1-1/2	60	100/box	300	088341 <b>96554</b>
	80	100/box	300	08834196249
3/4 x 2	80	100/box	200	088341 <b>96756</b>

### PORTABLE TOOLS AND SPECIALTIES Spiral Bands

TIER: GOOD

TRADENAME: MERIT R228



1-1/2 x 2

1-1/2 x 3

2 x 1

2 x 2

2-1/4 x 3

60

80

60

80

120

120

36

60

36

50

80

120

150

100/box

100/box

100/box

100/box

100/box

100/box

100/box

100/box

100/box

80





TIER: GOOD TRADENAME: MERIT R228 ABRASIVE: Aluminum Oxide STOCK PKG. QTY. PART : 088341**96067** 100/box 200 100/box 200 08834196533 100/box 100 08834196703 100/box 100 08834196809 100/box 100 08834196343

08834196166

088341**96595** 

08834196110

08834196173

08834197140

08834196620

08834196270

08834196729

08834195857

200

200

200

200

100

100

100

100

100

			ABRASIVE	Aluminum Oxide
617E (D x W)	GRIT	STOCK PKG. QTY.	NON-STOCK Moq	PART #
SIZE (D x W)				
3 x 2	80	100/box	100	088341 <b>96265</b>
3 x 3	36	100/box	100	088341 <b>96262</b>
	50	100/box	100	088341 <b>96253</b>
	60	100/box	100	088341 <b>96188 NS</b>
	80	100/box	100	088341 <b>96159</b>
	100	100/box	100	088341 <b>96250</b>

Some part numbers are non-stock; contact your Norton representative for status, order quantities and lead-times.

### **Expanding Rubber Drums**

Spiral Bands are easily removed and replaced on the rubber expanding drum.





TIER: GOOD

TIE	R: GOOD
TRADENAM	E RUBBER EXPANDING DRUMS
STD.	DIDT //

			1	IEN. GUUD
			TRADENA	ME: RUBBER EXPANDING DRUMS
SHAN	<b>ik</b> Ieter	MAX. RPM	STD. PKG.	PART #
1/4		20,000	1	088341 <b>96914</b> NS
1/4		18,000	1	088341 <b>96916</b>
1/4		10,000	1	088341 <b>96917</b>
1/4		8,000	1	088341 <b>96918</b>
1/4		12,000	1	088341 <b>96921</b>
1/4		10.000	1	08834196922

DIAMETER	WIDTH	DIAMETER	RPM	PKG.	PART #
1/4	1/2	1/8	30,000	1	088341 <b>96030</b>
3/8	1/2	1/4	30,000	1	088341 <b>96944</b> NS
3/8	1	1/8	18,000	1	088341 <b>96011 NS</b>
1/2	1/2	1/4	30,000	1	088341 <b>96904</b>
1/2	1	1/4	15,000	1	088341 <b>96906</b>
1/2	1-1/2	1/4	12,000	1	088341 <b>96907</b>
1/2	2	1/4	10,000	1	088341 <b>96908</b>
3/4	1/2	1/4	27,000	1	088341 <b>96909</b> NS
3/4	3/4	1/4	24,000	1	088341 <b>96910 NS</b>
3/4	1	1/4	17,000	1	088341 <b>96911</b>
3/4	1-1/2	1/4	10,000	1	08834196912
3/4	2	1/4	10,000	1	088341 <b>96913</b>
NS Non-stor	ck_contact_voi	ir Norton renr	esentative for	current order	quantities

NS Non-'ock, c tact your Norton representative for current order quantities and lead-times.

DRUM	WIDTH	SHANK	MAX.	STD.	DADT #
DIAMETER	WIDTH	DIAMETER	RPM	PKG.	PART #
1	1/2	1/4	20,000	1	088341 <b>96914                                   </b>
1	1	1/4	18,000	1	088341 <b>96916</b>
1	1-1/2	1/4	10,000	1	088341 <b>96917</b>
1	2	1/4	8,000	1	088341 <b>96918</b>
1-1/2	1	1/4	12,000	1	088341 <b>96921</b>
1-1/2	1-1/2	1/4	10,000	1	088341 <b>96922</b>
1-1/2	2	1/4	8,000	1	088341 <b>96923</b>
2	1	1/4	11,000	1	088341 <b>96926</b>
2	1-1/2	1/4	8,000	1	088341 <b>96927</b>
2	2	1/4	6,000	1	08834196928
3	1	3/8	3,000	1	088341 <b>96929 NS</b>
3	2	3/8	3,000	1	088341 <b>96930 NS</b>
3	3	3/8	3,000	1	088341 <b>96931</b>



### PORTABLE TOOLS AND SPECIALTIES **Tapered Cone Points**

Tapered cone points are strips of abrasive cloth rolled and glued to form a solid shape that is designed to break down during use and reveal the next layer of abrasive. Tapered cone points are similar to cartridge rolls but their shape lends greater accessibility to many difficult-to-reach work areas. They are used for deburring holes and in close tolerance work areas.

Applications:	Used on inside surfaces and inside corners where other abrasive shapes cannot reach. Typically these are used on high-speed air grinders and are always mounted on a mandrel. Ideal for flash removal, polishing, or removing machine tool marks, and edge breaking.
Grit Range:	50 - 320
Abrasive Grain:	Aluminum Oxide
Backing:	X-weight cotton
Construction:	Popular sizes and mandrels are listed, with additional sizes available upon request as made-to-order products
	Ceramic alumina and silicon carbide cone points are available upon request as made-to-order products
Maximum RPM:	1/8" to 1/2" - 23,000
	5/8" to 1" - 18,000
	1" to 1-1/2" – 15,000
Machine Used:	
	DIE GRINDER

### Application/Grit Recommendation Guide

FINER (FINISHING)

36 40	50	60	80	120	180	240	320
Blending Out Heavy Machin			00	120	100	210	0L0
Removing Heavy Burrs							
Applying Heavy Scratch Pat	tern						
Removing Flash/Parting Lin	es						
Removing Rust/Scale/Pit M	arks						
	Preparing Metal	for Painting					
	Blending Out Me	dium Machine Marks					
			Blending Metal Sur	faces			
			Applying Light Scra	tch Pattern			
					Fine Blending and C		
						Metal Finishing and	Polishing



Good starting specification for flash removal, polishing, or removing machine tool marks and edge breaking on all types of metal in difficult-to-reach work areas

# MERIT R228 ALUMINUM OXIDE TAPERED CONE POINTS

- · Quality aluminum oxide abrasive delivers long life
- · X-weight cotton cloth provides extended durability, conformability, and superior wear resistance; strong resin bond system provides good grain retention and life
- · Full taper construction consisting of rolled and half-glued abrasive strips that break down to expose next layer of abrasive

		TRADENAME:	GOOD MERIT R228 Aluminum Oxide
SIZE (D x L)	GRIT	STD. PKG.	PART #
3/16 x 1	60	500	088341 <b>86893</b>
Use K-110 Mandrel	80	500	088341 <b>80918</b>
	100	500	088341 <b>82197</b>
	120	500	088341 <b>82199</b>
	150	500	088341 <b>82200</b>
	180	500	088341 <b>86894</b>
	240	500	088341 <b>86895</b>
	320	500	088341 <b>82855</b>

		TIER	GOOD
		TRADENAME	MERIT R228
		ABRASIVE	Aluminum Oxide
SIZE (D x L)	GRIT	STD. PKG.	PART #
5/16 x 1-1/2	80	500	088341 <b>80873</b>
Use B-20 Mandrel	100	500	088341 <b>82043</b>
	120	500	088341 <b>82717</b>
	150	500	088341 <b>86890</b>
	240	500	088341 <b>82044</b>
	320	500	088341 <b>82537</b>

Refer to next page for mandrels.

COARSER (GRINDING)



### PORTABLE TOOLS AND SPECIALTIES Mandrels

### Cartridge and Spiral Roll Mandrels

MODEL #	PILOT DIA.	PILOT LENGTH	SHANK DIA.	SHANK LENGTH	OVERALL LENGTH	PART #
Cartridge and S	piral Roll Mandrels					
M-2E	3/32	3/4	1/4	1	3	088341 <b>83799 NS</b>
M-2	3/32	1	1/8	1	3	088341 <b>81202</b>
M-3	1/8	1/2	1/8	1	2-1/2	088341 <b>81203</b>
M-4	1/8	3/4	1/8	1	2-1/2	088341 <b>81204</b>
M-5	1/8	1	1/8	1	2-3/4	088341 <b>81205</b>
M-6	1/8	1-1/2	1/8	1	2-1/2	088341 <b>81206 NS</b>
M-7	1/8	1/2	1/4	1-1/4	2-1/4	088341 <b>81207</b>
M-8	1/8	3/4	1/4	1-1/4	2-1/2	088341 <b>81208</b>
N-9	1/8	1	1/4	1-1/4	2-3/4	088341 <b>81209</b>
VI-10	1/8	1-1/2	1/4	1-1/4	3-1/4	088341 <b>81210</b>
И-11	1/8	2	1/4	1-1/4	4	088341 <b>81211 NS</b>
И-12	3/16	1/2	1/8	1-1/4	2-1/4	088341 <b>81212 NS</b>
M-13	3/16	3/4	1/8	1-1/4	2-1/2	08834181213 NS
VI-14	3/16	1/2	1/4	1-1/4	2-1/2	088341 <b>81214 NS</b>
VI-16	3/16	1	1/4	1-1/4	3	088341 <b>81216</b>
VI-17	3/16	1-1/2	1/4	1-1/4	3-1/2	088341 <b>81217</b>
VI-18	3/16	2	1/4	1-1/4	4	088341 <b>81218</b>
И-19	1/4	1/2	1/4	1-1/4	2-1/2	08834181219 NS
M-21	1/4	1	1/4	1-1/4	3	088341 <b>81221</b>
Л-22	1/4	1-1/2	1/4	1-1/4	3-1/2	088341 <b>81222</b>
Л-23	1/4	2	1/4	1-1/4	4	08834181223 NS
Л-24	5/16	3/4	1/4	1-1/4	2-3/4	088341 <b>81224 NS</b>
Л-25	5/16	1	1/4	1-1/4	3	088341 <b>81225 NS</b>
Л-26	5/16	1-1/2	1/4	1-1/4	3-1/2	088341 <b>81226 NS</b>
Л-27	5/16	2	1/4	1-1/4	4	088341 <b>81227 NS</b>

NS Non-stock. Contact your Norton representative for current order quantities and lead-times. Standard Package = 1

#### Recommended Pilot Length for Mandrels

	0
3/4 Roll Length	Use 1/2 Pilot
1 Roll Length	Use 3/4 Pilot
1-1/2 Roll Length	Use 1 Pilot
2 Roll Length	Use 1-1/2 Pilot

# Extra Shank Length Mandrels for Cartridge Rolls and Spiral Rolls

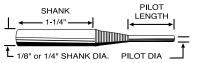
MODEL #	SHANK LENGTH	OVERALL LENGTH	PART NO.
<b>Extras Shank</b>	Length Mandrels		
M-8-4	4	5-1/4	088341 <b>80116</b>
M-8-6	6	7-1/4	088341 <b>80122</b>
M-9-2.5	2-1/2	4	088341 <b>80096</b>
M-9-3	3	4-1/2	088341 <b>80129</b>
M-9-4	4	5-1/2	088341 <b>80074 NS</b>
M-9-6	6	7-1/2	088341 <b>80131</b>
M-10-4	1-3/4	4	088341 <b>80092 NS</b>
M-10-6	3-3/4	6	08834180145

All Extra Shank Length mandrels are 1/4" diameter

NS Non-stock. Contact your Norton representative for current order quantities and lead-times. Standard Package = 1

### **Tapered Cone Point Mandrels**

DESCRIPTION	SHANK	PART #
Cone Point Mandrels		
A-10	1/4	088341 <b>81300</b>
B-20	1/4	088341 <b>81301</b>
C-30	1/4	088341 <b>81302</b>
D-40	1/4	088341 <b>81303</b>
E-50	1/4	088341 <b>81304</b>
F-60	1/4	088341 <b>81305</b>
G-70	1/4	088341 <b>81306</b>
I-90	1/4	088341 <b>81308</b>
K-110	1/8	088341 <b>81310</b>
Standard Package = 1		



### PORTABLE TOOLS AND SPECIALTIES Test Kits





These test kits feature the most popular range and sizes of our coated specialty products in convenient kit formats. Ideal for small job shops, or for travelling to a job site. Our cartridge roll kits are great when you need a small quantity, but a wide range of grits and sizes



#### Ceramic Alumina Cartridge Roll Test Kit

#### • Part # 662610**66726**

· Kit includes a variety of our ceramic alumina cartridge rolls, spiral rolls and mandrels in popular sizes and grits.

#### Aluminum Oxide Cartridge Roll Test Kit "CR"

- Part # 088341**81061**
- Includes over 120 pieces of our most popular sizes, grits and shapes with their appropriate mandrels.





#### Porting Test Kit "APK-MO"

- Part # 08834169032
- The samples in this kit highlight specialties for general metal and wood working polishing and finishing applications.



### PORTABLE TOOLS AND SPECIALTIES Non-Woven Specialties

#### Cross Buffs

Best choice for blending, cleaning and polishing

# **CROSS BUFFS**

- Unique design is tough yet conformable to intricate shapes and contours without changing the workpiece dimension
- Premium aluminum oxide grain for excellent cutting and finishing
- · Firm durable web for high resistance to tearing on burrs and sharp edges

				TIER: BEST
			TRADEN	AME: HIGH STRENGTH
			ABRAS	SIVE: Aluminum Oxide
			ATTACHN	IENT: 8-32 Eyelet
SIZE (D x W)	GRIT	PLY	STD. PKG.	PART #
1-1/2 x 1/2	Medium	2	100	088341 <b>89308</b>
	Very Fine	2	100	088341 <b>89307 NS</b>
	Very Fine	3	100	088341 <b>89309</b> NS

8-32 eyelets: Attach to MM32-4 mandrel. Part No. 08834183163 (See description at end of Overlap lotted Disc Section) NS Non-stock. Contact your Norton representative for current order quantities and lead-times.

#### Surface Preparation Stars



#### The perfect item for ID work

# MERIT SURFACE PREPARATION STARS

- Star shape design is tough yet conformable to intricate shapes and contours without changing the workpiece dimension
- · Premium aluminum oxide grain for excellent cutting and finishing
- · Firm durable web for high resistance to tearing on burrs and sharp edges

		TIER:	GOOD
		TRADENAME:	MERIT SURFACE PREP
		ABRASIVE:	Aluminum Oxide
		ATTACHMENT:	1/4-20 Eyelet
SIZE (D x EYELET)	GRIT	STD. PKG.	PART #
1-1/2 x 1/4-20	С	100	088341 <b>85923</b>
	VF	100	088341 <b>85925</b>
2 x 1/4-20	С	100	088341 <b>85926</b> NS
	Μ	100	088341 <b>85927</b> NS
	VF	100	088341 <b>85928</b> NS
3 x 1/4-20	С	100	088341 <b>85929</b> NS
	Μ	100	088341 <b>85678</b> NS
	VF	100	088341 <b>85931</b> NS
4 x 1/4-20	Μ	100	088341 <b>85933</b> NS

NS Non-stock. Contact your Norton representative for current order quantities and lead-times.

1/4-20 eyelets attach to MM20-4 mandrel, Part # 08834183164 (See description at end of Overlap Slotted Disc Section.)





### PORTABLE TOOLS AND SPECIALTIES Non-Woven Specialties

#### Non-Woven 1/4" Steel Shank Disc Wheels



#### lest choice for all of your tough stripping needs on all kinds of surfaces

## **BLAZE RAPID STRIP DISCS**

- · Ceramic alumina grain provides 2X cut rate, 2X life over silicon carbide products
- Advanced resin bond does not shed on rust-encrusted pieces, and prevents gouging and rework; does not snag when used for deburring
- Leave a thoroughly cleaned surface that ensures excellent adhesion for subsequent processes such as coating, painting and soldering

#### Best choice for light deburring and finishing



# **DISC WHEELS**

- Durable, longer lasting aluminum oxide abrasive leaves a more polished finish
- Discs are ganged together to form a wheel that is tough yet conformable to intricate shapes and contours without changing the workpiece dimension
- These wheels are mounted on a 1/4 inch steel mandrel embedded in a strong epoxy core



TIER: BEST TRADENAME: BLAZE RAPID STRIP

				ADI	NASIVE. Gerannic Alumina
SIZE (D x 1/4 SHANK)	GRIT	PLY	MAX. RPM	STD. PKG.	PART #
4	Extra Coarse	1 Ply	8,000	5	776960 <b>05713</b> NS
4	Extra Coarse	2 Ply	8,000	5	666233 <b>75051</b> NS
	AL 1 1 1 1				

NS Non-stock. Contact your Norton representative for current order quantities and lead-times.



					TIER: BEST
				TRAD	ENAME: HIGH-STRENGTH
				AB	RASIVE: Aluminum Oxide
SIZE (D x 1/4 SHANK)	GRIT	PLY	MAX. RPM	STD. PKG.	PART #
-	Medium	2 Ply	12,000	10	088341 <b>31551</b>
	Medium	4 Ply	12,000	10	088341 <b>31554</b>
	Medium	2 Ply	8,000	10	088341 <b>31558</b>
	Very Fine	3 Ply	8,000	10	088341 <b>31560</b>
}	Medium	4 Ply	8,000	10	088341 <b>31496</b>
	Fine	5 Ply	8,000	10	088341 <b>31557</b>
	Very Fine	5 Ply	8,000	10	088341 <b>31497</b>
	Fine	3 Ply	6,000	10	088341 <b>31562</b> NS
	Medium	4 Ply	6,000	10	088341 <b>31564</b>
)	Medium	2 Ply	4,000	10	088341 <b>31567</b> NS
	Medium	4 Ply	4,000	10	088341 <b>31570</b>
	Fine	5 Ply	4,000	10	088341 <b>31571 NS</b>

NS Non-stock. Contact your Norton representative for current order quantities and lead-times. Disc wheels are constructed by number of plys.

Industrial Market - Full-Line

Used for a wide range of metal fabrication and welding applications including stock removal,

Flap wheels are an ideal choice for a wide variety of blending, deburring and finishing applications common in the metal fabrication, welding and polishing industries. Flap wheels are conformable to intricate shapes and contours. Designed to deliver a consistent finish with a uniform rate of cut, flap wheels wear away, continually exposing fresh abrasives.

#### **Applications:**

**Size Range:** 

**Grit Range: Abrasive Grain:** 

**Machine Used:** 

blending, deburring, cleaning, finishing, and polishing Flap wheels with mounted steel shanks: 3/8" - 3" diameter Flap wheels with mounted 1/4"-20 thread: 1" - 3" diameter Flap wheels with arbor holes: 3" - 16" diameter 40 - 320

Ceramic Alumina, Aluminum Oxide Blend, Aluminum Oxide



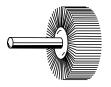
#### Shape Recommendation Guide

#### Shape

VDRTDN

SAINT-GOBAIN

#### **Description/Application**



Flap Wheels with Mounted Steel Shanks

Wheels are designed with a 1/8" or 1/4" steel shank as an integral part of each wheel. These shanks run through the wheel creating better balance, a reduction of chatter, and reduced operator fatigue. They also permit quick changes on air tools when using other abrasive products.



#### Flap Wheels with Mounted 1/4"-20 Thread

Wheels are designed with a 1/4"-20 thread and flange as an integral part of the wheel. These threads facilitate the quickest changes on air tools using flap wheels exclusively, as there are no special tools needed to change the flap wheel. Also allow extended reach with accessory mandrels.



Flap Wheels with Arbor Holes

For use on larger portable and fixed-base tools where the wheel must fit on an existing arbor.

### Application/Grit Recommendation Guide

COARSER (G	RINDING)						FINER (FINISHING)
40	50	60	80	120	180	240	320
Blending Out He	eavy Machine Mark	S					
Removing Heav	y Burrs						
Applying Heavy	Scratch Pattern						
Removing Flash	/Parting Lines						
Removing Rust	/Scale/Pit Marks						
	Preparing N	letal for Painting					
	Blending Ou	It Medium Machine Marks					
			Blending Metal Sur	aces			
			Applying Light Scra	tch Pattern			
					Fine Blending a	nd Cleaning	
						Metal Finishin	g and Polishing

**BLAZE, PINK, R369 HIGH PERFORMANCE** See Non-Woven Flap Wheel section for Interleaf Flap Wheels





Best choice for hard-to-grind materials, including superalloys (cobalt, inconel, and titanium) and stainless steel

# BLAZE R920 CERAMIC ALUMINA

- See significantly faster, cooler, burn-free results on the toughest jobs from the next-generation of sharp, longest-lasting ceramic abrasive grains and advanced grinding aid lubricant
- X-weight cotton flaps provide conformability and even wear
- · Advanced self-lubricating grain treatment reduces heat on hard-to-grind materials

Better choice for blending, deburring and finishing on a wide range of materials

# PINK R928 CERAMIC ALUMINA

- Ceramic grain provides better performance than zirconia alternatives
- Improved resin bond system provides longer life
- Versatile X-weight poly cotton backing for flexibility and life



Good choice for more durable flap wheel applications where aggressive cut and superior life are required

# MERIT R369 HIGH PERFORMANCE A/O BLEND

- · Long-lasting premium aluminum oxide blend with 2 to 3 times longer life
- Delivers an excellent cut rate on finishing operations
- · Heavy cotton blended flaps provide extended durability, conformability, and superior wear resistance



Better choice for more flexible flap wheel applications where finish is required

# MERIT R207 ALUMINUM OXIDE

- · Solid-performing aluminum oxide abrasive delivers uniform stock removal and long life
- · Heavy X-weight cotton flaps provide conformability and even wear
- · Good general purpose starting specification for small deburring and cleaning jobs



### Flap Wheel Test Kits

- Mini 1/4"-20 Thread Test Kit "CQ"
- Part # 088341**38001**
- Includes ten, 1" to 3" diameter, 1/4"-20 thread mini flap wheels
- Each kit includes a 1/4"-20 QC-4 quick-change adapter
- Mini1/4" Steel Shank Test Kit "CMM"
- Part # 08834138004
- Includes ten wheels, 1" to 3" diameter in various grits
- The flap wheels are mounted on a 1/4" diameter hardened steel shank

Micro Mini 1/8" Steel Shank Test Kit "MMC"

- Part # 08834131493
- Includes 5 wheels, 3/8" to 1-3/16" in diameter
- The flap wheels are mounted on a 1/8" diameter hardened steel shank
- Ideal for fast polishing and light deburring of holes or grooves



#### Micro-Mini Flap Wheels with 1/8" Mounted Steel Shanks

- The smallest flap wheels, ranging from 3/8" to 1-3/16" diameter, mounted on a 1/8" diameter steel shank
- Provide fast polishing and light deburring of internal workpieces with holes or grooves as small as 1/2"



			TIER:	GOOD	
			TRADENAME:	MERIT R369	
			ABRASIVE:	Premium Aluminum Oxide	
			BACKING:	Y-Weight Cotton	
		MAX.	STD.	5	
SIZE (D x W x SK.)	GRIT	RPM	PKG.	PART #	S
3/8 x 3/8 x 1/8	60	40,000	10	088341 <b>37470</b>	3,
	80	40,000	10	088341 <b>37471</b>	
	120	40,000	10	088341 <b>37472</b>	
	180	40,000	10	088341 <b>37473</b>	
	240	40,000	10	088341 <b>37474</b>	
	320	40,000	10	088341 <b>37475</b>	
5/8 x 5/8 x 1/8	60	37,000	10	088341 <b>37480</b>	3,
	80	37,000	10	088341 <b>37481</b>	
	120	37,000	10	088341 <b>37482</b>	
	180	37,000	10	088341 <b>37483</b>	
	240	37,000	10	088341 <b>37484</b>	
	320	37,000	10	088341 <b>37485</b>	1.
5/8 x 3/4 x 1/8	80	37,000	10	088341 <b>37541</b>	
	120	37,000	10	088341 <b>37542</b>	
	180	37,000	10	088341 <b>37543</b>	
	240	37,000	10	088341 <b>37544</b>	1.
	320	37,000	10	088341 <b>37545</b>	
3/4 x 3/16 x 1/8	60	35,000	10	088341 <b>37550</b>	
	80	35,000	10	088341 <b>37551</b>	
	120	35,000	10	088341 <b>37552</b>	
	180	35,000	10	088341 <b>37553</b>	
	240	35,000	10	088341 <b>37554</b>	1.
	320	35,000	10	088341 <b>37555</b>	
3/4 x 3/8 x 1/8	60	35,000	10	088341 <b>37560</b>	
	80	35,000	10	088341 <b>37561</b>	
	120	35,000	10	088341 <b>37562</b>	
	180	35,000	10	088341 <b>37563</b>	S
	240	35,000	10	088341 <b>37564</b>	q
	320	35,000	10	088341 <b>37565</b>	
3/4 x 1/2 x 1/8	60	35,000	10	088341 <b>37570</b>	
	80	35,000	10	088341 <b>37571</b>	
	120	35,000	10	088341 <b>37572</b>	
	180	35,000	10	088341 <b>37573</b>	
	240	35,000	10	088341 <b>37574</b>	
	320	35,000	10	088341 <b>37575</b>	

			TRADENAME:	MERIT R369
			ABRASIVE:	Premium Aluminum Oxide
			BACKING:	Y-Weight Cotton
		MAX.	STD.	, in the second s
SIZE (D x W x SK.)	GRIT	RPM	PKG.	PART #
3/4 x 5/8 x 1/8	60	35,000	10	088341 <b>37580</b>
	80	35,000	10	088341 <b>37581</b>
	120	35,000	10	088341 <b>37582</b>
	180	35,000	10	088341 <b>37583</b>
	240	35,000	10	088341 <b>37584</b>
	320	35,000	10	088341 <b>37585</b>
3/4 x 3/4 x 1/8	60	35,000	10	088341 <b>37590</b>
	80	35,000	10	088341 <b>37591</b>
	120	35,000	10	088341 <b>37592</b>
	240	35,000	10	088341 <b>37594</b>
	320	35,000	10	088341 <b>37595</b>
1-3/16 x 1/8 x 1/8	80	30,000	10	088341 <b>37491</b>
	120	35,000	10	088341 <b>37492</b>
	180	35,000	10	088341 <b>37493</b>
	320	35,000	10	088341 <b>37495</b>
1-3/16 x 3/16 x 1/8	60	30,000	10	088341 <b>37508</b>
	80	35,000	10	088341 <b>37501</b>
	120	35,000	10	088341 <b>37502</b>
	180	35,000	10	08834137503
	240	35,000	10	088341 <b>37504</b>
	320	35,000	10	088341 <b>37505</b>
1-3/16 x 3/8 x 1/8	80	30,000	10	088341 <b>37511</b>
	120	35,000	10	088341 <b>37512</b>
	180	35,000	10	08834137513
	240	35,000	10	088341 <b>37514</b>
	320	35,000	10	088341 <b>37515</b>

Some part numbers are non-stock; contact your Norton representative for status, order quantities and lead-times.



#### Micro-Mini Test Kit "MMC"

- Part # 088341**31493**
- Includes five wheels, 3/8" to 1-3/16" diameter in various grits, mounted on a 1/8" diameter hardened steel shank
- The "MMC" kit is ideal for fast polishing and light deburring of internal holes or grooves as small as 1/2"





### Mini Flap Wheels with 1/4" Mounted Steel Shanks

• Small flap wheels, ranging from 1" to 3" diameter, mounted on a 1/4" diameter steel shank

· Very durable, long-lasting mini flap wheels for demanding, heavy stock removal applications

TRADENAME:         BLAZE R920         PINK R928         MERIT R369         M           ABRASIVE:         Ceramic Alumina         Ceramic Alumina         Premium Aluminum Oxide         AI           BACKING:         X-Weight Cotton         X-Weight Poly/Cotton         Y-Weight Cotton         X-Weight Cotton	000 <b>IERIT R207</b> Juminum Oxide -Weight Cotton ART # 36425 <b>02576</b> 36425 <b>02577</b> 36425 <b>02578</b>
TRADENAME:         BLAZE R920         PINK R928         MERIT R369         M           ABRASIVE:         Ceramic Alumina         Ceramic Alumina         Premium Aluminum Oxide         AI           SIZE (D x W x SK.)         GRIT         MAX. RPM         STD. PKG.         PART #         PART #<	luminum Oxide -Weight Cotton ART # 36425 <b>02576</b> 36425 <b>02577</b>
ABRASIVE:         Ceramic Alumina         Ceramic Alumina         Aluminum Oxide         Al           BACKING:         X-Weight Cotton         X-Weight Poly/Cotton         Y-Weight Cotton         X-Weight Cott	-Weight Cotton ART # 36425 <b>02576</b> 36425 <b>02577</b>
SIZE (D x W x SK.)         GRIT         MAX. RPM         STD. PKG.         PART #	ART # 36425 <b>02576</b> 36425 <b>02577</b>
1 x 1/2 x 1/4         80         30,000         10           120         30,000         10         08334137105           1 x 5/8 x 1/4         40         30,000         10         08334137105           60         30,000         10         08834137100         63           80         30,000         10         08834137100         63           120         30,000         10         08834137102         63           120         30,000         10         08834137102         63           120         30,000         10         08834137102         63           120         30,000         10         08834137102         63           120         30,000         10         08834137104         63           1x 1 x 1/4         40         30,000         10         69957339701         08834137310         63           80         30,000         10         66261151170         69957339702         08834137310         63           80         30,000         10         66261151171         69957339703         08834137311         63	36425 <b>02576</b> 36425 <b>02577</b>
120         30,000         10           1 x 5/8 x 1/4         40         30,000         10         08834137105           60         30,000         10         08834137100         63           80         30,000         10         08834137101         63           120         30,000         10         08834137102         63           120         30,000         10         08834137102         63           180         30,000         10         08834137104         63           240         30,000         10         08834131536         64           240         30,000         10         08834131259         66         30,000         10         6834137310         63           80         30,000         10         66261151170         69957339702         08834137310         63           80         30,000         10         66261151171         69957339703         08834137311         63	36425 <b>02577</b>
1 x 5/8 x 1/4         40         30,000         10         08834137105           60         30,000         10         08834137100         63           80         30,000         10         08834137101         63           120         30,000         10         08834137102         63           120         30,000         10         08834137102         63           180         30,000         10         08834137102         63           240         30,000         10         08834131259         08834131259           1 x 1 x 1/4         40         30,000         10         6957339702         08834137310         63           80         30,000         10         66261151170         69957339703         08834137310         63	36425 <b>02577</b>
60         30,000         10         08834137100         63           80         30,000         10         08834137101         63           120         30,000         10         08834137102         63           120         30,000         10         08834137102         63           180         30,000         10         08834131536         08           240         30,000         10         08834137104         08834131259           1 x 1 x 1/4         40         30,000         10         69957339701         0883413750           60         30,000         10         66261151170         69957339702         08834137310         63           80         30,000         10         66261151171         69957339703         08834137311         63	36425 <b>02577</b>
80         30,000         10         08834137101         63           120         30,000         10         08834137102         63           180         30,000         10         08834137102         63           240         30,000         10         08834137104         08834137104           1 x 1 x 1/4         40         30,000         10         69957339701         08834131259           60         30,000         10         66261151170         69957339702         08834137310         63           80         30,000         10         66261151171         69957339703         08834137311         63	36425 <b>02577</b>
120         30,000         10         08834137102         63           180         30,000         10         08834131536         63           240         30,000         10         08834137104         63           1 x 1 x 1/4         40         30,000         10         69957339701         08834131259           60         30,000         10         66261151170         69957339702         08834137310         63           80         30,000         10         66261151171         69957339703         08834137311         63	
180         30,000         10         08834131536           240         30,000         10         08834137104           1 x 1 x 1/4         40         30,000         10         69957339701         08834131259           60         30,000         10         66261151170         69957339702         08834137310         63           80         30,000         10         66261151171         69957339703         08834137311         63	36425 <b>02578</b>
240         30,000         10         08834137104           1 x 1 x 1/4         40         30,000         10         69957339701         08834131259           60         30,000         10         66261151170         69957339702         08834137310         63           80         30,000         10         66261151171         69957339703         08834137311         63	
1 x 1 x 1/4 40 30,000 10 699573 <b>39701</b> 088341 <b>31259</b> 60 30,000 10 662611 <b>51170</b> 699573 <b>39702</b> 088341 <b>37310</b> 63 80 30,000 10 662611 <b>51171</b> 699573 <b>39703</b> 088341 <b>37311</b> 63	
60         30,000         10         66261151170         69957339702         08834137310         63           80         30,000         10         66261151171         69957339703         08834137311         63	
80 30,000 10 662611 <b>51171</b> 699573 <b>39703</b> 088341 <b>37311</b> 63	
	36425 <b>02580</b>
	36425 <b>02581</b>
	36425 <b>02582</b>
180 30,000 10 088341 <b>37313</b>	
240 30,000 10 088341 <b>37114</b>	
320 30,000 10 088341 <b>37315</b>	
1-3/8 x 5/8 x 1/4 60 30,000 10 088341 <b>37320</b>	
80 30,000 10 088341 <b>37321</b>	
120 30,000 10 088341 <b>37322</b>	
180 30,000 10 088341 <b>37323</b>	
240 30,000 10 088341 <b>37324</b>	
1-1/2 x 1/2 x 1/4 60 25,000 10	
80 25,000 10	
1-1/2 x 1 x 1/4 40 25,000 10 088341 <b>35140</b>	
	36425 <b>02592</b>
	36425 <b>02593</b>
	36425 <b>02594</b>
180         25,000         10         08834137343	
240 25,000 10 088341 <b>32101</b>	
1-1/2 x 1-1/2 x 1/4 40 25,000 10 088341 <b>30642</b>	
60 25,000 10 088341 <b>30643</b>	
80 25,000 10 088341 <b>30644</b>	
120 25,000 10 088341 <b>30641</b>	
180         25,000         10         08834130695	
2 x 1/2 x 1/4 60 25,000 10	
80 25,000 10	
120 25,000 10	
2 x 3/4 x 1/4 40 25,000 10 088341 <b>37158</b>	
60 25,000 10 088341 <b>37160</b>	
80 25,000 10 088341 <b>37161</b>	
120 25,000 10 088341 <b>37162</b>	
180 25,000 10 088341 <b>37163</b>	

Some part numbers are non-stock; contact your Norton representative for status, order quantities and lead-times.

Continued





### Mini Flap Wheels with 1/4" Mounted Steel Shanks continued

			TIER:	BEST	BETTER	GOOD	GOOD
			TRADENAME:	BLAZE R920	PINK R928	MERIT R369	MERIT R207
			ABRASIVE:	Ceramic Alumina	Ceramic Alumina	Premium Aluminum Oxide	Aluminum Oxide
			BACKING:	X-Weight Cotton	X-Weight Poly/Cotton	Y-Weight Cotton	X-Weight Cotton
SIZE (D x W x SK.)	GRIT	MAX. RP	M STD. PKG.		PART #	PART #	PART #
2 x 1 x 1/4	40	25,000	10		699573 <b>39705</b>	088341 <b>37377</b>	
	60	25,000	10	662611 <b>51173</b>	699573 <b>39706</b>	088341 <b>37370</b>	636425 <b>02600</b>
	80	25,000	10	662611 <b>51174</b>	699573 <b>39711</b>	088341 <b>37371</b>	636425 <b>02601</b>
	120	25,000	10		699573 <b>39712</b>	088341 <b>37372</b>	636425 <b>02602</b>
	180	25,000	10			08834137373	
	240	25,000	10			088341 <b>37374</b>	
	320	25,000	10			08834137375	
2 x 1-1/2 x 1/4	40	25,000	10			088341 <b>37183</b>	
	60	25,000	10			088341 <b>37380</b>	
	80	25,000	10			088341 <b>37381</b>	
	120	25,000	10			088341 <b>37382</b>	
	180	25,000	10			088341 <b>37383</b>	
2-1/2 x 1 x 1/4	40	20,000	10			088341 <b>37408</b>	
	60	20,000	10			088341 <b>37410</b>	636425 <b>02608</b>
	80	20,000	10			088341 <b>37411</b>	636425 <b>02609</b>
	120	20,000	10			088341 <b>37412</b>	636425 <b>02610</b>
	180	20,000	10			088341 <b>37413</b>	
	240	20,000	10			08834137633	
	320	20,000	10			088341 <b>37415</b>	
2-1/2 x 1-1/2 x 1/4	60	20,000	10			088341 <b>37420</b>	
	80	20,000	10			088341 <b>37421</b>	
	120	20,000	10			088341 <b>37422</b>	
3 x 1/2 x 1/4	60	20,000	10				636425 <b>02612</b>
	120	20,000	10				636425 <b>02614</b>
3 x 3/4 x 1/4	60	20,000	10			088341 <b>37440</b>	
	80	20,000	10			088341 <b>37441</b>	
3 x 1 x 1/4`	40	20,000	10		699573 <b>39713</b>	088341 <b>37456</b>	
	60	20,000	10	662611 <b>51176</b>	699573 <b>39714</b>	088341 <b>37450</b>	636425 <b>02620</b>
	80	20,000	10	662611 <b>51177</b>	699573 <b>39715</b>	088341 <b>37451</b>	636425 <b>02621</b>
	120	20,000	10	662611 <b>51178</b>	699573 <b>39716</b>	088341 <b>37252</b>	636425 <b>02622</b>
	180	20,000	10			088341 <b>37253</b>	
	240	20,000	10			088341 <b>35339</b>	
	320	20,000	10			088341 <b>35341</b>	
3 x 2 x 1/4	40	20,000	10			08834137460	
	60	20,000	10			08834137260	
	80	20,000	10			088341 <b>37261</b>	
	120	20,000	10			08834137262	
	180	20,000	10			08834137263	

Some part numbers are non-stock; contact your Norton representative for status, order quantities and lead-times.



#### Mini 1/4" Steel Shank Test Kit "CMM"

- Part # 08834138004
- Includes ten wheels, 1" to 3" diameter in various grits mounted on a 1/4" diameter hardened steel shank





### Mini Flap Wheels with 1/4"-20 Thread

- Mini flap wheels ranging from 1" to 3" diameter, mounted on a 14-20 thread that allows you to quickly spin the wheels
  on and off with no tools
- Designed for polishing and finishing intricate surfaces; cost-effective replacement for brushes, rubber points, and felt bobs



			TIER:	BETTER	GOOD	GOOD
			TRADENAME:		MERIT R369	MERIT R207
			ABRASIVE:	Ceramic Alumina	Premium Aluminum Oxide	Aluminum Oxide
			BACKING:	X-Weight Poly/Cotton	Y-Weight Cotton	X-Weight Cotton
		MAX.	STD.			
SIZE (D x W x THD.)	GRIT	RPM	PKG.	PART #	PART #	PART #
1 x 5/8 x 1/4-20	60	30,000	10		088341 <b>31001</b>	636425 <b>02624</b>
	80	30,000	10		088341 <b>31002</b>	636425 <b>02625</b>
	120	30,000	10		088341 <b>31003</b>	636425 <b>02626</b>
1 x 1 x 1/4-20	40	30,000	10	699573 <b>39718</b>	088341 <b>31027</b>	000.40500000
	60	30,000	10	699573 <b>39719</b>	088341 <b>31008</b>	636425 <b>02628</b>
	80	30,000	10	699573 <b>39720</b>	088341 <b>31009</b>	636425 <b>02629</b>
	120	30,000	10	699573 <b>39721</b>	088341 <b>31010</b>	636425 <b>02630</b>
	240	30,000	10		088341 <b>31012</b>	
	320	30,000	10		088341 <b>31013</b>	
1-3/8 x 5/8 x 1/4-20	60	30,000	10		088341 <b>32001</b>	636425 <b>02632</b>
	80	30,000	10		088341 <b>32002</b>	636425 <b>02633</b>
	120	30,000	10		088341 <b>32003</b>	636425 <b>02634</b>
1-5/8 x 1 x 1/4-20	40	25,000	10		088341 <b>32051</b>	
	60	25,000	10		088341 <b>32015</b>	636425 <b>02638</b>
	80	25,000	10		088341 <b>32016</b>	636425 <b>02639</b>
	120	25,000	10		088341 <b>32017</b>	636425 <b>02640</b>
	180	25,000	10		088341 <b>32018</b>	
2 x 1/2 x 1/4-20	80	25,000	10			636425 <b>02643</b>
	120	25,000	10			636425 <b>02644</b>
2 x 3/4 x 1/4-20	60	25,000	10		088341 <b>33008</b>	
	80	25,000	10		088341 <b>33009</b>	
	120	25,000	10		088341 <b>33010</b>	
	180	25,000	10			
2 x 1 x 1/4-20	40	25,000	10	699573 <b>39722</b>	088341 <b>33044</b>	
	60	25,000	10	699573 <b>39723</b>	088341 <b>33015</b>	636425 <b>02646</b>
	80	25,000	10	699573 <b>39735</b>	088341 <b>33016</b>	636425 <b>02647</b>
	120	25,000	10	699573 <b>39736</b>	088341 <b>33017</b>	636425 <b>02648</b>
	180	25,000	10		088341 <b>33018</b>	
	240	25,000	10		088341 <b>33019</b>	
	320	25,000	10			
2 x 1-1/2 x 1/4-20	60	25,000	10		088341 <b>35201</b>	
	80	25,000	10		088341 <b>35202</b>	
	120	25,000	10		088341 <b>35203</b>	
2-1/2 x 1 x 1/4-20	40	20,000	10		088341 <b>34061</b>	
	60	20,000	10		088341 <b>34022</b>	636425 <b>02654</b>
	80	20,000	10		088341 <b>34023</b>	
	120	20,000	10		088341 <b>34024</b>	
3 x 1/2 x 1/4-20	80	20,000	10			636425 <b>02659</b>
	120	20,000	10			
3 x 3/4 x 1/4-20	80	20,000	10		088341 <b>35009</b>	
	120	20,000	10		088341 <b>35010</b>	
3 x 1 x 1/4-20	40	20,000	10	699573 <b>39737</b>	088341 <b>35230</b>	
	60	20,000	10	699573 <b>39738</b>	088341 <b>35015</b>	636425 <b>02664</b>
	80	20,000	10	699573 <b>39739</b>	088341 <b>35016</b>	636425 <b>02665</b>
	120	20,000	10	699573 <b>39740</b>	088341 <b>35017</b>	636425 <b>02666</b>
	180	20,000	10		088341 <b>35018</b>	

Some part numbers are non-stock; contact your Norton representative for status, order quantities and lead-times. For adapters for flap wheels with 1/4"-20 thread, see the end of this section



### 3" – 8" Flap Wheels with Arbor Holes

- Flap wheels ranging from 3" to 8" diameter with arbor holes
- Heavy cotton backing and premium abrasive grains combine to provide superior life with aggressive cut on a wide
  range of polishing and finishing applications



		i	TRADENAME:	GOOD MERIT R369 Premium Aluminum Oxide	GOOD MERIT R207 Aluminum Oxide
			BACKING:	Y-Weight Cotton	X-Weight Cotton
SIZE (D x W x H)	GRIT	MAX. RPM	STD. PKG.	PART #	PART #
3 x 2 x 3/8	80	20,000	10	088341 <b>35051</b>	
	120	20,000	10	088341 <b>35052</b>	
3-1/2 x 1 x 5/8	40	20,000	10	088341 <b>22001</b>	
	60	20,000	10	088341 <b>22003</b>	
	80	20,000	10	088341 <b>22004</b>	
	120	20.000	10	088341 <b>22006</b>	
	180	20,000	10	088341 <b>22007</b>	
	240	20,000	10	088341 <b>22008</b>	
	320	20.000	10	088341 <b>22009</b>	
3-1/2 x 1-1/2 x 5/8	40	20,000	10	088341 <b>22011</b>	
5 1,2 % 1 1,2 % 0,0	60	20.000	10	088341 <b>22013</b>	
	80	20,000	10	088341 <b>22014</b>	
	120	20,000	10	088341 <b>22016</b>	
	180	20,000	10	088341 <b>22018</b>	
3-1/2 x 2 x 5/8	40	20,000	10	088341 <b>22022</b>	
5 1/2 / 2 / 0/0	60	20.000	10	088341 <b>22024</b>	
	80	20,000	10	088341 <b>22025</b>	
	120	20,000	10	088341 <b>22027</b>	
	180	20.000	10	088341 <b>22028</b>	
4 x 1 x 5/8	40	12,000	10	088341 <b>22032</b>	
1 / 1 / 0/0	60	12,000	10	088341 <b>22034</b>	636425 <b>02673</b>
	80	12,000	10	088341 <b>22035</b>	636425 <b>02674</b>
	120	12,000	10	088341 <b>22037</b>	636425 <b>02675</b>
	180	12,000	10	088341 <b>22038</b>	
	240	12,000	10	088341 <b>22039</b>	
	320	12,000	10	088341 <b>22040</b>	
4 x 1-1/2 x 5/8	40	12,000	10	088341 <b>22042</b>	
1 1/2 1/2	60	12,000	10	088341 <b>22044</b>	
	80	12,000	10	088341 <b>22045</b>	
	120	12,000	10	088341 <b>22047</b>	
	240	12,000	10	088341 <b>22050</b>	
4 x 2 x 5/8	40	12,000	10	088341 <b>22053</b>	
1 1 2 1 0/0	60	12,000	10	088341 <b>22055</b>	
	80	12,000	10	088341 <b>22055</b>	
		12,000	10	088341 <b>22058</b>	
	120				
	120 240	12,000	10	088341 <b>22060</b>	

Some part numbers are non-stock; contact your Norton representative for status, order quantities and lead-times. For flap wheel with arbor hole adapters and bushings, see the end of this section.

Continued





### 3" - 8" Flap Wheels with Arbor Holes continued

				BEST	GOOD	GOOD
				BLAZE R920	MERIT R369	MERIT R207
				Ceramic Alumina X-Weight Cotton	Premium Aluminum Oxide Y-Weight Cotton	Aluminum Oxide X-Weight Cotton
SIZE (D x W x H)	GRIT	MAX RPM	STD. PKG.		PART #	PART #
5 x 1-1/2 x 5/8	40	12,000	10		088341 <b>22063</b>	
0 / 1 1/2 / 0/0	60	12,000	10		088341 <b>22065</b>	
	80	12,000	10		088341 <b>22066</b>	
	120	12,000	10		088341 <b>22068</b>	
	180	12,000	10		088341 <b>22070</b>	
	240	12,000	10		088341 <b>22071</b>	
	320	12,000	10		088341 <b>22072</b>	
6 x 1/2 x 1	40	6,000	10		088341 <b>23001</b>	
	60	6,000	10		088341 <b>23003</b>	
	120	6,000	10		088341 <b>23005</b>	
	150	6,000	10		088341 <b>22198</b>	
	180	6,000	10		088341 <b>23006</b>	
6 x 1 x 1	40	6,000	5		088341 <b>23009</b>	
	60	6,000	5	662611 <b>46104</b>	088341 <b>23011</b>	636425 <b>02680</b>
	80	6,000	5	662611 <b>46105</b>	08834123012	636425 <b>02681</b>
	120	6,000	5	662611 <b>46106</b>	088341 <b>23014</b>	636425 <b>02682</b>
	150 180	6,000	5 5		088341 <b>23015</b>	
	240	6,000 6,000	5		088341 <b>23016</b> 088341 <b>23017</b>	
6 x 1-1/2 x 1	40	6,000	5		088341 <b>23020</b>	
0 X 1-1/2 X 1	60	6,000	5		088341 <b>23022</b>	636425 <b>02686</b>
	80	6,000	5		00034120022	636425 <b>02687</b>
	120	6,000	5		088341 <b>23025</b>	
	180	6,000	5		088341 <b>23027</b>	
	240	6,000	5		08834123028	
	320	6,000	5		088341 <b>23029</b>	
6 x 2 x 1	40	6,000	5		088341 <b>23031</b>	
	60	6,000	5		088341 <b>23033</b>	636425 <b>02691</b>
	80	6,000	5		088341 <b>23034</b>	636425 <b>02692</b>
	120	6,000	5		088341 <b>23036</b>	636425 <b>02694</b>
	180	6,000	5		088341 <b>23038</b>	
	240	6,000	5		088341 <b>23039</b>	
	320	6,000	5		088341 <b>23040</b>	
6 x 3 x 1	80	6,000	3		088341 <b>23056</b>	
	120	6,000	3		088341 <b>23058</b>	
	180	6,000	3		088341 <b>23060</b>	
011	240	6,000	3		088341 <b>23061</b>	
8 x 1 x 1	40	4,500	3		08834123070	
	60 80	4,500 4,500	3		088341 <b>23072</b> 088341 <b>23073</b>	
	120	4,500	3		088341 <b>23075</b>	
	120	4,500	3		088341 <b>23075</b>	
8 x 2 x 1	40	4,500	3		088341 <b>23092</b>	
SAEAT	60	4,500	3		088341 <b>23094</b>	636425 <b>02700</b>
	80	4,500	3		088341 <b>23095</b>	636425 <b>02701</b>
	120	4,500	3		088341 <b>23097</b>	
	180	4,500	3		088341 <b>23099</b>	
	320	4,500	3		088341 <b>23101</b>	

Some part numbers are non-stock; contact your Norton representative for status, order quantities and lead-times. For flap wheel with arbor hole adapters and bushings, see the end of this section.





### 10" - 16" Large Flap Wheels with Arbor Holes

Wide range of applications:

- · For polishing/grinding jobs in production work as well as clean-up and maintenance jobs
- Work on metals, plastic, rubber and wood

Easy to operate:

• No adjustments, dressing, or preparation required before or during operation

- Fewer rejected parts:
- More forgiving than other abrasive products
- Reduce the possibility of flattening, gouging and surface deformation

			TIER:	GOOD
		7	RADENAME:	MERIT R369
			ABRASIVE:	Premium Aluminum Oxide
			BACKING:	Y-Weight Cotton
SIZE (D x W x H)	GRIT	MAX. RPM	STD. PKG.	PART #
10 x 1 x 1-3/4	40	4,000	4	088341 <b>22223</b>
	80	4,000	4	088341 <b>24003</b>
	120	4,000	4	088341 <b>24005</b>
	180	4,000	4	088341 <b>24007</b>
	240	4,000	4	088341 <b>22889</b>
	320	4,000	4	088341 <b>24009</b>
10 x 1-1/2 x 1-3/4	60	4,000	4	088341 <b>24022</b>
	80	4,000	4	088341 <b>24023</b>
	180	4,000	4	088341 <b>24027</b>
10 x 2 x 1-3/4	60	4,000	2	088341 <b>24042</b>
	80	4,000	2	088341 <b>24043</b>
	120	4,000	2	088341 <b>24045</b>
	180	4,000	2	088341 <b>24047</b>
10 x 3 x 1-3/4	60	4,000	2	088341 <b>24077</b>
	80	4,000	2	088341 <b>22316</b>
	180	4,000	2	088341 <b>22132</b>
12 x 1 x 1-3/4	60	3,000	4	088341 <b>24085</b>
	80	3,000	4	088341 <b>22349</b>
	120	3,000	4	088341 <b>22311</b>
	180	3,000	4	088341 <b>22315</b>
12 x 2 x 1-3/4	40	3,000	2	088341 <b>22248</b>
	60	3,000	2	088341 <b>22250</b>
	120	3,000	2	088341 <b>22269</b>
	150	3,000	2	088341 <b>22270</b>
	240	3,000	2	088341 <b>22273</b>
	320	3,000	2	088341 <b>22275</b>
12 x 4 x 1-3/4	180	2,400	1	088341 <b>20017</b>

		TIFR	GOOD
			MERIT R369
			Premium Aluminum Oxide
			Y-Weight Cotton
GRIT	MAX. RPM	STD. PKG.	PART #
60	2,400	1	088341 <b>20020</b>
120	2,400	1	088341 <b>20022</b>
60	2,400	1	088341 <b>20028</b>
80	2,400	1	088341 <b>23215</b>
120	2,400	1	088341 <b>22907</b>
240	2,400	1	088341 <b>20032</b>
120	2,400	1	088341 <b>20035</b>
240	2,000	1	088341 <b>20041</b>
80	2,400	1	088341 <b>20043</b>
120	2,400	1	088341 <b>20044</b>
240	2,400	1	088341 <b>20046</b>
60	2,400	1	088341 <b>20047</b>
120	2,400	1	088341 <b>20050</b>
180	2,400	1	088341 <b>20051</b>
240	2,400	1	088341 <b>20052</b>
120	2,400	1	088341 <b>20055</b>
	60           120           60           80           120           240           120           240           120           240           60           120           240           80           120           240           80           120           240           60           120           180           240	$\begin{array}{c ccccc} 60 & 2,400 \\ \hline 120 & 2,400 \\ \hline 00 & 2,400 \\ \hline 80 & 2,400 \\ \hline 120 & 2,400 \\ \hline 240 & 2,400 \\ \hline 120 & 2,400 \\ \hline 240 & 2,000 \\ \hline 80 & 2,400 \\ \hline 120 & 2,400 \\ \hline 180 & 2,400 \\ \hline 240 & 2,400 \\ \hline 180 & 2,400 \\ \hline 240 & 2,400 \\ \hline 180 & 2,400 \\ \hline 240 & 2,400 \\ \hline 180 & 2,400 \\ \hline 240 &$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$

Some part numbers are non-stock; contact your Norton representative for status, order quantities and lead-times.

For flap wheel with arbor hole adapters and bushings, see the end of this section.



#### Adapter and Bushings for Flap Wheels with Arbor Holes

WHEEL DIAMETER	ADAPTERS	PART #
Shank Adapters		
3-1/2	1/4 Shank	088341 <b>25001</b>
3-1/2	3/8 Shank	088341 <b>25007</b> NS
4-8	1/4 Shank	088341 <b>25003</b>
<b>Threaded Mounting</b>	Adapters	
4-8	5/8-11 Thread	088341 <b>25027</b>
<b>Reducing Bushings</b>		
6-8	1 to 3/8	088341 <b>25016</b> NS
	1 to 1/2	088341 <b>25017</b>
	1 to 5/8	088341 <b>25018</b> NS
	1 to 3/4	088341 <b>25019</b> NS
	1 to 7/8	088341 <b>25020</b> NS
10-16	1 to 5/8	088341 <b>22069</b> NS

Standard packages = 1 adapter, 1 pair of bushings NS Non-stock. Contact your Norton representative for current order quantities and lead-times. For additional aluminum reducing bushings see non-woven convolute wheel section











#### Adapters for 1/4"-20 Thread Mini and Arbor Hole Flap Wheels

MODEL #	DESCRIPTION	PART #
Adapters		
ADAPT C	Fits 3 x 2 x 3/8 arbor flap wheel	088341 <b>37009</b> NS
MA-100	Fits A.H. Mini Wheel	088341 <b>37007</b> NS
QC-8	1/8 x 5/8	088341 <b>37002</b> NS
QC-4	1/4 SK. Dia. x 5/8 SK. L.	088341 <b>37001</b>
QC-44	1/4 x 4	088341 <b>37003</b>
QC-46	1/4 x 6	088341 <b>37004</b>
QC-48	1/4 x 8	088341 <b>37005</b>
QC-T	1/4-20 Thread	088341 <b>37012</b>
QC-T	3/8-24 Thread	088341 <b>37010</b>

Standard package = 1 adapter

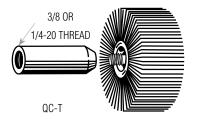
Other thread sizes available for quotation NS Non-stock. Contact your Norton representative for current order quantities and lead-times.





QC-46

MM











### Merit Sand-O-Flex Wheels

With their firm cushioning brushes, Sand-O-Flex's abrasive strips are forced into, around and over corners, hollow and fluted surfaces, and small openings. Pressure is distributed evenly over the surface to prevent loss of detail and the flattening of rounded areas; for sanding metals, woods, plastics, rubber and ceramic.

Sand-O-Flex wheels eliminate the need to hand-sand and are designed to fit most standard equipment. They load quickly and easily by turning the index knob as needed, allowing you to change grit size in minutes. Sand-O-Flex refills are available both scored (for finer, less aggressive work) and unscored. And, with the use of adapters, Sand-O-Flex wheels will fit most electric bench grinders.

#### Sand-O-Flex Wheel - Model 350-RP

- Diameter: 6-1/2" overall, 4" diameter high-impact plastic body
- 1" wide abrasive strips backed by 8 cushioning brushes
- 1/4" diameter steel shank
- Weight: 9-1/2 oz.
- Maximum operating speed: 2,400 RPM
- Special adapter required for bench grinder use
- Some assembly required

		TIER:	GOOD
		TRADENAME:	MERIT SAND-O-FLEX
		ABRASIVE:	Aluminum Oxide
MODEL #	GRIT	STD. PKG.	PART #
Sand-O-Flex Wheel			
350-RP		1	088341 <b>11051</b>
Comes assembled with 80 grit A/O resin bond scored refill and brushes			
Sand-O-Flex Accessories			
Replacement Brushes for 350-RP; 8 per set		1 set	088341 <b>13003</b>
Resin Bond Refills			
350-RP SCORED	60	10	088341 <b>11052</b>
	80	10	088341 <b>11053</b>
	100	10	088341 <b>12114</b>
	120	10	088341 <b>11054</b>
	180	10	088341 <b>11057</b>
Glue Bond Refills			
350-RP SCORED	80	10	088341 <b>12054</b>
	100	10	088341 <b>12055</b>
	120	10	088341 <b>12056</b>
350-RP UNSCORED	80	10	088341 <b>12044</b>





Non-woven surface finishing flap wheels are an ideal choice for a wide variety of blending and finishing applications common in the metal fabrication, welding and polishing industries. Flap wheels are conformable to intricate shapes and contours. Designed to deliver a consistent finish with a uniform rate of cut, flap wheels wear away continually exposing fresh abrasives.

There are two types of non woven flap wheels: non-woven only abrasive flaps where finishing is the primary application, and interleaf with alternating cloth and non-woven abrasive flaps (less conformable, more aggressive) for stock removal and finishing. Interleaf flap wheels must always be run in the direction indicated by the arrow.

#### Used for a wide range of metal fabrication and welding applications including blending, deburring, cleaning, finishing, and polishing Flap wheels with mounted steel shanks: 2" - 4" diameter Flap wheels with arbor holes: 3" - 12" diameter

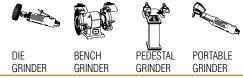
**Abrasive Grain: Machine Used:** 

**Applications:** 

**Size Range:** 

**Grit Range:** 

60 - 320Aluminum Oxide



### Application/Grit Recommendation Guide

COARSER (GRINDING)

NDRTDN

SAINT-GOBAIN

FINER (FINISHING)

NON- WOVEN FLAP WHEEL

60	80	120	180	240	320
Preparing Metal for Painting					
Blending Out Medium Mach	ine Marks				
	Blending Metal Surfaces				
	Applying Light Scratch Patter				
		Fine Blending and Cleaning			
				Metal Finishing and Polishing	

INTERLEAF FLAP WHEEL



Better choice for fine grit light cleaning and finishing

# NON-WOVEN FLAP WHEELS

- · Premium aluminum oxide grain with durable resin bond and web that wears away continually exposing fresh abrasives
- Tough yet conformable to intricate shapes and contours without changing the workpiece dimension
- · Designed with a steel shank as an integral part of the wheel or with and arbor hole



#### Good choice for fine grit cleaning and blending and finishing applications

# MERIT INTERLEAF FLAP WHEELS

- Alternating cloth and non-woven flaps make interleaf wheels less conforming and more aggressive than non-woven flap wheels, but less aggressive than all-cloth flap wheels
- Premium aluminum oxide grain with durable resin bond and web that wears away continually exposing fresh abrasives
- Tough yet conformable to intricate shapes and contours without changing the workpiece dimension





### PORTABLE TOOLS AND SPECIALTIES Non-Woven Flap Wheels



### 1/4" Mounted Steel Shanks

Wheels are designed with a 1/4" steel shank as an integral part of each wheel. These shanks run through the wheel creating better balance, a reduction of chatter, and reduced operator fatigue. They also permit quick changes on air tools when using other abrasive products.



#### **Arbor Hole Mounts**

For use on larger portable and fixed-base tools where the wheel must fit on an existing arbor.



#### Non-Woven

						10
Non-Wo	/en				TIER: BETTER	BETTER
	/011				TRADENAME: BEAR-TEX NON-WOVEN	BEAR-TEX NON-WOVEN
SIZE		NON-WOVEN	MAX.	STD.		
(D x W x SK./AH	.) ABRASIVE	GRIT	RPM	PKG.	PART #	PART #
2 x 1 x 1/4	A/0	Very Fine	12,000	20	662610 <b>51717</b>	
	A/0	Medium	12,000	20	662610 <b>51716</b>	
	A/0	Very Fine	12,000	20	662610 <b>51719</b>	
	A/0	Medium	12,000	20	662610 <b>51718</b>	
3 x 2 x 1/4	A/0	Medium	8,000	10	662610 <b>58474</b>	
6 x 1 x 2	S/C	Very Fine	3,000	4		662610 <b>58450</b>
	S/C	Fine	3,000	4		662610 <b>58451</b>
	A/0	Fine	3,000	4		662610 <b>58487</b>
	A/0	Medium	3,000	4		662610 <b>58456</b>
8 x 1 x 3	A/0	Fine	2,500	3		662610 <b>58491</b>
8 x 2 x 3	A/0	Fine	2,500	2		662610 <b>58493</b>
	A/0	Medium	2,500	2		662610 <b>00889</b>
12 x 2 x 5	A/0	Medium	1,900	1		662610 <b>05070</b>

NS Non-stock. Contact your Norton representative for current order quantities and lead-times.



GOO



#### Interleaf

						TRADENAME: MERIT I	ITERLEAF	MERIT INTERLEAF
SIZE		COATED	NON-WOVEN	MAX.	STD.			
(D x W x SK./AH.)	ABRASIVE	GRIT	GRIT	RPM	PKG.	PART #		PART #
2 x 1 x 1/4	A/0	60	Very Fine	12,000	10	088341 <b>38</b>	-	
	A/0	80	Very Fine	12,000	10	088341 <b>38</b>		
	A/0	120	Very Fine	12,000	10	088341 <b>44</b>		
	A/0	180	Very Fine	12,000	10	088341 <b>44</b>	1458	
	A/0	320	Very Fine	12,000	10	088341 <b>44</b>	1459	
2 x 1-1/2 x 1/4	A/0	80	Very Fine	12,000	10	088341 <b>38</b>	8125	
	A/0	120	Very Fine	12,000	10	088341 <b>38</b>	8126	
	A/0	320	Very Fine	12,000	10	088341 <b>38</b>	8128 NS	
3 x 1 x 1/4	A/0	60	Very Fine	12,000	10	088341 <b>38</b>	3129	
	A/0	80	Very Fine	12,000	10	088341 <b>38</b>	3130	
	A/0	120	Very Fine	12,000	10	088341 <b>38</b>	3118	
	A/0	180	Very Fine	12,000	10	088341 <b>38</b>	3120	
	A/0	320	Very Fine	12,000	10	088341 <b>38</b>	3119	
3 x 2 x 1/4	A/0	120	Very Fine	8,000	10	088341 <b>4</b> 4	1460	
	A/0	180	Very Fine	8,000	10	088341 <b>44</b>	1461	
3 x 2 x 3/8	A/0	60	Very Fine	12,000	10			088341 <b>39000 NS</b>
	A/0	120	Very Fine	12,000	10			088341 <b>39001 NS</b>
	A/0	240	Very Fine	12,000	10			088341 <b>39028 NS</b>
	A/0	320	Very Fine	12,000	10			088341 <b>39024</b> NS
4 x 2 x 1/4	A/0	80	Very Fine	12,000	10	088341 <b>21</b>	115	
	A/0	120	Very Fine	12,000	10	088341 <b>2</b> 0	)458	
4 x 2 x 5/8	A/0	60	Very Fine	12,000	10			088341 <b>26025 NS</b>
	A/0	240	Very Fine	12,000	10			088341 <b>26014</b> NS
	A/0	320	Very Fine	12,000	10			088341 <b>26027</b> NS
6x1x1	A/0	120	Very Fine	6,000	10			088341 <b>26006</b> NS
	A/0	240	Very Fine	6,000	10			088341 <b>26030 NS</b>
6 x 2 x 1	A/0	80	Very Fine	6,000	10			088341 <b>26009 NS</b>
	A/0	180	Very Fine	6,000	10			088341 <b>26018</b> NS
6 x 3 x 1	A/0	80	Very Fine	6.000	6			088341 <b>26055</b> NS
	1 -		e for current order o	- ]	laad_timac			

NS Non-stock. Contact your Norton representative for current order quantities and lead-times.

#### Refer to Non-Woven Convolute Wheel section for Flap Wheel Reducing Bushings.



Flaps of abrasive cloth are stacked, inserted into a holder, and then attached to a mandrel. The flaps are designed to break down during use and reveal the next layer of abrasive.

To create an interleaf bore polisher, cloth flaps are mixed with non-woven flaps.

#### **Applications:**

**Grit Range:** 

**Abrasive Grain:** 

For deburring, sizing, cleaning and polishing the interior diameters of cylinders, tubes and hydraulic fittings. Flaps adjust automatically to inside diameter, polishing the entire surface

area with each pass. Bore polishers are self-centering, so they apply equal pressure to full wall of inside diameter. Spring action design gives faster inside diameter cleaning, deburring and polishing to cylinders, deep bores and tubes.

Interleafed bore polishers are designed to polish and finish in one easy application. The abrasive flaps cut, while the non-woven flaps apply a fine finish. 60 - 240 Aluminum Oxide

#### Application-to-Product Shape Recommendation Guide

Shape	Application
Solid Flaps	<ul> <li>For 5/8" to 1" interior diameter bores</li> </ul>
B-3 Series	<ul> <li>3 abrasive packs 1-1/2" wide, bonded to hub</li> </ul>
-	Use with QC-5 mandrel Part # 088341 <b>54182</b>
Solid Flaps	For 1" to 4" interior diameter bores
B-4 Series	<ul> <li>4 abrasive packs 1-1/2" wide, bonded to hub</li> </ul>
	Use with BPM-4 mandrel Part # 08834154183
Solid Flaps	• For 2" to 5-7/8" interior diameter bores
B-8 Series	<ul> <li>8 abrasive packs 1-1/2" wide, bonded to hub</li> </ul>
*	Use with BPM-8 mandrel Part # 08834154184
Scored Flaps	Available upon request as made-to-order products.
Interleaf	Cloth flaps are mixed with non-woven flapes. Interleaf bore polishers do double duty. Designed to polish and finish in one easy application, they are the ideal choice when close tolerances must be maintained, while giving an interior a polished finish.

### Application/Grit Recommendation Guide

COARSER (MATERIAL RE	MOVAL)			FINER (F	INISHING)
4					$\longrightarrow$
60	80	120	180	240	
Blending Out Medium Machine	Marks				
Sizing Cylinders					
	Deburring Cylinders				
	Blending Metal Surfaces				
	Cleaning Cylinders				
	Applying Light Scratch Pattern				
			Fine Blending and Cleaning		
			Metal Finishing and Polishing	g	
					<b>&gt;</b>
SOLID FLAP		SCORED		IN	TERLEAF

203

NDRTDN

SAINT-GOBAIN



### PORTABLE TOOLS AND SPECIALTIES Bore Polishers

### Aluminum Oxide Bore Polishers

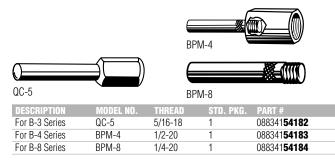
			TIER: TRADENAME: ABRASIVE: BACKING:	GOOD MERIT R369 Aluminum Oxide Y-weight Cotton/Poly
DESCRIPTION	GRIT	MAX. RPM	STD. PKG.	PART #
Bore Polishers – Soli				00004454400
B-305 Fits ID 5/8 to 1	60	25,000	10	088341 <b>54190</b>
FIIS ID 5/8 to 1	80	25,000	10	088341 <b>54191</b>
	120	25,000	10	088341 <b>54193</b>
	180	25,000	10	088341 <b>54195</b>
B 405	240	25,000	10	088341 <b>54197</b>
B-405	60	22,000	10	088341 <b>54091</b>
Fits ID 1 to 1-1/2	80	22,000	10	088341 <b>54092</b>
	120	22,000	10	088341 <b>54093</b>
	180	22,000	10	088341 <b>54094</b>
B-410	60	20,000	10	088341 <b>54100</b>
Fits ID 1-1/2 to 2	80	20,000	10	088341 <b>54101</b>
	120	20,000	10	088341 <b>54102</b>
	180	20,000	10	088341 <b>54103</b>
	240	20,000	10	088341 <b>54104</b>
B-415	60	16,000	10	088341 <b>54109</b>
Fits ID 2-1/8 to 2-1/2	80	16,000	10	088341 <b>54110</b>
	120	16,000	10	088341 <b>54111</b>
	180	16,000	10	088341 <b>54112</b>
B-420	60	15,000	10	088341 <b>54118</b>
Fits ID 2-1/2 to 3	80	15,000	10	088341 <b>54119</b>
	120	15,000	10	088341 <b>54120</b>
	180	15,000	10	088341 <b>54121</b>
B-425	60	10,000	10	088341 <b>54127</b>
Fits ID 3-1/8 to 4	80	10,000	10	088341 <b>54128</b>
	120	10,000	10	088341 <b>54129</b>
	180	10,000	10	088341 <b>54130</b>

NS Non-stock. Contact your Norton representative for current order quantities	
and lead-times.	

			TIER: TRADENAME:	GOOD Merit R369
			ABRASIVE:	
			BACKING:	Y-weight Cotton/Pol
DESCRIPTION	GRIT	MAX. RPM	STD. PKG.	PART #
Bore Polishers – Solid			SID. FKU.	FANI #
Bole Fulisiieis – Juliu B-810	60	16.000	10	088341 <b>54136</b>
Fits ID 2 to 2-1/2	80	16,000	10	088341 <b>54137</b>
1113102102172	120	16,000	10	088341 <b>54138</b>
	120	16,000	10	088341 <b>54139</b> NS
	240	16,000	10	088341 <b>54140</b> NS
B-815	60	15,000	10	088341 <b>54145</b>
Fits ID 2-5/8 to 3	80	15,000	10	088341 <b>54146</b>
1113 10 2-3/0 10 3	120	15,000	10	088341 <b>54147</b>
	120	15,000	10	088341 <b>54148</b> NS
	240	15,000	10	088341 <b>54149</b> NS
B-820	60	10,000	10	088341 <b>54154</b>
6-620 Fits ID 3-1/8 to 4	80	10,000	10	088341 <b>54155</b>
1 113 1D 3-1/0 10 4	120	10,000	10	088341 <b>54155</b>
	120	- ,	10	
	240	10,000	10	088341 <b>54157</b>
D 005		10,000		088341 <b>54158</b> NS
B-825 Fits ID 4-1/4 to 5-1/4	60	8,000	10	088341 <b>54163</b>
FIIS ID 4-1/4 IU 0-1/4	80	8,000	10	088341 <b>54164</b>
	120	8,000	10	088341 <b>54165</b>
	180	8,000	10	088341 <b>54166</b>
D 000	240	8,000	10	088341 <b>54167</b>
B-830	60	8,000	10	088341 <b>54172</b>
Fits ID 5-1/4 to 5-7/8	80	8,000	10	088341 <b>54173</b>
	120	8,000	10	088341 <b>54174</b>
	180	8,000	10	088341 <b>54175</b>
	240	8,000	10	088341 <b>54176</b>
Bore Polishers – Score		ler products		

Bore Polishers – Interleaf										
B-405 Interleaf	80	22,000	10	08834150271						
Fits ID 1 to 1-1/2	180	22,000	10	088341 <b>50273</b>						

### Mandrels for Bore Polishers



### Extension Mandrels for Bore Polishers

<b>DIAMETER x LENGTH</b>	MODEL NO.	THREAD	STD. PKG.	PART #
1/4 x 4	EM-144	1/4-20	1	088341 <b>54185</b>
1/4 x 6	EM-146	1/4-20	1	088341 <b>54186</b>
1/4 x 8	EM-148	1/4-20	1	088341 <b>54187</b>

To extend a B-4 series bore polisher, attach the adapter piece of the BPM-4 mandrel to the bore polisher, then attach the desired length extension mandrel above to the BPM-4 adapter piece. To extend a B-8 series bore polisher, attach the desired length extension mandrel above directly to the bore polisher.



### Bore Polisher Test Kit "BP"

#### Part # 08834154181

 Contains ten bore polishers and two mini 1/4"-20 thread flap wheels in assorted sizes and grits for finishing 1" to 5" interior diameters, and mandrel for 1/4" chuck.







FlexDrum abrasive segments sweep away flaws. Their extreme longevity and perfect balance make them well-suited for automatic as well as offhand use. Hubs and abrasive segments can be combined to fit your job perfectly.

Blending out parting lines on castings, smoothing out pre-ground welded areas, removing **Applications:** burrs and work flaws, graining stainless, brush-finishing and satin-finishing aluminum, removing rust, deflashing molded plastic and rubber parts, and preparing surfaces for painting or plating. Diameter of loaded FlexDrum: 8" - 18" **Size Range:** Width of FlexDrum: 1-1/2" - 12" Custom die-cut segments as well as extra wide segments, in widths up to 144" are also available as made-to-order products. **Grit Range:** 50 - 240Resin or glue Heavyweight cotton **Abrasive Grain:** Premium Aluminum Oxide

### Shape/Application Recommendation Guide



**Plain Segment**  For flat or mildly contoured surfaces



**Bond:** 

**Backing:** 

1/4 Scored (SC) Segment Great for complex parts

· Provides a fine finish



1/2 Slash (SL) Segment Great for mild and moderate contours



#### **Interleaf Segment**

- · Plain cloth segments are mixed with non-woven segments. Interleaf FlexDrums do double duty. Designed to polish and finish in one easy application,
- Available upon request as made-to-order product

### Loading Flex Drum Hubs



FlexDrum hub end plate removes for easy loading of abrasive segments.



Custom profiled segments eliminate break-in resulting in maximum productivity. Contact your sales representative for more information.



### Plain Segments – for flat or mildly curved surfaces

		TIER:	GOOD						
		TRADENAME:	MERIT R369						
		ABRASIVE:	A/0						
		BACKING:	Y-weight Cotton						
		GRIT:	50	60	80	100	120	180	240
WIDTH	TRIM LENGTH*	STD. PKG.	PART #						
1-1/2	2-3/4	12	088341 <b>55002</b>	088341 <b>55003</b>	088341 <b>55004</b>		088341 <b>55006</b>	088341 <b>55008</b>	088341 <b>55010</b>
2	2-3/4	12	088341 <b>55013</b>	088341 <b>55014</b>	088341 <b>55015</b>	088341 <b>55016</b>		088341 <b>55019</b>	
2	4	20		088341 <b>55313</b>	088341 <b>55314</b>			088341 <b>55318</b>	
2	5	20		088341 <b>55568</b>					
3	2-3/4	12		088341 <b>55026</b>	088341 <b>55027</b>		088341 <b>55029</b>	088341 <b>55031</b>	
3	4	20			088341 <b>55326</b>			088341 <b>55330</b>	
3	5	20		08834155579			088341 <b>55582</b>		
4	2-3/4	12	088341 <b>55036</b>				088341 <b>55040</b>		
4	4	20	088341 <b>55336</b>	088341 <b>55337</b>	088341 <b>55338</b>		088341 <b>55340</b>		
4	5	20		088341 <b>55590</b>					

All FlexDrum segments are non-stock; contact your Norton representative for current order quantities and lead-times.

#### 1/4" Scored Segments – for complex parts and providing a fine finish

			TIER:	GOOD					
			TRADENAME:	MERIT R369					
			ABRASIVE:	A/0	A/0	A/0	A/0	A/0	A/0
			BACKING:	Y-weight Cotton					
			GRIT:	50	60	80	100	120	180
WIDTH	TRIM LTH.*	SCORE	STD. PKG.	PART #					
1-1/2	2-3/4	1/4	12		088341 <b>55083</b>	088341 <b>55084</b>		088341 <b>55086</b>	088341 <b>55088</b>
2	2-3/4	1/4	12	088341 <b>55094</b>	088341 <b>55095</b>	088341 <b>55096</b>	088341 <b>55097</b>	088341 <b>55098</b>	088341 <b>55100</b>
3	2-3/4	1/4	12		088341 <b>55107</b>	088341 <b>55108</b>	088341 <b>55109</b>		088341 <b>55112</b>
4	2-3/4	1/4	12	088341 <b>55117</b>	088341 <b>55118</b>	088341 <b>55119</b>		088341 <b>55121</b>	088341 <b>55123</b>

All FlexDrum segments are non-stock; contact your Norton representative for current order quantities and lead-times.

#### 1/2" Slashed Segments - for mild and moderate contours

			TIER:	GOOD				
			TRADENAME:	MERIT R369				
			ABRASIVE:	A/0	A/0	A/0	A/0	A/0
			BACKING:	Y-weight Cotton				
			GRIT:	60	80	120	180	240
WIDTH	TRIM LTH.*	SLASH	STD. PKG.	PART #				
2	4	1/2	20	088341 <b>55420</b>			088341 <b>55425</b>	088341 <b>55427</b>
2	5	1/2	20			088341 <b>55639</b>		
3	4	1/2	20		088341 <b>55432</b>			
4	4	1/2	20		088341 <b>55445</b>	088341 <b>55447</b>		088341 <b>55451</b>
4	5	1/2	20		088341 <b>55659</b>			

All FlexDrum segments are non-stock; contact your Norton representative for current order quantities and lead-times. \*Trim Length is the actual usable length of segment when loaded

### TECH TIP

FlexDrums can be used for polishing large IDs. Just load half the segments with a wheel diameter ½" to 1" larger than the ID of your workpiece.



#### **Hub Units**

- FlexDrum hubs are perfectly balanced, last indefinitely and are available in widths from 1-1/2" to 12"
- · Extra wide widths are available up to 144" as made-to-order products

MODEL NO.	D x W	ARBOR HOLE/THREAD	SEGMENTS PER HUB	PART #
FlexDrum Hub Units				
81.5-B	2-3/8 x 1-1/2	1 AH	12	088341 <b>40065</b>
82-B	2-3/8 x 2	1 AH	12	088341 <b>41049</b>
		5/8-11 THD	12	088341 <b>40048</b>
83-B	2-3/8 x 3	1 AH	12	088341 <b>41018</b>
		5/8-11 THD	12	088341 <b>40034</b>
84-B	2-3/8 x 4	1 AH	12	088341 <b>40066</b>
		5/8-11 THD	12	088341 <b>40049</b>
122-B	4 x 2	1-1/4 AH	20	088341 <b>40050</b>
123-B	4 x 3	1-1/4 AH	20	088341 <b>40051</b>
124-B	4 x 4	1-1/4 AH	20	088341 <b>40061</b>
142-B	6 x 2	1-1/4 AH	30	088341 <b>40062</b>
143-B	6 x 3	1-1/4 AH	30	699573 <b>99208</b>
144-B	6 x 4	1-1/4 AH	30	088341 <b>41060</b>
340-B2	8 x 2	1-1/4 AH	40	636425 <b>92550</b>
340-B4	8 x 4	1-1/4 AH	40	636425 <b>92548</b>

All FlexDrum hub units are non-stock; contact your Norton representative for current order quantities and lead-times.



12" WHEEL WHEN LOADED



2-3/8" DIAMETER HUB WITH 1" ARBOR HOLE 8" WHEEL WHEN LOADED



2-3/8" DIAMETER HUB ALSO AVAILABLE WITH 5/8"-11 ARBOR 8" WHEEL WHEN LOADED



14" OR 16" WHEEL WHEN LOADED





### **FlexDrum Reference Charts**

FlexDrums can be mounted on any type of arbor.

#### Weights

0	
DIAMETER	WEIGHT
Weight of Hubs*	
4" Diameter Hub	1.5 lbs./inch of width
6" Diameter Hub	2 lbs./inch of width
8" Diameter Hub	2.5 lbs./inch of width
Weight of Hubs with Segme	nts*
4" Diameter Hub	3.4 - 4 lbs./inch of width
6" Diameter Hub	5 - 5.5 lbs./inch of width
8" Diameter Hub	6.75 - 7 lbs./inch of width
*Approximate values. Actual we	ight will depend on abrasive type and overall width of hub.

нμр eigni will aepe

#### FlexDrum Maximum RPM

WHEEL DIAMETER	MAXIMUM RPM
8	4,500
12	3,000
14	2,500
16	2,200
18	2,000

#### Recommended H.P. Required

HUB	H.P.
4" Diameter Hub	1/2 H.P. /inch of width
6" Diameter Hub	3/4 H.P./inch of width
8" Diameter Hub	1 H.P./inch of width

#### Recommended Surface Feet per Minute for using EloyDrum Whoole on Various Materials

for using FlexDrum Wheels	on Various Materials
MATERIAL	SFPM
Mild Steel	5,000
Stainless Steel	6,500
Alloy Steel	5,000
Titanium	3,500
Hard Aluminum	5,500
Nonferrous	5,000
Rubber	4,500
Hardwood (edge breaking)	4,000
Softwood	3,500
Thermoplastic	3,000

#### SPEC CHECK



#### ElexDrum Hub Specification Chart

i loverani i lao opot		art		
MODEL NO.	82-B	121-B	141-B	840-B
Diameter of Finished Wheel	8	12	14 or 16	16 or 18
Diameter of Hub Alone	2-3/8	4	6	8
Arbor Hole	1 or	3/4 to	1 to	1-1/4
	5/8-11 thd	1-3/4	3-1/2	to 5
Segments Per Hub	12	20	30	40

#### How to Determine Diameter of Finished FlexDrums

HUB DIAMETER	TRIM LENGTH (X2)	FINISHED WHEEL					
2-3/8	2-3/4	8					
4	4	12					
4	5	14					
6	4	14					
6	5	16					
8	4	16					
8	5	18					

### TECH TIP

For surface feet per minute, use the following calculation: SFPM=.262 x DIA (in inches) x RPM.





L2

Our double-cut style carbide burrs have stronger tooth formulation and numerous cutting edges to outperform other double-cut carbide burrs with better stock removal, granular chip break, and longer life.

Pair up these long-lasting burrs with our pneumatic die grinder to quickly and comfortably accomplish many portable applications on one machine – including jobs using specialties, small diameter flap wheels, and mounted points.

Deburring, medium-to-light surface cleaning and stock removal, weld removal and

Applications: Shapes: Shank Diameter:

**Machine Used:** 

prep, chamfering A, B, C, D, F, G, H, L, M



1/4"

### Understanding the Product

-		
Burr	Dime	ensions
Dan	-	11010110

D1	L1	D2	L2	D1 D2
HEAD DIAMETER	HEAD LENGTH	SHANK DIAMETER	OVERALL BURR LENGTH (OL)	L1

### TECH TIP

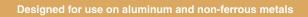
Each carbide burr is packed individually in a clear, protective plastic case with Norton-blue end-caps. Each burr is marked with the burr head diameter and length for easy identification.



Double cut burrs are a popular choice because of their universal cutting style

# DOUBLE CUT CARBIDE BURRS

- Hard tungsten carbide burrs with strong tooth formulations and numerous cutting edges for extended life and less changeover downtime versus other cutting tools
- · Higher stock removal, and smaller, granular chip-break on hard-to-grind workpieces versus other carbide burrs
- Perform well at higher temperatures and can be used longer than high-speed steel tools even if your operation generates some heat



# SINGLE CUT CARBIDE BURRS

- Single spiral carbide burrs make deburring aluminum and non-ferrous materials an ease
- Extra sharp edges and fast debris removal keeps you on task for better production
- · Perform well at higher temperatures and can be used longer than high-speed steel tools

SGO



#### Carbide Burrs for Standard Metal Removal



#### Cylindrical without End Cut

The ends of these burrs are flat, with no cutting edges and are used for contour finishing and to get into right-angled corners.

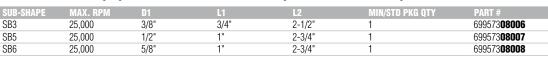


	ΜΛΥ ΒΡΜ	D1	14	12		DADT #
SUD-SHAPE	MAA. III W	וש		01	WIN/STD PKG QTT	FANI#
SA1	25,000	1/4"	3/4"	2"	1	699573 <b>08002</b>
SA3	25,000	3/8"	3/4"	2-1/2"	1	699573 <b>08004</b>
SA5	25,000	1/2"	1"	2-3/4"	1	699573 <b>08005</b>



#### Cylindrical with End Cut

The cutting edge at the end of the burr makes these burrs a good choice for contour finishing.





### **Ball-Nosed Cylindrical**

Use these round-nosed burrs for smoother operation and better tool control.

SUB-SHAPE	MAXRPM	D1	L1	L2	MIN/STD PKG QTY	PART #
SC1	25,000	1/4"	3/4"	2"	1	699573 <b>08009</b>
SC2	25,000	5/16"	3/4"	2-1/2"	1	699573 <b>08010</b>
SC3	25,000	3/8"	3/4"	2-1/2"	1	699573 <b>08011</b>
SC5	25,000	1/2"	1"	2-3/4"	1	699573 <b>08012</b>
SC5	25,000	1/2"	1"	6"	1	699573 <b>60679</b>
SC6	25,000	5/8"	1"	2-3/4"	1	699573 <b>08013</b>



#### **Ball Shape**

Use these carbide burrs to create a concave and to hollow out a workpiece.

SUB-SHAPE	MAXRPM	D1	L1	L2	MIN/STD PKG QTY	PART #
SD1	25,000	1/4"	1/4"	2"	1	699573 <b>08014</b>
SD3	25,000	3/8"	5/16"	2-1/8"	1	699573 <b>08016</b>
SD5	25,000	1/2"	7/16"	2-3/16"	1	699573 <b>08017</b>





#### **Ball-Nosed Tree**

Designed to round off edges and make concave cuts.

SUB-SHAPE	MAXRPM	D1	L1	L2	MIN/STD PKG QTY	PART #
SF1	25,000	1/4"	3/4"	2"	1	699573 <b>08018</b>
SF2	25,000	5/16"	3/4"	2-1/2"	1	699573 <b>08019</b>
SF3	25,000	3/8"	3/4"	2-1/2"	1	699573 <b>08020</b>
SF3	25,000	3/8"	3/4"	6"	1	699573 <b>60689</b>
SF5	25,000	1/2"	1"	2-3/4"	1	699573 <b>08021</b>
SF5	25,000	1/2"	1"	6"	1	699573 <b>60691</b>
SF6	25,000	5/8"	1"	2-3/4"	1	699573 <b>08022</b>



### Carbide Burrs for Standard Metal Removal



#### Tree with Taper

The taper allows access to hard-to-reach areas, such as angled contours.



SUB-SHAPE	MAXRPM	D1	L1	L2	MIN/STD PKG QTY	PART #
SG1	25,000	1/4"	3/4"	2"	1	699573 <b>08023</b>
SG3	25,000	3/8"	3/4"	2-1/2"	1	699573 <b>08025</b>
SG5	25,000	1/2"	1"	2-3/4"	1	699573 <b>08026</b>
SG5	25,000	1/2"	1"	6"	1	699573 <b>60712</b>
SG6	25,000	5/8"	1"	2-3/4"	1	699573 <b>08027</b>



#### Flame Shape SH

Great for channel working and shaping due to its long fluted sides and rounded head.

SUB-SHAPE	MAXRPM	D1	L1	L2	MIN/STD PKG QTY	PART #
SH5	25,000	1/2"	1-1/4"	6"	1	699573 <b>66822</b>





#### **Ball-Nosed Cone**

This cone shape is excellent for imparting fine finishes.

SUB-SHAPE	MAXRPM	D1	L1	L2	MIN/STD PKG QTY	PART #
SL2	25,000	5/16"	7/8"	2-3/4"	1	699573 <b>08028</b>
SL3	25,000	3/8"	1 3/16"	2-15/16"	1	699573 <b>08029</b>
SL4	25,000	1/2"	1 3/16"	3"	1	699573 <b>08030</b>
SL4	25,000	1/2"	1-3/16"	6"	1	699573 <b>60720</b>



#### **Pointed Cone** 31

Ideal for rounded edges or reaching difficult, tight areas.

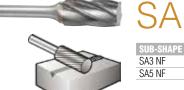
SUB-SHAPE	MAXRPM	D1	L1	L2	MIN/STD PKG QTY	PART #
SM5	25,000	1/2"	7/8"	6"	1	699573 <b>60767</b>

### Carbide Burr Kit

	SUB-SHAPE Carbide Burr Kit*	MIN/STD PKG QTY 1	<b>PART #</b> 699573 <b>08060</b>
	* Kit Includes one each of: SA5 (699573 <b>08005</b> ), SF3 (699573 <b>08020</b> ), SF5 (699573 <b>08021</b> ),	SG5 (699573 <b>08026)</b> , and SL4 (699	
<b>L</b> DARE			
Lin			



### Carbide Burrs for Aluminum and Non-Ferrous Materials



#### Cylindrical without End Cut

The ends of these burrs are flat, with no cutting edges and are used for contour finishing and to get into right-angled corners.

SUB-SHAPE	MAX. RPM	D1	L1	L2	MIN/STD PKG QTY	PART #
SA3 NF	25,000	3/8"	3/4"	21/2"	1	699573 <b>40148</b>
SA5 NF	25,000	1/2"	1"	2-3/4"	1	699573 <b>40149</b>



#### Ball-Nosed Tree

Designed to round off edges and make concave cuts.

	9	0				
SUB-SHAPE	MAXRPM	D1	L1	L2	MIN/STD PKG QTY	PART #
SF3 NF	25,000	3/8"	3/4"	2-1/2"	1	699573 <b>40154</b>
SF5 NF	25,000	1/2"	1"	2-3/4"	1	699573 <b>60647</b>



#### SL Ball-Nosed Cone This cone shape is excellent

This cone shape is excellent for imparting fine finishes.

SUB-SHAPE	MAXRPM	D1	L1	L2	MIN/STD PKG QTY	PART #
SL4 NF	25,000	1/2"	1-1/4"	6"	1	699573 <b>60651</b>

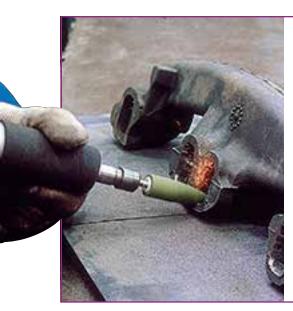


# we've got you covered FROM DIY TO TOOLCRIB TO PRODUCTION FLOOR

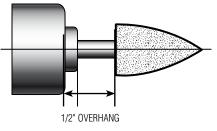
Available in vitrified bond, resin bond, center lap and cotton fiber, and in a variety of shapes our mounted points offer fast, free cutting grinding and finishing capability. Produce sharp edges with the Norton line of sharpening stones - bringing solutions for craftsmen and hobbyists alike for over 190 years.

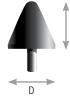


### PRECISION OFFHAND/PORTABLE **Mounted Points**



#### Measurement Guide





#### Resin bond, vitrified bond, center lap, and cotton fiber mounted points are available in a wide range of shapes.

Industries:	Aerospace
	Tool and Die
	Construction
	Metal Fabrication
	Automotive
	Cutlery
	Mold Shops
	Stainless Steel Equipment
	Foundries
Abrasive Grain:	Ceramic Alumina, Zirconia Alumina, Zirconia Alumina / Aluminum Oxide Blend, Aluminum Oxide
Shape Availability:	A, B, and W
Machine Used:	
	DIE AND HORIZONTAL/ PENCIL STRAIGHT SHAFT GRINDER PORTABLE GRINDER

#### **Description of Overhang**

Overhang is the distance between the grinder chuck and the abrasive on the spindle. The larger the overhang, the lower the maximum safe operating speed.

#### Size

Measured by diameter (D) x thickness (T)

### **Cotton Fiber**

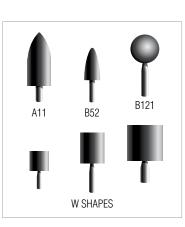


#### Good for blending and polishing

# COTTON FIBER ALUMINUM OXIDE - RESIN BOND

- · Aluminum oxide grain provides an excellent blend of cut rate and life
- · The cotton fibers ensure smooth, chatter-free grinding
- Designed for blending and polishing in one step; use 80 grit for most materials and 120 for polishing and stainless steel applications

				TIER: TRADENAME: ABRASIVE:	GOOD COTTON FIBER Aluminum Oxide	
SHAPE	SIZE (D x T)	SPINDLE DIA.†	MAX. RPM*	MIN./STD. PKG.	SPEC	PART #
<b>Cotton Fi</b>	ber Mounted Po					
A11	7/8 x 2	1/4	19,860	5/25	A80-HBF3	614636 <b>22664</b>
B52	3/8 x 3/4	1/8	45,370	5/25	A120-HBF3	614636 <b>20242</b>
B121	1/2" Ball	1/8	45,370	5/25	A80-HBF3	614636 <b>22657</b>
W163	1/4 x 1/2	1/8	60,000	5/25	A80-HBF3	614636 <b>22655</b>
			60,000	5/25	A120-HBF3	614636 <b>22656</b>
W176	3/8 x 1/2	1/8	45,370	5/25	A80-HBF3	614636 <b>22654</b>
W185	1/2 x 1/2	1/8	34,500	5/25	A80-HBF3	614636 <b>22649</b>
W187	1/2 x 1	1/8	20,620	5/25	A80-HBF3	614636 <b>22651</b>
W220	1x1	1/4	25,500	5/25	A80-HBF3	614636 <b>22646</b>



† Spindle length is 1-1/2"

\* Maximum RPM valid to 1/2" overhang. See package insert for other overhangs.



#### Center Lap





#### Better for Excell-O center lap and similar machines

# CENTER LAP ALUMINUM OXIDE - VITRIFIED BOND

- Specially formulated wheel treatment provides added lubricity to the wheel, minimizing risk of metallurgical damage
- The larger diameter spindle ensures minimal deflection and rigid support
- Precise dimensional tolerances ensure accurate location of part centers

			TIER:	BETTER							
			TRADENAME:	CENTER LAP							
			ABRASIVE:	Aluminum Oxide							
SHAPE SIZE (	D x T) SPINDLE DIA.	† MAX. RPM*	MIN./STD. PKG.	SPEC	PART #						
Center Lap Mounted Points											
– 1/2 x	2** 1/2	65,000	5/25	A80-VVM	614636 <b>21421</b>						
– 1 x 2*	* 1/2	15,900	5/25	A80-VVM	614636 <b>22926</b>						

CH TIP

Dress the center lap mounted points frequently to ensure accurate and smooth center holes.

It is the user's responsibility to refer to and comply with ANSI B7.1

† Spindle length is 1-1/4

Maximum RPM valid to 1/2" overhang. See package insert for other overhangs. \*\* Pointed 60°

#### **Resin Bond**



#### Best choice for fast stock removal

# NORZON ZIRCONIA ALUMINA - RESIN BOND

- · Zirconia alumina abrasive blend for 2X faster cut rate than standard aluminum oxide
- Strong grain and specially formulated organic bond provide 4X greater life than aluminum oxide points, while • reducing vibration and wheel chatter
- · Ideal for removing parting lines, fins and small risers from castings, and smoothing and blending of welded areas



Better choice for fast stock removal and long life

# CHARGER Z/A & A/O BLEND – RESIN BOND

- Durable zirconia alumina and aluminum oxide abrasive blend delivers 35% faster cut rate than standard aluminum oxide; an aggressive, free cut, and more parts cleaned in less time to substantially increase productivity
- · Specially formulated organic bond provides 2X greater life than standard resin bonds while reducing vibration and wheel chatter
- Better choice for removing parting lines, fins and small risers from castings, and smoothing and blending welded areas
- Charger mounted point pre-packed in small packages are ideal for vending machines, pegboards, small jobs, and carrying to job site

				TIER:	BEST		BETTER				
				TRADENAME:	NORZON		CHARGER				
			ABRASIVE:		Zirconia Alumina		Zirconia Alumina/Aluminum Oxide				
SHAPE	SIZE (D x T)	SPINDLE DIA.†	MAX. RPM*	MIN./STD. PKG.	SPEC	PART #	SPEC	PART #			
Resin Bond Mounted Points											
A1	3/4 x 2-1/2	1/4	19,800	5/25	NZ24-UBXR1	614636 <b>16457</b>	Charger	614636 <b>16458</b>			
A3	1 x 2-3/4	1/4	16,100	5/25	NZ24-UBXR1	614636 <b>16459</b>	Charger	614636 <b>16460</b>			
A11	7/8 x 2	1/4	19,860	5/25	NZ24-UBXR1	614636 <b>16463</b>	Charger	614636 <b>16464</b>			
W189	1/2 x 2	1/4	24,000	5/25	NZ24-UBXR1	614636 <b>16465</b>	Charger	614636 <b>16466</b>			
W197	5/8 x 2	1/4	21,000	5/25	NZ24-UBXR1	614636 <b>16467</b>					
W207	3/4 x 1-1/2	1/4	24,000	5/25			Charger	614636 <b>16470</b>			
W208	3/4 x 2	1/4	18,750	5/25	NZ24-UBXR1	614636 <b>16471</b>					
W220	1 x 1	1/4	25,500	5/25	NZ24-UBXR1	614636 <b>17520</b>	Charger	614636 <b>17521</b>			
			25,500	5 V							
W221	1 x 1-1/2	1/4	19,120	5/25	NZ24-UBXR1	614636 <b>16473</b>	Charger	614636 <b>16474</b>			
W222	1 x 2	1/4	15,900	5/25	NZ24-UBXR1	614636 <b>16475</b>	Charger	614636 <b>16476</b>			
t Spindle length is 1-1/2"											

† Spindle length is 1-1/2"
 \* Maximum RPM valid to 1/2" overhang. See package insert for other overhangs.

NS Non-stock; contact your Norton representative for current order quantities and lead times.

W SHAPES

A.F



### Vitrified Bond





# QUANTUM CERAMIC ALUMINA - VITRIFIED BOND

- Quantum grain with unique, engineered ceramic grain and shape, specifically developed for high-volume, high-speed alloy grinding operations
- Minimal loading and heat build-up; provide up to 33% longer life and 37% better metal removal rates versus other ceramic points
- · Versatile; optimized for all low-, medium-, and high-force vitrified applications
- Oil and Gas 36 grit mounted points; specifically engineered to efficiently grind the carbide matrix material of oil field drill heads

Better medium grit option for blending and deburring

# PINK ALUMINUM OXIDE - VITRIFIED BOND

- Sharp versatile 86A aluminum oxide grain is free cutting and resists burn
- · Excellent form holding compared to more friable white aluminum oxides
- Medium grit for blending and deburring



#### Good value for general purpose, small job shop applications

# GEMINI ALUMINUM OXIDE - VITRIFIED BOND

- 38A abrasive is designed to be cool cutting to minimize burn
- · High temperature vitrified bond maximizes form holding and life
- Wide grit range for stock removal, blending/deburring, and finishing/polishing

### TECH TIP

- For best mounted point performance, always run the mounted point at the maximum allowable speed according to ANSI B7.1. Refer to the speed chart included in each shipment for proper operating speeds.
- Use "A" shapes for medium- to heavy-duty blending.
- Use "B" shapes for light deburring and finishing/polishing.
- Use "W" shapes for offhand and precision grinding of medium to heavy stock.
- Use 36 grit and coarser for rough grinding.
- · Use 60 and 90 grits for imparting fine finishes or when grinding on narrow surfaces.



It is the user's responsibility to refer to and comply with ANSI B7.1





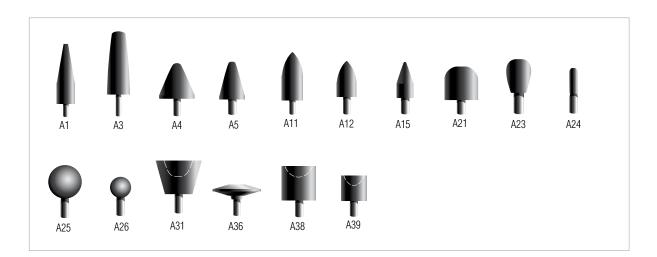
## PRECISION OFFHAND/PORTABLE Mounted Points

## Vitrified Bond

				TIER:	BEST		BETTER		GOOD	
				TRADENAME:	QUANTUM		PINK		GEMINI	
				ABRASIVE:	Ceramic Alum	ina	86A Alumin	um Oxide	38A Alumini	um Oxide
				MIN./						
SHAPE	SIZE (D x T)	SPINDLE DIA.†	MAX. RPM*	STD. PKG.	SPEC	PART #	SPEC	PART #	SPEC	PART #
	Bond Mounted P			T Ku.	51 20		JILU		51 20	
A1	3/4 x 2-1/2	1/4	19,800	25/250	Oil & Gas 36	614636 <b>86139</b>				
AI	3/4 x 2-1/2	1/4	19,800	5/25	3NQ80	690831 <b>49139</b>	86A80-S	690786 <b>45335</b>	38A36-T	614636 <b>24374</b>
A1	3/4 x 2-1/2	1/4	19,800	5/25	311000	03003143103	00400 0	030700-3003	38A60-P	614636 <b>24375</b>
A3	1 x 2-3/4	1/4	16,100	25/250	Oil & Gas 36	614636 <b>86138</b>			00/100 1	01100024010
A3	1 x 2-3/4	1/4	16,100	5/25	011 & 013 00	01100000100	86A80-S	690786 <b>45333</b>	38A36-T	614636 <b>24377</b>
A3	1 x 2-3/4	1/4	16,100	5/25			00/100 0		38A60-P	614636 <b>24378</b>
A4	1-1/4 x 1-1/4	1/4	30,560	5/25					38A60-P	614636 <b>24380</b>
A5	3/4 x 1-1/8	1/4	45,000	5/25			86A80-S	690786 <b>45339</b>	38A36-T	614636 <b>24381</b>
A5	3/4 x 1-1/8	1/4	45,000	5/25					38A60-P	61463624382
A11	7/8 x 2	1/4	19,860	5/25	3NQ80	690831 <b>49141</b>			38A36-T	61463624384
A11	7/8 x 2	1/4	19,860	5/25			86A80-S	690786 <b>45336</b>	38A60-P	61463624385
A12	11/16 x 1-1/4	1/4	48,000	5/25			86A80-S	690786 <b>45344</b>	38A60-P	614636 <b>24388</b>
A15	1/4 x 1-1/16	1/4	72,750	5/25					38A60-P	614636 <b>24391</b>
A21	1x1	1/4	34,500	5/25					38A60-P	614636 <b>24392</b>
A23	3/4 x 1	1/4	39,370	5/25					38A60-P	614636 <b>24394</b>
A24	1/4 x 3/4	1/4	76,500	5/25					38A60-P	614636 <b>24395</b>
A25	1" Ball	1/4	35,620	5/25			86A80-S	690786 <b>45341</b>	38A60-P	614636 <b>24396</b>
A26	5/8" Ball	1/4	61,120	5/25					38A60-P	614636 <b>24397</b>
A36	1-5/8 x 3/8	1/4	23,520	25/250	0il & Gas 36	662531 <b>45562</b>				
A36	1-5/8 x 3/8	1/4	23,520	5/25					38A60-P	614636 <b>24404</b>
A38	1x1	1/4	34,500	5/25			86A80-S	690786 <b>45345</b>	38A60-P	614636 <b>24406</b>
A39	3/4 x 3/4	1/4	47,250	5/25					38A60-P	614636 <b>24407</b>

† Standard spindle size is 1/4" x 1-1/2"

\* Maximum RPM valid to 1/2" overhang. See package insert for other overhangs.





## PRECISION OFFHAND/PORTABLE **Mounted Points**

## Vitrified Bond

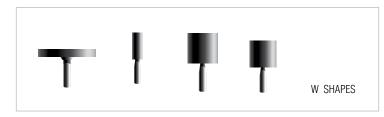
				TIER:	BEST		BETTER		GOOD	
				TRADENAME:	QUANTUN	l	PINK		GEMINI	
				ABRASIVE:	Ceramic Al	umina	86A Alumin	um Oxide	38A Alumin	um Oxide
				MIN./						
SHAPE	SIZE (D x T)	SPINDLE DIA.†	MAX. RPM*	STD. PKG.	SPEC	PART #	SPEC	PART #	SPEC	PART #
	Bond Mounted P			- Ital						
B42	1/2 X 3/4	1/8	33,570	5/25					38A60-P	614636 <b>24412</b>
B44	7/32 x 3/8	1/8	68,400	5/25					38A60-P	614636 <b>24414</b>
B52	3/8 x 3/4	1/8	45,370	5/25			86A80-S	690786 <b>45334</b>	38A60-P	614636 <b>24420</b>
B52	3/8 x 3/4	1/4	81,000	5/25					38A60-P	614636 <b>24419</b>
B52	3/8 x 3/4	1/8	45,370	5/25					38A90-Q	614636 <b>24422</b>
B53	5/16 x 5/8	1/8	60,000	5/25			86A80-S	690786 <b>45340</b>	38A60-P	614636 <b>24423</b>
B81	3/4 x 3/16	1/8	50,930	5/25			86A80-S	690786 <b>45347</b>		
B97	1/8 x 3/8	1/8	105,000	5/25	3NQ80	690831 <b>49048</b>	86A80-S	690786 <b>45337</b>	38A60-P	614636 <b>24451</b>
B121	1/2" Ball	1/8	45,370	5/25			86A80-S	690786 <b>45338</b>	38A60-P	614636 <b>24466</b>
B122	3/8" Ball	1/8	61,650	5/25	3NQ80	690831 <b>49050</b>	86A80-S	690786 <b>45360</b>	38A60-P	614636 <b>24470</b>
B123	3/16" Ball	1/8	104,250	5/25					38A60-P	614636 <b>24472</b>
B124	1/8" Ball	1/8	105,000	5/25					38A90-Q	614636 <b>24474</b>
B135	1/4 x 1/2	1/8	60,000	5/25			86A80-S	690786 <b>45342</b>	38A60-P	614636 <b>24484</b>

*†* Spindle size is 1/8" or 1/4" x 1-1/2" *\** Maximum RPM valid to 1/2" overhang. See package insert for other overhangs.



$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	
ABRASIVE:         Ceramic Alumina         86A Aluminum Oxide         38A Aluminum           SHAPE         SIZE (0 x T)         DIA.†         RPM*         STD.         PKG.         SPEC         PART #         SPEC         PART #         SPEC           Vitrified Bond Mounted Points – W Shapes         W154         3/16 x 1/2         1/8         70,500         5/25         3NQ80         69083149133         38A60-P         38A60-P         38A60-P         900         9000000000000000000000000000000000000	
SHAPE         SIZE (D x T)         SPINDLE DIA.†         MAX. RPM*         SPEC PKG.         PART #         SPEC         PART #         SPEC           Vitrified Bond Mounted Points W Shapes	Dxide
SHAPE         SIZE (D x T)         SPINDLE DIA.+         MAX. RPM*         STD. PKG.         SPEC         PART #         SPEC         PART #         SPEC           Vitrified Bond Mounted Points - W Shapes	
W154       3/16 x 1/2       1/8       70,500       5/25       3NQ80       69083149133       38A60-P       9         W163       1/4 x 1/2       1/8       60,000       5/25       86A80-S       69078645346       38A60-P       9         W164       1/4 x 3/4       1/8       45,900       5/25       38A60-P       38A60-P       9         W176       3/8 x 1/2       1/8       45,370       5/25       38A60-P       9       38A60-P       9         W177       3/8 x 3/4       1/8       33,750       5/25       86A80-S       69078645355       38A60-P       9         W179       3/8 x 1-1/4       1/4       20,415       25/250       0il & Gas 36       69083154055       9       9       9         W185       1/2 x 1/2       1/4       61,500       5/25       86A80-S       69078645354       9	PART #
W163       1/4 x 1/2       1/8       60,000       5/25       86A80-S       69078645346       38A60-P         W164       1/4 x 3/4       1/8       45,900       5/25       38A60-P       38A60-P         W176       3/8 x 1/2       1/8       45,370       5/25       38A60-P       38A60-P         W177       3/8 x 3/4       1/8       33,750       5/25       86A80-S       69078645355       38A60-P         W179       3/8 x 1-1/4       1/4       20,415       25/250       0il & Gas 36       69083154055       9078645355       38A60-P         W185       1/2 x 1/2       1/8       34,500       5/25       86A80-S       69078645354         W185       1/2 x 1/2       1/4       61,500       5/25       86A80-S       69078645354         W188       1/2 x 1-1/2       1/4       61,500       5/25       86A80-S       69078645354         W189       1/2 x 2       1/4       24,000       25/250       0il & Gas 36       61463686137         W189       1/2 x 2       1/4       24,000       5/25       38A60-P       38A60-P         W200       3/4 x 1       1/4       34,500       5/25       38A60-P       38A60-P <td< td=""><td></td></td<>	
W164       1/4 x 3/4       1/8       45,900       5/25       38A60-P         W176       3/8 x 1/2       1/8       45,370       5/25       38A60-P         W176       3/8 x 3/4       1/8       33,750       5/25       86A80-S       69078645355       38A60-P         W177       3/8 x 3/4       1/8       33,750       5/25       86A80-S       69078645355       38A60-P         W179       3/8 x 1-1/4       1/4       20,415       25/250       0il & Gas 36       69083154055       38A60-P       W185         W185       1/2 x 1/2       1/4       61,500       5/25       86A80-S       69078645354       W188       38A60-P       W189       38A60-P       W189       30,370       5/25       38A60-P       W189       38A60-P       W189       38A60-P       W189       38A60-P       W189       38A60-P       W200       3/4 x 1       34,500       5/25       38A60-P       W205       38A60-P       W205       38A60-P       W205       38A60-P       W215       1 x 1/8	14636 <b>24497</b>
W176       3/8 x 1/2       1/8       45,370       5/25       38A60-P         W177       3/8 x 3/4       1/8       33,750       5/25       86A80-S       69078645355       38A60-P         W179       3/8 x 1-1/4       1/4       20,415       25/250       0il & Gas 36       69083154055       38A60-P       0         W185       1/2 x 1/2       1/8       34,500       5/25       86A80-S       69078645354       38A60-P       0         W185       1/2 x 1/2       1/4       61,500       5/25       86A80-S       69078645354       0 </td <td>14636<b>24504</b></td>	14636 <b>24504</b>
W177       3/8 x 3/4       1/8       33,750       5/25       86A80-S       69078645355       38A60-P         W179       3/8 x 1-1/4       1/4       20,415       25/250       0il & Gas 36       69083154055       38A60-P       0         W185       1/2 x 1/2       1/8       34,500       5/25       86A80-S       69078645354       38A60-P       0         W185       1/2 x 1/2       1/4       61,500       5/25       86A80-S       69078645354       38A60-P       0         W188       1/2 x 1-1/2       1/4       61,500       5/25       86A80-S       69078645354       38A60-P       0         W189       1/2 x 2       1/4       24,000       25/250       0il & Gas 36       61463686137       38A60-P       0         W189       1/2 x 2       1/4       24,000       5/25       38A60-P       0       38A60-P       0         W200       3/4 x 1/8       1/8       50,930       5/25       86A80-S       69078645356       38A60-P       0         W215       1 x 1/8       1/8       38,200       5/25       38A60-P       0       0         W215       1 x 1/2       1/4       38,200       5/25       38A60-P       0	14636 <b>24505</b>
W179       3/8 x 1-1/4       1/4       20,415       25/250       0il & Gas 36       69083154055         W185       1/2 x 1/2       1/8       34,500       5/25       38A60-P       38A60-P         W185       1/2 x 1/2       1/4       61,500       5/25       86A80-S       69078645354         W185       1/2 x 1-1/2       1/4       30,370       5/25       38A60-P       38A60-P         W189       1/2 x 2       1/4       24,000       25/250       0il & Gas 36       61463686137         W189       1/2 x 2       1/4       24,000       5/25       38A60-P       38A60-P         W200       3/4 x 1/8       1/8       50,930       5/25       86A80-S       69078645356       38A60-P         W205       3/4 x 1       1/4       34,500       5/25       38A60-P       38A60-P         W215       1 x 1/8       1/8       38,200       5/25       38A60-P       38A60-P         W215       1 x 1/2       1/4       38,200       5/25       38A60-P       38A60-P         W215       1 x 1/2       1/4       38,200       5/25       38A60-P       38A60-P         W218       1 x 1/2       1/4       38,200       5/25<	14636 <b>24517</b>
W185       1/2 x 1/2       1/8       34,500       5/25       38A60-P       38A60-P         W185       1/2 x 1/2       1/4       61,500       5/25       86A80-S       69078645354         W185       1/2 x 1-1/2       1/4       30,370       5/25       38A60-P       38A60-P         W189       1/2 x 2       1/4       24,000       25/250       0il & Gas 36       61463686137         W189       1/2 x 2       1/4       24,000       5/25       38A60-P       38A60-P         W189       1/2 x 2       1/4       24,000       5/25       38A60-P       38A60-P         W200       3/4 x 1/8       1/8       50,930       5/25       86A80-S       69078645356       38A60-P         W205       3/4 x 1       1/4       34,500       5/25       38A60-P       38A60-P         W215       1 x 1/8       1/8       38,200       5/25       38A60-P       38A60-P         W218       1 x 1/2       1/4       38,200       5/25       38A60-P       38A60-P         W218       1 x 1/2       1/4       38,200       5/25       38A60-P       38A60-P         W220       1 x 1       1/4       25,500       5/25       38	14636 <b>24518</b>
W185       1/2 x 1/2       1/4       61,500       5/25       86A80-S       69078645354         W188       1/2 x 1-1/2       1/4       30,370       5/25       38A60-P       38A60-P         W189       1/2 x 2       1/4       24,000       25/250       0il & Gas 36       61463686137         W189       1/2 x 2       1/4       24,000       5/25       38A60-P       38A60-P         W189       1/2 x 2       1/4       50,930       5/25       86A80-S       69078645356       38A60-P         W200       3/4 x 1/8       1/8       50,930       5/25       38A60-P       38A60-P       38A60-P         W215       1 x 1/8       1/8       38,200       5/25       38A60-P       38A60-P         W218       1 x 1/2       1/4       38,200       5/25       38A60-P       38A60-P         W218       1 x 1/2       1/4       38,200       5/25       38A60-P       38A60-P         W218       1 x 1/2       1/4       38,200       5/25       38A60-P       38A60-P         W220       1 x 1       1/4       25,500       5/25       38A60-P       38A60-P         W222       1 x 2       1/4       15,900       5/2	
W188       1/2 x 1-1/2       1/4       30,370       5/25       38A60-P         W189       1/2 x 2       1/4       24,000       25/250       0il & Gas 36       61463686137         W189       1/2 x 2       1/4       24,000       5/25       38A60-P       38A60-P         W189       1/2 x 2       1/4       24,000       5/25       38A60-P       38A60-P         W200       3/4 x 1/8       1/8       50,930       5/25       86A80-S       69078645356       38A60-P         W205       3/4 x 1       1/4       34,500       5/25       38A60-P       38A60-P       38A60-P         W215       1 x 1/8       1/8       38,200       5/25       38A60-P       38A60-P         W218       1 x 1/2       1/4       38,200       5/25       38A60-P       38A60-P         W220       1 x 1       1/4       25,500       5/25       38A60-P       38A60-P         W222       1 x 2       1/4       15,900       5/25       38A60-P       38A60-P	14636 <b>24525</b>
W189       1/2 x 2       1/4       24,000       25/250       0il & Gas 36       61463686137         W189       1/2 x 2       1/4       24,000       5/25       38A60-P       38A60-P         W200       3/4 x 1/8       1/8       50,930       5/25       86A80-S       69078645356       38A60-P         W205       3/4 x 1       1/4       34,500       5/25       38A60-P       38A60-P         W215       1 x 1/8       1/8       38,200       5/25       38A60-P       38A60-P         W218       1 x 1/2       1/4       38,200       5/25       38A60-P       38A60-P         W220       1 x 1       1/4       25,500       5/25       38A60-P       38A60-P         W222       1 x 2       1/4       15,900       5/25       38A60-P       38A60-P	
W189       1/2 x 2       1/4       24,000       5/25       38A60-P         W200       3/4 x 1/8       1/8       50,930       5/25       86A80-S       69078645356       38A60-P         W205       3/4 x 1       1/4       34,500       5/25       38A60-P       38A60-P         W215       1 x 1/8       1/8       38,200       5/25       38A60-P       38A60-P         W218       1 x 1/2       1/4       38,200       5/25       38A60-P       38A60-P         W220       1 x 1       1/4       25,500       5/25       38A60-P       38A60-P         W222       1 x 2       1/4       15,900       5/25       38A60-P       38A60-P	14636 <b>24530</b>
W200         3/4 x 1/8         1/8         50,930         5/25         86A80-S         69078645356         38A60-P           W205         3/4 x 1         1/4         34,500         5/25         38A60-P         38A60-P           W215         1 x 1/8         1/8         38,200         5/25         38A60-P         38A60-P           W218         1 x 1/2         1/4         38,200         5/25         38A60-P         38A60-P           W218         1 x 1/2         1/4         38,200         5/25         38A60-P         38A60-P           W220         1 x 1         1/4         25,500         5/25         86A80-S         69078645359         38A60-P           W222         1 x 2         1/4         15,900         5/25         38A60-P         38A60-P	
W205         3/4 x 1         1/4         34,500         5/25         38A60-P           W215         1 x 1/8         1/8         38,200         5/25         38A60-P         38A60-P           W218         1 x 1/2         1/4         38,200         5/25         38A60-P         38A60-P           W218         1 x 1/2         1/4         38,200         5/25         38A60-P         38A60-P           W220         1 x 1         1/4         25,500         5/25         86A80-S         69078645359         38A60-P           W222         1 x 2         1/4         15,900         5/25         38A60-P         38A60-P	14636 <b>24531</b>
W215         1 x 1/8         1/8         38,200         5/25         38A60-P         0           W218         1 x 1/2         1/4         38,200         5/25         38A60-P         0           W218         1 x 1/2         1/4         38,200         5/25         38A60-P         0           W220         1 x 1         1/4         25,500         5/25         86A80-S         69078645359         38A60-P         0           W222         1 x 2         1/4         15,900         5/25         38A60-P         0	14636 <b>24543</b>
W218         1 x 1/2         1/4         38,200         5/25         38A60-P         38A60-P           W220         1 x 1         1/4         25,500         5/25         86A80-S         69078645359         38A60-P         9078645359           W222         1 x 2         1/4         15,900         5/25         38A60-P         9078645359         38A60-P         9078645359	1463624550
W220         1 x 1         1/4         25,500         5/25         86A80-S         69078645359         38A60-P           W222         1 x 2         1/4         15,900         5/25         38A60-P         3	14636 <b>24560</b>
W222 1 x 2 1/4 15,900 5/25 38A60-P	14636 <b>24564</b>
W222 1 x 2 1/4 15,900 5/25 38A60-P	14636 <b>24566</b>
	14636 <b>24569</b>
W235 1-1/2 x 1/4 1/4 25,470 5/25 86A80-S 690786 <b>45343</b> 38A60-P	14636 <b>24583</b>
	14636 <b>24585</b>
	14636 <b>24587</b>
	1463624588
	1463624592

*f Spindle size is 1/8" or 1/4" x 1-1/2" \* Maximum RPM valid to 1/2" overhang. See package insert for other overhangs.* 







Since 1823, Norton stones have lead the marketplace with conventional and diamond benchstones, waterstones, sharpening systems, files, slips and specialty stones for industrial, commercial and DIY sharpening applications. Our comprehensive line of sharpening and finishing products is the industry's broadest line with premier performance and quality.

Aluminum Oxide (India), Silicon Carbide (Crystolon), Arkansas (Soft and Hard Translucent),

Deburring, dimensioning, sharpening, honing

Coarse, Medium, Fine, Extra Fine, Ultra Fine

#### **Applications:** Grit Range: **Abrasive Types:**

**Machine Used:** 

and Diamond

HAND SHARPENING

#### Application-to-Product Recommendation Guide **Benchstones Abrasive Files**

	Coarse/Medium Sharpening	Fine Stoning	Finish Honing
Chip Breakers	-	Fine Crystolon Benchstone	-
Draw Knives	Coarse Crystolon	Fine	Ascent
	Benchstone	India Benchstone	Benchstone
Scrapers	Coarse Crystolon	Fine India	Ascent
	Benchstone	Benchstone	Benchstone
Chisels (Wood)	Coarse Crystolon	Fine India	Ascent
	Benchstone	Benchstone	Benchstone
	1000 Waterstone	4000 Waterstone	8000 Waterstone
Plane Blades	Coarse Crystolon	Fine India	Ascent
	Benchstone	Benchstone	Benchstone
	1000 Waterstone	4000 Waterstone	8000 Waterstone

## Slips

	Coarse/Medium Sharpening	Fine Stoning
Milling Cutter	Medium India Round Edge Slip	Fine India Round Edge Slip
Carbide Tools		Fine Crystolon Slip for Carbide Tools

	Coarse/Medium Sharpening	Fine Stoning	Finish Honing
Form Cutter	Coarse or Medium India Knife Blade	Fine India Knife Blade	-
Keyways	Coarse or Medium India Square File	Fine India Square File	-
Lathe Bits	Medium India Square File	Fine India Square File	_
Radius Tools	Medium India Round File	Fine India Round File	-
Reamers	Medium India Reamer Stone	Fine India Reamer Stone	_
Router Bits	-	Fine India Square File	-
Saws	Coarse India Triangular File	Fine India Tapered Triangular File	-
Center Punches	Medium India Triangular File	Fine India Triangular File	-
Magnetic Chucks	Medium Crystolon Round File	Fine India Round File	_
Molding Cutters*	Coarse or Medium India File	Fine India File	-
Countersinks	Coarse India Triangular File	Fine India Triangular File	Hard Arkansas Triangular File
Tap Threads	-	Fine India Triangular File	_

\* Select shape to fit configuration

## Instructional Videos



Sharpening Stones Playlist

📎 nortonsga.us/kb542

Ideal for sales training and end-user self-study. Learn to efficiently use these sharpening products to maintain tools at peak performance and prolong their life - to make all your sharpening, honing, etc. applications easier.



## Relative Sharpening Comparisons for Norton Products

Crystolon (Silicon Carbide); India (Aluminum Oxide)	Arkansas (Soft, Hard Translucent)	Diamond Stones	Waterstones	Coated Abrasives (Waterproof Sandpaper)		Diamond Compound	
			JIS	CAMI	FEPA	MICRON	
			(Japan)	(USA)	(Europe)	Size	
					P100	141	
Coarse Crystolon					P120	127	
				120		116	
Coarse India					P150	97	
				150		93	
Vedium Crystolon				180	P180	78	
		Extra Coarse Diamond (220)	Norton 220		P220	65	
				220		60	
					P240	58	
/ledium India				240		53.5	
					P280	52.5	
						50	
					P320	46	
ine Crystolon						45	
<u> </u>		Coarse Diamond (325)		280		43	
		\			P360	40.5	
			360	320		36	
ine India					P400	35	
				360		29	
					P600	25.8	
				400		23	
	Soft Arkansas	Fine Diamond (600)	600		P800	22	
						20	
			800	600	P1200	16	
			Norton 1000	700		14	
				800	P1500	12.6	
			1200			11	
					P2000	10.3	
			1500	1000		9.2	
						9	
				1500	P2500	8.4	
					. 2000	7.5	
	Hard Translucent Arkansas		Norton 4000	2000		6	
				2000		5	
			Norton 8000			3	
						1.2	
						1	
			15000			0.5	



#### Benchstones



#### Extremely hard and wear resistant

# ASCENT BENCHSTONES

- Fine and Ultra-fine Ceramic benchstones produce a keener edge that possible with traditional sharpening stones
- Designed to work on all types of knife and tool steels, Ceramic benchstones are the best choice for honing and polishing an already sharp edge
- . These smooth finished stones are best used dry or with a very small amount of water

			TIER:	BEST
SIZE (L x W x H)	QTY./ Case	SPEC.		PART #
Ascent Single Gri	t Benchs	tones		
4 x 1 x 1/2	1	Fine		690786 <b>43670</b>
	1	Ultra Fine		690786 <b>43671</b>
6 x 2 x 1/2	1	Fine		690786 <b>43672</b>
	1	Ultra Fine		690786 <b>43673</b>
8 x 2 x 1/2	1	Fine		690786 <b>43674</b>
	1	Ultra Fine		690786 <b>43675</b>
8 x 3 x 1/2	1	Fine		690786 <b>43676</b>
	1	Ultra Fine		690786 <b>43677</b>
11-1/2 x 2-1/2 x 1/2	1	Fine		690786 <b>43678</b>
	1	Ultra Fine		690786 <b>43679</b>

Better choice for sharpening tools and knives



# PRECISION BENCHSTONES

- Jewelers' Benchstones These stones are excellent for sharpening the fine, precision cutting tools used by jewelers, engravers and artisans
- Penknife Precision Benchstones Ideal for sharpening cutting tools, laboratory blades, surgical instruments, engravers' and die makers' tools, and pocket knives to the keenest edge

		Th	ER: BETTE	R		
SIZE (L x W x H)	QTY./ Case	SPEC.	PRODI	JCT #	PART #	
<b>Precision Bench</b>	istones –	Jewelers'				
4 x 2 x 3/8	5	Ultra Fine – Hard Translucent Arkansas	HB24		614636 <b>8752</b>	5
6 x 2 x 3/8	5	Ultra Fine – Hard Translucent Arkansas	HB26		614636 <b>8753</b>	0
Jewelers' stones al	re packed ii	n individual boxes within a case. Order in multiples of	f stones/cas	е.		
<b>Precision Bench</b>	stones –	Penknife				
3 x 1 x 3/8	5	Extra Fine – Soft Arkansas	SB13		614636 <b>8756</b>	0
		Ultra Fine – Hard Translucent Arkansas	HB13		614636 <b>8755</b>	0
4 x 1 x 3/8	5	Extra Fine – Soft Arkansas	SB14		614636 <b>8756</b>	5
		Ultra Fine – Hard Translucent Arkansas	HB14		614636 <b>8755</b>	5



#### **Benchstones**



#### Better choice for edge shaping and honing

# SINGLE GRIT ABRASIVE BENCHSTONES

- Crystolon sharp premium silicon carbide abrasive, delivers fast stock removal for quick edge shaping with minimal loading
- India smooth cutting aluminum oxide abrasive produces a strong, keen, long-lasting edge and is the choice for the best blend of cut rate and finish
- Arkansas Natural premium Novaculite quarried in Arkansas and available in Soft or Hard Translucent

		TIF	R: BETTER	
	QTY./	TIL		
SIZE (L x W x H)	CASE	SPEC.	PRODUCT #	PART #
<b>Single Grit Benchsto</b>	nes – Crys	stolon (Silicor	Carbide)	
4 x 1 x 1/4	5	Coarse	CJB14	614636 <b>85470</b>
	5	Medium	MJB14	614636 <b>85465</b>
	5	Fine	FJB14	614636 <b>85460</b>
4 x 1 x 1/2	5	Coarse	CJB24	614636 <b>85485</b>
	5	Medium	MJB24	614636 <b>85480</b>
	5	Fine	FJB24	614636 <b>85475</b>
5 x 2 x 5/8	5	Medium	MJB35	614636 <b>85495</b>
	5	Fine	FJB35	614636 <b>85490</b>
6 x 2 x 1	5	Coarse	CJB6	614636 <b>85510</b>
	5	Medium	MJB6	614636 <b>85505</b>
	5	Fine	FJB6	614636 <b>85500</b>
8 x 2 x 1	5 5	Coarse	CJB8	614636 <b>85525</b>
	5	Medium	MJB8	614636 <b>85520</b>
	5	Fine	FJB8	614636 <b>85515</b>
8 x 3 x 1/2	5 5	Coarse	CJB83	614636 <b>54459</b> *
		Medium	MJB83	614636 <b>54458</b> *
	5	Fine	FJB83	614636 <b>54457</b> *
11-1/2 x 2-1/2 x 1/2	1	Coarse	JM3	614636 <b>85980</b> #
	1	Medium	JM6	614636 <b>85975</b> #
<b>Single Grit Benchsto</b>	nes – Sofi	t Arkansas		
8 x 2 x 3/4-1	5	Extra Fine	SB8	614636 <b>85680</b>

		TIE	R: BETTER	
	QTY./	0770		
SIZE (L x W x H)	ČASĖ	SPEC.	PRODUCT #	PART #
Single Grit Benchsto		•		
4 x 1 x 1/4	5	Coarse	CB14	614636 <b>85580</b>
	5	Medium	MB14	614636 <b>85575</b>
	5	Fine	FB14	614636 <b>85570</b>
4 x 1 x 1/2	5	Coarse	CB24	614636 <b>85595</b>
	5	Medium	MB24	614636 <b>85590</b>
	5	Fine	FB24	614636 <b>85585</b>
5 x 2 x 5/8	5	Medium	MB35	614636 <b>85605</b>
	5	Fine	FB35	614636 <b>85600</b>
6 x 2 x 1	5	Coarse	CB6	614636 <b>85620</b>
	5	Medium	MB6	614636 <b>85615</b>
	5	Fine	FB6	614636 <b>85610</b>
8 x 2 x 1	5	Coarse	CB8	614636 <b>85635</b>
	5	Medium	MB8	614636 <b>85630</b>
	5	Fine	FB8	614636 <b>85625</b>
8 x 3 x 1/2	5	Coarse	CB83	61463654462*
-	5	Medium	MB83	61463654461*
	5	Fine	FB83	61463654460*
11-1/2 x 2-1/2 x 1/2	1	Medium	IM6	61463654214#
. , ,	1	Fine	IM9	61463685970#
Single Grit Benchsto	nes – Har	d Translucent	Arkansas	
4 x 2 x 3/4-1	5	Ultra Fine	HB4	614636 <b>85655</b>
6 x 2 x 3/4-1	5	Ultra Fine	HB6	614636 <b>85660</b>
8 x 2 x 3/4-1	5	Ultra Fine	HB8	614636 <b>85665</b>

8 x 2 x 3/4-1 5 Extra Fine SB8 \* May be used as replacement stone for IM-83 Sharpening System.

# May be used as replacement stone for IM-313 Sharpening Stone System.

These benchstones (except for 8 x 3 x 1/2 and vendibles) are packed in individual boxes within a case. Order in multiples of stones/case.



#### **Benchstones**



Better choice for economical solution for general sharpening and finishing with one stone

# COMBINATION GRIT ABRASIVE BENCHSTONES

Crystolon Combination

Coarse and fine grit sharp-cutting silicon carbide abrasive surfaces for general sharpening (to moderate tolerances) when the speed of sharpening is more important than the fineness of the cutting edges. Gray in color.

- India Combination Coarse and fine grit aluminum oxide abrasive surfaces produce strong, keen, long-lasting edges on quality tools. Orange/brown in color.
- Crystolon/India Combination
   Fast-sharpening, medium grit silicon carbide (Crystolon) and fine aluminum oxide (India) abrasive surfaces for keen, long-lasting edges on quality tools. Crystolon side is dark gray in color, India side is orange.
- Giant Combination Stones
   11-1/2" and 12" bench oil stones are used to sharpen large edge tools with long sweeping strokes.

## Application-to-Product Recommendation Guide

	FAST CUT STOCK REMOVAL	INITIAL SHARPENING	FINAL SHARPENING	HONING	SHARPEST EDGE
Grit Size	Coarse	Medium	Fine	Extra Fine	Ultra Fine
Abrasive	Crystolon	Crystolon	India	Soft Arkansas	Hard Arkansas
Product/Color	Grey	Grey	Orange	Milky White	Translucent

	0.000		<i>TIER:</i> BETTER	
SIZE (L x W x H)	QTY./ Case	SPEC.	PRODUCT #	PART #
<b>Combination Grit Be</b>	enchstone	es – Crystolon (Silicon Carbide)		
4 x 1 Round	5	Coarse/Fine	JB64	614636 <b>85435</b>
4 x 1-3/4 x 5/8	5	Coarse/Fine	JB134	614636 <b>85440</b>
5 x 2 x 3/4	5	Coarse/Fine	JB45	614636 <b>85445</b>
6 x 2 x 1	5	Coarse/Fine with Anniversary Box	JB6	614636 <b>85450</b>
8 x 2 x 1	5	Coarse/Fine with Anniversary Box	JB8	614636 <b>85455</b>
11-1/2 x 2-1/2 x 1	2	Coarse/Fine	JUM3	614636 <b>85840</b>
12 x 2-1/2 x 1-1/2	2	Coarse/Fine	JUM4	614636 <b>85855</b>
<b>Combination Grit Be</b>	enchstone	es – India (Aluminum Oxide)		
4 x 1 Round	5	Coarse/Fine	IB64	614636 <b>85545</b>
4 x 1-3/4 x 5/8	5	Coarse/Fine	IB134	614636 <b>85550</b>
5 x 2 x 3/4	5	Coarse/Fine	IB45	614636 <b>85555</b>
6 x 2 x 1	5	Coarse/Fine with Anniversary Box	IB6	614636 <b>85560</b>
8 x 2 x 1	5	Coarse/Fine with Anniversary Box	IB8	614636 <b>85565</b>
11-1/2 x 2-1/2 x 1	2	Coarse/Fine	IM2	614636 <b>85851</b>
<b>Combination Grit Be</b>	enchstone	es – Crystolon/India		
6 x 2 x 1	5	Medium/Fine	IC6	614636 <b>85643</b>
11-1/2 x 2 x 1	2	Medium/Fine	IC11	614636 <b>87239</b>

These benchstones are packed in individual boxes within a case. Order in multiples of stones/case.



#### Waterstones

Waterstones are synthetic stones designed to be softer than oil stones. These softer grade stones are used with water as the lubricant (versus oil) to develop a fast cutting slurry. The Norton Waterstone system was designed in a carefully planned sequence to create sharpening efficiency. You get the level of abrasiveness you need at each stage, without wasting time trying to sharpen your tools on a grit that is too fine, too soon.



Better choice for producing superior edges on planes and straight chisels

# WATERSTONES

- · Synthetic stones designed to work together, with water for fast sharpening, fine finish
- · Softer than traditional oilstones providing lapping action for superb results with low pressure
- Color-coded by grit: 220 grit for repairing badly damaged tools, 1000 grit for initial cut, 4000 grit for excellent finishing, and 8000 grit for polishing

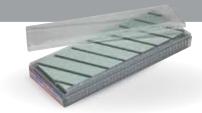
Better choice for raising slurry



# PREP STONE

- This synthetic stone enhances the performance of waterstones by speeding up the slurry-making process needed to cut and polish with waterstones
- This prep stone is designed to raise the slurry on waterstones without significantly altering the dimensions of the stone
- Waterstones are great for producing superior edges for planes and straight chisels

Better choice for producing flat surfaces on waterstones



# FLATTENING STONE

- · Coarse grit silicon carbide stone promotes fast results
- · Diagonal grooves increase swarf removal
- · Superbly flat with hard bond to produce extremely flat surfaces on all waterstones

		7	IER: BETTER
SIZE (L x W x H)	QTY./ Case	SPEC.	PART #
Waterstones – Singl			
8x3x1	5	220	614636 <b>89505</b>
0 / 0 / 1	5	1000	614636 <b>89506</b>
	5	4000	614636 <b>89507</b>
	5	8000	614636 <b>89508</b>
Set	1	4 Stones: 220, 1000, 4000, 8000 Grit	614636 <b>24334</b>
Waterstones – Comi	bination Gr		
8x3x1	5	220 / 1000	614636 <b>24335</b>
	5	1000 / 4000	614636 <b>24450</b>
	5 5	1000 / 8000	699366 <b>55039</b>
	5	4000 / 8000	614636 <b>24336</b>
Prep Stone			
20mm x 20mm x 3"	5	Aluminum Oxide	662434 <b>39361</b>
Flattening Stone			
9 x 3 x 3/4	5	Silicon Carbide	699366 <b>87444</b>
Waterstone Kit			
N/A	1	Kit includes: 1-220/1000 and 1-4000/8000 waterstone, 1 flattening stone	076607 <b>87943</b>

Waterstones are packed in individual boxes within a case. Order in multiples of stones/case

## Instructional Videos



Sharpening Stones Playlist **onrtonsga.us/kb542** 

Ideal for sales training and end-user self-study. Learn to efficiently use these sharpening products to maintain tools at peak performance and prolong their life – to make all your sharpening, honing, etc. applications easier.

### **TECH TIP**

Maximizing Waterstone Performance

- · Wet waterstone
- Rub evenly with the prep stone to create slurry
- Evening off the high spots will make for less-frequent flattening of the waterstones
- Waterstones wear concave with use; periodically flatten with flattening stone



## **Diamond Benchstones**

Made in the USA, these benchstones have unique stackable non-skid rubber feet designed to keep the diamond plate steady while you sharpen, and efficiently stacked for space-saving storage when not in use. Our simple grit-size color-coding makes them easy to differentiate.



Better choice for producing superior edges on planes and straight chisels

# STACKABLE DIAMOND BENCHSTONES

- Flat, diamond surface plated onto a nickel coated steel bar precision ground to a tolerance of .001 in. for fast, even blade and tool edge sharpening
- · Continuous diamond sharpening surface for excellent sharpening performance across entire surface of stone
- · Choose 220 grit for badly worn tools, 325 for initial sharpening, 600 grit for final sharpening
- · Color-coded tabs on stones and packaging for easy identification of grit sizes for use and displaying
- · Stackable; the stones firmly stack on top of each other for easy, small-profile storage
- · Non-skid rubber base stays in place while sharpening for smoother, efficient sharpening

		TIER	BETTER				
SIZE WITH RUBBER FEET (L x W x H)	QTY./ Case	SPEC.	PART #				
Stackable Diamond Benchstones							
6 x 2 x 1/4*	5	D220	662532 <b>68082</b>				
6 x 2 x 1/4*	5	D325	662532 <b>68081</b>				
6 x 2 x 1/4*	5	D600	662532 <b>68080</b>				

Diamond benchstones are packed in individual boxes within a case. Order in multiples of stones/case.



6" stones come retail packaged

## Sharpening Stone Oil



Better choice for improving sharpening stone performance

# SHARPENING STONE OIL

- · Highly refined lubricating oil which is specifically formulated for sharpening stone use
- Will not load or "gum-up" sharpening stones, meets U.S. Pharmacopoeia standards for mineral oil purity; may be used around food preparation operations
- · Equally ideal for all lubricating jobs

QTY./ CASE         SPEC.         PRODUCT #         PART #           Sharpening Stone Oil 4-1/2 oz.         20         Oil         XB1         61463687760			TIER:	BETTER				
	SIZE		SPEC.	PRODUCT #	PART #			
4-1/2 oz. 20 Oil XB1 614636 <b>87760</b>	<b>Sharpening Ston</b>	Sharpening Stone Oil						
	4-1/2 oz.	20	Oil	XB1	614636 <b>87760</b>			
1 Pint 20 Oil XB5 614636 <b>87770</b>	1 Pint	20	Oil	XB5	614636 <b>87770</b>			
1 Quart 5 Oil XB2 614636 <b>87775</b>	1 Quart	5	Oil	XB2	614636 <b>87775</b>			

#### TECH TIP

- All oil stones are porous in nature; oil is required to keep the pores open and working efficiently
- Use Norton oil to optimize the performance of Crystolon, India and Arkansas stones
- While sharpening knives, blades and tools, be careful to keep fingers away from sharp edges



## Sharpening Systems

#### Tri-Stone Systems

The base of the tri-stone system acts as an oil reservoir permitting continuous submersion of the unused stones, keeping them clean and saturated, ready for immediate use and years of utility. Rotating the handle brings the desired stone into position for sharpening. All offer a range of replacement stones to replace worn or damaged stones, or substitute different specifications to customize the system.



Better choice for large, straight-edged tool sharpening

# IM313 MULTI-OILSTONE SHARPENING SYSTEM

- Considered by many to be the ultimate sharpening system, the IM313 contains three oil stones. The 11-1/2" stone length permits long, sweeping strokes for faster and more precise sharpening and honing of all large, wider straight-edged tools. The heavy base has a non-skid bottom.
- Coarse Crystolon stone quickly restores worn edges for general sharpening; medium Crystolon stone produces the average edge needed for most tools; and fine India stone hones for a sharper edge
- · Each IM313 system is included with a pint of Norton oil, plastic angle guide, and reservoir unit

#### Better choice for a versatile, multi-size tool and knife sharpener

# IM200 PROFESSIONAL SHARPENING SYSTEM

- The smaller 8" stone IM200 system provides the same quality sharpening features as the IM313 making it the
  perfect choice for small restaurants and home DIYers
- Coarse Crystolon stone quickly restores worn edges for general sharpening; medium Crystolon stone produces the average edge needed for most tools; and fine India stone hones for a sharper edge
- · Contains 4-1/2 oz. of lubricating oil, plastic angle guide, and the reservoir unit



#### Better choice for small straight-edged tool sharpening

# IM100 3-IN-1 TOOL AND KNIFE SHARPENING SYSTEM

- The smallest system, designed for general sharpening, the IM100 is an affordable choice for small knives, cutlery, and woodworking tools
- Coarse Crystolon stone quickly restores worn edges for general sharpening; medium Crystolon stone produces the average edge needed for most tools; and fine India stone hones for a sharper edge
- 4-1/2 oz. of lubricating oil and a reservoir unit included

Portable Sharpening Systems



Better choice for all sharpening enthusiasts who carry their system with them

# IM83 PORTABLE SHARPENING STONE SYSTEM

- Sturdy metal latches secure the cover and storage case where small tools can be housed. The IM83
  system is designed like all our other sharpening systems; the stones can be replaced to customize the unit to
  individual requirements
- · Ideal for industrial toolrooms, restaurants, knife manufacturers, DIYers, and sportsmen
- Both IM83 systems include 3 sharpening stones, and a reservoir carrying case; the oil stone system also
  includes 4-1/2 oz. oil
- IM83-W Portable Waterstone System Tool Repair to Fine Finishes This portable sharpening system is equipped with a carefully engineered sequence of waterstones for clean, efficient sharpening. The waterstones can easily be maintained with the flattening stone provided
- IM83-O Portable Oil Stone System Straight-Edged Tool Sharpening The coarse silicon carbide (Crystolon) stone in this system repairs damaged edges quickly; the medium aluminum oxide (India) stone imparts a durable, smooth cutting edge; and the fine aluminum oxide (India) stone provides the final sharpening and polishing stage



## Sharpening Systems

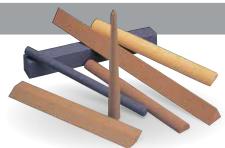
#### Portable Sharpening Systems

	0 ,		<i>IER:</i> BETTER	
SIZE	QTY./ Case	SPEC.	PRODUCT #	PART #
M313 Multi-Oilstone Sh	narpening Sy	stem		
11-1/2 x 2-1/2 x 1/2	1	1 Coarse Crystolon, 1 Medium Crystolon, and 1 Fine India Stone, 1 Pint Oil, Angle Guide, Reservoir Unit	IM313	614636 <b>85960</b>
M200 Professional Sha	rpening Syst	em		
3 x 2 x 3/8	1	1 Coarse Crystolon, 1 Medium Crystolon, and 1 Fine India Stone, 4-1/2 oz. Oil, Angle Guide, Reservoir Unit	IM200	614636 <b>91260</b>
M100 3-in-1 Tool and K	nife Sharpen	ing System		
x 2 x 1/2	1	1 Coarse Crystolon, 1 Medium Crystolon, and 1 Fine India Stone, 4-1/2 oz. Oil, Reservoir Unit	IM100	614636 <b>85356</b>
M83 Portable Systems				
3 x 3 x 1/2	1	Oilstones: 1 Coarse Crystolon, 1 Medium India, 1 Fine India, 4-1/2 oz. Oil, Reservoir Carrying Ca	se IM83-0	662435 <b>82823</b>
3 x 3 x 1	1	Waterstones: 1 ea. of 1000, 4000, 8000 Grit, 1 Flattening Stone, Reservoir Carrying Case	IM83-W	662435 <b>82825</b>

For sharpening system replacement stones: see single grit benchstone charts, or your Norton representative for replacement stones and parts which may be used as replacements or to customize your system.

#### Abrasive Files

Norton abrasive files hold their shape while imparting the finest, most uniform finish on precision machine parts and in tool and die making. They are ideal for any deburring, chamfering or radiusing job, or for filing delicate parts. Select the file shape that matches the contour of the surface being stoned.



Better choice for any deburring, chamfering or radiusing job, or for filing delicate parts

# ABRASIVE FILES

- Crystolon Files Fast-acting silicon carbide products, Crystolon files are designed for use where moderate tolerances are acceptable, and speed of sharpening is more important than fineness
- India Files India files are ideal when close tolerance, and strong, keen, long-lasting edges are needed
- Hard Translucent Arkansas Files Hard Arkansas has an ultra fine grit that produces the finest edge possible while maintaining tolerances unequalled by any other abrasive file. It will also produce a highly polished finish

#### Square Abrasive Files

Square File applications range from dimensioning keyways to maintain fit, stoning faces on router bits, touching-up edges of reamer teeth, and lapping/honing to close tolerances to produce the finest edge on precision instruments, die work and delicate tools.



		TI	ER: BETTER	
SIZE (L x H)	QTY./ Case	SPEC.	PRODUCT #	PART #
<b>Square Abras</b>	ive Files – (	Crystolon (Silic	on Carbide)	
4 x 1/2	5	Medium	MJF44	614636 <b>86045</b>
	5	Fine	FJF44	614636 <b>86040</b>
<b>Square Abras</b>	ive Files – I	Hard Transluce	nt Arkansas	
3 x 1/4	5	Ultra Fine	HF13	614636 <b>86590</b>
3 x 3/8	5	Ultra Fine	HF33	614636 <b>86595</b>
3 x 1/2	5	Ultra Fine	HF43	614636 <b>86600</b>
All square files	are bulk nack	ed		

All square files are bulk packed

		TIER	BETTER	
SIZE (L x H)	QTY./ Case	SPEC.	PRODUCT #	PART #
Square Abrasi	ve Files – I	ndia (Aluminum C	)xide)	
4 x 1/4	5	Coarse	CF14	614636 <b>86075</b>
	5	Medium	MF14	614636 <b>86070</b>
	5	Fine	FF14	614636 <b>86065</b>
4 x 3/8	5	Coarse	CF34	614636 <b>86090</b>
	5	Medium	MF34	614636 <b>86085</b>
	5	Fine	FF34	614636 <b>86080</b>
4 x 1/2	5	Coarse	CF44	614636 <b>86105</b>
	5	Medium	MF44	614636 <b>86100</b>
	5 V	Medium	MF44-V	662533 <b>25913</b>
	5	Fine	FF44	614636 <b>86095</b>
6 x 1/2	5	Coarse	CF46	614636 <b>86120</b>
	5	Medium	MF46	614636 <b>86115</b>
	5	Fine	FF46	614636 <b>86110</b>
6 x 5/8	5	Medium	MF56	614636 <b>86130</b>
	5	Fine	FF56	614636 <b>86125</b>
6 x 3/4	5	Coarse	CF66	614636 <b>86150</b>
	5	Medium	MF66	614636 <b>86145</b>
	5	Fine	FF66	614636 <b>86140</b>
6 x 1	5	Coarse	CF76	614636 <b>86165</b>
	5	Medium	MF76	614636 <b>86160</b>
	5	Fine	FF76	614636 <b>86155</b>

V = Vendible Package. Ideal for vending machines, small jobs, and carrying to job site. Pre-packed in sturdy boxes of 5 per pack. Order by total number of stones needed in multiples of 5.



### **Abrasive Files**

#### Triangular Abrasive Files

Triangular Files are used for a variety of deburring, chamfering and radiusing applications including cleaning tap threads, stoning cutting surfaces of milling cutters, lapping honing tools, dies and molds, and putting precision points on center punches.

The India line also offers Tapered Triangles, used by mechanics and tool and die makers to impart the correct edge in the least time.



		TI	ER: BETTER	
	QTY./			
SIZE (L x H)	CASE	SPEC.	PRODUCT #	PART #
<b>Triangular Ab</b>	rasive Files	s – Crystolon (S	ilicon Carbide)	
4 x 1/4	5	Fine	FJF114	614636 <b>86185</b>
4 x 1/2	5	Fine	FJF144	614636 <b>86205</b>
<b>Triangular Ab</b>	rasive Files	s – Hard Translu	cent Arkansas	
3 x 1/4	5	Ultra Fine	HF113	614636 <b>86620</b>
3 x 3/8	5	Ultra Fine	HF133	614636 <b>86625</b>
3 x 1/2	5	Ultra Fine	HF143	614636 <b>86630</b>
All Triongular fi	loo ara hullur	aakad		

All Triangular files are bulk packed

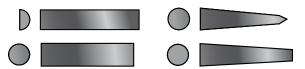
#### Round Abrasive Files

Half Round Files offer both a round and a flat surface for imparting a fine finish on precision machine parts, tools and dies.

Round Files are ideal for deburring, chamfering, radiusing, lapping, honing, cleaning radius tools to a burr-free edge, and dimensioning compound curves on templates.

Round Pointed Files are ideally suited for engravers and die sinkers for stoning difficult recesses on instruments and die tools.

Round Tapered Files are used by craftsmen, woodworkers, and die makers as their unique shape imparts the correct edge quickly.



		7	IER: BETTER	
SIZE (L x D)	QTY./ Case	SPEC.	PRODUCT #	PART #
Half Round Ab	rasive File	s – India (Alum	inum Oxide)	
4 x 1/4	5	Medium	MF314	614636 <b>86355</b>
	5	Fine	FF314	614636 <b>86350</b>
4 x 3/8	5	Medium	MF334	614636 <b>86385</b>
	5	Fine	FF334	614636 <b>86380</b>
4 x 1/2	5	Coarse	CF344	614636 <b>86405</b>
	5	Medium	MF344	614636 <b>86400</b>
	5	Fine	FF344	614636 <b>86395</b>

All Half-Round and Round files are bulk packed

# PRECISION OFFHAND/PORTABLE Sharpening Stones

	ÔTV /	1	ER: BETTER	
SIZE (L x H)	QTY./ Case	SPEC.	PRODUCT #	PART #
Triangular Abi	rasive Files	– India (Alumi	num Oxide)	
4 x 1/4	5	Coarse	CF114	614636 <b>86240</b>
	5	Medium	MF114	614636 <b>86235</b>
	5	Fine	FF114	614636 <b>86230</b>
4 x 3/8	5	Coarse	CF134	614636 <b>86255</b>
	5	Medium	MF134	614636 <b>86250</b>
	5	Fine	FF134	614636 <b>86245</b>
4 x 1/2	5	Coarse	CF144	614636 <b>86270</b>
	5	Medium	MF144	614636 <b>86265</b>
	5	Fine	FF144	614636 <b>86260</b>
6 x 1/2	5	Coarse	CF146	614636 <b>86285</b>
	5	Medium	MF146	614636 <b>86280</b>
	5	Fine	FF146	614636 <b>86275</b>
6 x 5/8	5	Medium	MF156	614636 <b>86295</b>
	5	Fine	FF156	614636 <b>86290</b>
6 x 3/4	5	Medium	MF166	614636 <b>86310</b>
	5	Fine	FF166	614636 <b>86305</b>
6 x 1	5	Medium	MF176	614636 <b>86325</b>
	5	Fine	FF176	614636 <b>86320</b>
Triangular Tap	ered Abras	ive Files – Ind	ia (Aluminum Oxid	e)
4 x 1/2 x 1/4	5	Medium	MF544	614636 <b>86685</b>
	5	Fine	FF544	614636 <b>86680</b>

		Th	ER: BETTER	
SIZE (L x D)	QTY./ Case	SPEC.	PRODUCT #	PART #
<b>Round Abrasiv</b>	e Files – C	rystolon (Silico	n Carbide)	
4 x 1/4	5	Medium	MJF214	614636 <b>86430</b>
	5	Fine	FJF214	614636 <b>86425</b>
4 x 3/8	5	Medium	MJF234	614636 <b>86440</b>
<b>Round Abrasiv</b>	e Files – Ir	ndia (Aluminum	Oxide)	
4 x 1/4	5	Coarse	CF214	614636 <b>86480</b>
7 / 1 / 7	5	Medium	MF214	614636 <b>86475</b>
	5	Fine	FF214	614636 <b>86470</b>
4 x 3/8	5	Coarse	CF234	614636 <b>86495</b>
	5	Medium	MF234	614636 <b>86490</b>
	5	Fine	FF234	614636 <b>86485</b>
4 x 1/2	5	Coarse	CF244	614636 <b>86510</b>
	5	Medium	MF244	614636 <b>86505</b>
	5	Fine	FF244	614636 <b>86500</b>
6 x 1/2	5	Coarse	CF246	614636 <b>86525</b>
	5	Medium	MF246	614636 <b>86520</b>
	5	Fine	FF246	614636 <b>86515</b>
6 x 5/8	5	Medium	MF256	614636 <b>86535</b>
6 x 3/4	5	Medium	MF266	614636 <b>86550</b>
6 x 1	5	Medium	MF276	614636 <b>86565</b>
<b>Round Abrasiv</b>	e Files – H	ard Translucen	t Arkansas	
3 x 1/4	5	Ultra Fine	HF813	614636 <b>86800</b>
<b>Round Pointed</b>	Abrasive	Files – India (Al	luminum Oxide)	
3 x 5/16 Base	5	Medium	MF723	614636 <b>86745</b>
	5	Fine	FF723	614636 <b>86740</b>
<b>Round Pointed</b>	Abrasive	Files – Hard Tra	Inslucent Arkansa	IS
3 x 1/4 Base	5	Ultra Fine	HF863	614636 <b>86825</b>
<b>Round Tapered</b>	Abrasive	Files – India (A	luminum Oxide)	
4 x 1/2 x 1/4	5	Medium	MF644	614636 <b>86655</b>
	5	Fine	FF644	614636 <b>86650</b>

#### Industrial Market - Full-Line



## **Abrasive Files**

#### Diamond-Shaped Abrasive Files

Diamond-shaped Files are precision sharpening favorites for cleaning acute angles in dies and molds, and for stoning geometric chasers and sewing machine feeds.



			TIER: BETTER			
	QTY./					
SIZE (L x W x H)	CASE	SPEC.	PRODUCT #	PART #		
<b>Diamond-Shape</b>	d Abrasive	e Files – Indi	a (Aluminum Oxide	)		
4 x 9/16 x 3/16	5	Coarse	CT134	614636 <b>86720</b>		
	5	Medium	MT134	614636 <b>86715</b>		
	5	Fine	FT134	614636 <b>86710</b>		
Diamond-Shaped Abrasive File – Hard Translucent Arkansas						
3 x 1/2 x 3/16	5	Ultra Fine	HF843	614636 <b>86815</b>		
All Diamond-shaped files are bulk packed						

#### **Beveled Abrasive Files**

Beveled Files are preferred by exacting artisans, jewelers, mechanics, and watchmakers for honing the finest of finishes. These extremely hard files provide years of service.



		Ti	ER: BETTER	
	QTY./			
SIZE (L x W x H)	CASE	SPEC.	PRODUCT #	PART #
<b>Beveled Abrasi</b>	ve File –	Hard Transluce	nt Arkansas	
3 x 3/8 x 1/8	5	Ultra Fine	HF833	614636 <b>86810</b>
All Reveled files a	re hulk nad	rked		

All Beveled files are bulk packed

#### Flat Abrasive Files

The Flat File is the choice of mechanics, artisans and jewelers. This long lasting file produces the finest finishes.



		7	TER: BETTER	
SIZE (L x W x H)	QTY./ Case	SPEC.	PRODUCT #	PART #
<b>Flat Abrasive F</b>	ile – Harc	l Translucent A	Arkansas	
3 x 3/8 x 1/8	5	Ultra Fine	HF823	614636 <b>86805</b>
All Flat files are h	ulk nacked			

All Flat files are bulk packed

#### **Oval Abrasive Files**

The Oval File's shape makes it ideal for finishing and honing recesses or curved edges of precision instruments.



			TIER: BETTER	
SIZE (L x W x H)	QTY./ Case	SPEC.	PRODUCT #	PART #
<b>Oval Abrasive Fi</b>	le – Hard	Translucent	Arkansas	
3 x 1/2 x 3/16	5	Ultra Fine	HF853	614636 <b>86820</b>
All Oval files are bu	ulk packed			

See the "Norton Professional Sharpening Products and Dressing Sticks Catalog #200" on nortonabrasives.com to view the complete list and descriptions of our many sharpening products.

#### Knife Blade Abrasive Files

Knife Blade Files are used by clock and watch makers to quickly sharpen, hone, and maintain the edges and points of cutting tools.



		7	<i>IER:</i> BETTER	
	QTY./	0050		DADT #
SIZE (L x W x H)	CASE	SPEC.	PRODUCT #	PART #
Knife Blade Abr	asive Fil	es – India (Aluı	ninum Oxide)	
4 x 1 x 1/8 Back	5	Coarse	CF724	614636 <b>86780</b>
	5	Medium	MF724	614636 <b>86775</b>
	5	Fine	FF724	614636 <b>86770</b>
<b>Knife Blade Abr</b>	asive Fil	e – Hard Transl	ucent Arkansas	
3 x 3/4 x 1/8	5	Ultra Fine	HF873	614636 <b>86830</b>
All Knife Blade file	s are bulk	packed		

#### Abrasive File Sets

#### Hard Translucent Arkansas File Set

This set provides a selection of our most popular square, triangular, round and knife blade files in ultra fine Hard Translucent Arkansas for honing and polishing a wide range of configurations.

#### Hard Translucent Arkansas-India File Set

This set contains an assortment of files for finishing, honing and polishing applications. It contains a selection of the most popular square, triangular, round and knife blade files in both fine grit India and ultra fine grit Hard Translucent Arkansas.



		TIER: BETTER	
SIZE (L x W x H)	QTY./ Case	PRODUCT #	PART #
	Franslucent Arka	nsas	
	1		614636 <b>86839</b>
1 Each of Ultra Fin	e Hard Arkansas HF	13, HF113, HF813, and HF873	
File Set - Hard 1	Franslucent Arka	nsas and India (Aluminum (	Dxide)
	1	•	614636 <b>86840</b>
1 Each of Ultra Fin	e Hard Arkansas HF	13, HF43, HF113, HF813, HF87	73,

1 Each of Ultra Fine Hard Arkansas HF13, HF43, HF113, HF813, HF873, and Fine India FF14, FF44, FF114, FF214, FF724



## **Abrasive Files**

#### Engravers' Chuck & Points

Engravers' Points are the choice of professional die-makers for cleaning tight corners and recesses where close tolerances and accuracy are a must. The Engravers' Chuck is a knurled nickel-plated tool designed to hold the Engravers' Point.

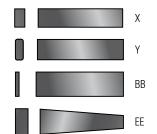
		TIER	BETTER		
SIZE (L x POINT)	QTY./ Case	SPEC.	PRODUCT #	PART #	********
Engravers' Chuck					
Engravers' Chuck	5		XT1	614636 <b>87485</b>	
Engravers' Point – India (Aluminum Oxid	e)				
1 x 1/8 Point	5	Fine	FT11	614636 <b>87495</b>	
Engravers' Point – Soft Arkansas					
1 x 1/8 Point	5	Extra Fine	AT11	614636 <b>87490</b>	

All Engravers' Chucks and Points are bulk packed.

#### Silversmith Precision Files

These aluminum oxide precision-shaped stones are designed for use by silversmiths and mechanics for close tolerance lapping, touching-up instruments, and for cleaning tools and dies.

		TIE	R: BETTER		
SIZE	QTY./ Case	SPEC.	PRODUCT #	PART #	
Silversmith Precision Files – India (Aluminum Oxide)					
4 x 5/16 x 3/16 x 5/16 x 1/16 - X	5	Medium	MF414	614636 <b>86855</b>	
	5	Fine	FF414	614636 <b>86850</b>	
4 x 1/2 x 1/16 - BB	5	Medium	MF444	614636 <b>86960</b>	
	5	Fine	FF444	614636 <b>86955</b>	
4 x 1/2 x 1/4 x 5/16 x 1/8 - EE	5	Medium	MF474	614636 <b>87005</b>	
	5	Fine	FF474	614636 <b>87000</b> NS	



All Silversmith Precision Files are bulk packed.

## **Pocket Stones**



Better choice for outdoor enthusiasts

# POCKET STONES

- · Convenient and easily transported
- · Ideal for outdoor enthusiasts to sharpen scissors, knives, axes, etc.
- Available in a protective case

		TIE	R: BETTER		
SIZE (L x W x H)	QTY./ Case	SPEC.	PRODUCT #	PART #	
Sportsman Pocket Stone – India (Alu	minum Oxide)				
3 x 1-1/2 x 1/2	50	Coarse/Fine	IBP4	614636 <b>90705</b>	
Pocket Stone – India (Aluminum Oxid	le)				
4 x 3/4 x 1/4	25	Fine	IBP4	614636 <b>24153</b>	
Pocket Stone with Case - India (Alun	ninum Oxide)				
3 x 7/8 x 3/8 with case	50	Fine	FBP3	614636 <b>91122</b>	
Pocket Stone with Case - Crystolon	Silicon Carbide	)			
3 x 7/8 x 3/8 with case	50	Fine	JP14	614636 <b>90703</b>	
Fish Hook Stone With Pouch – Crystolon Half-Round (Silicon Carbide)					
3 x 1/2 with pouch	50	Fine		614636 <b>24072</b>	
All Daakat Stange are bulk peaked					

All Pocket Stones are bulk packed.



#### Abrasive Slips

# PRECISION OFFHAND/PORTABLE Sharpening Stones



#### Better choice for imparting fine, uniform finishes

# ABRASIVE SLIPS

- Norton abrasive slips impart the finest, most uniform finishes on curved knives and tools, molders' knives, wood
  gouges, bead planers, and carbide—tipped tools
- The Crystolon and India stones are designed for preliminary sharpening; the Norton Hard Translucent Arkansas stones are the choice for achieving the finest finish possible
- · These fast-acting slips hold their shape and are long lasting

#### Carbide Tool Slips

Crystolon (silicon carbide) Slips are used to maintain the edge of carbide tools – keeping regrinding costs and time to an absolute minimum. Not oil-filled.

#### Round Edge Slips

Round Edge Slips are ideal for precision sharpening and honing of bead planers, curved knives and tools, molders' knives and wood gouges.



		TIEF	BETTER	
	ÛTV./		. DETTEN	
SIZE	QTY./ Case	SPEC.	PRODUCT #	PART #
Carbide Tool Slips – Crystolor	ı (Silicon Carbi	de)		
3-1/2 x 3/4 x 1/2	5	Coarse	CJT63	614636 <b>87295</b>
	5	Medium	MJT63	614636 <b>87290</b>
	5	Fine	FJT63	614636 <b>87285</b>
Set of Three Above	5	Coarse, Medium & Fine	J63	614636 <b>87300</b>
Carbide Tool Slips –  India (Al	uminum Oxide)			
2-1/4 x 7/8 x 3/16	5	Medium	MS12	614636 <b>87215</b>
Round Edge Slips – Crystolon	(Silicon Carbid	le)		
4-1/2 x 1-3/4 x 1/4 x 3/32	5	Medium	MJS24	614636 <b>87080</b>
	5	Fine	FJS24	61463687075
4-1/2 x 1-3/4 x 1/2 x 3/16	5	Coarse	CJS44	614636 <b>87100</b>
	5	Medium	MJS44	614636 <b>87095</b>
	5	Fine	FJS44	614636 <b>87090</b>
6 x 2-1/4 x 3/4 x 3/8	5	Medium	MJS66	614636 <b>87110</b>
	5	Fine	FJS66	614636 <b>87105</b>
Round Edge Slips – India (Alu	minum Oxide)			
4 x 1 x 7/16 x 3/16	5	Medium	MS14	614636 <b>87140</b>
	5	Fine	FS14	614636 <b>87135</b>
4-1/2 x 1-3/4 x 1/4 x 3/32	5	Coarse	CS24	614636 <b>87155</b>
	5	Medium	MS24	614636 <b>87150</b>
	5	Fine	FS24	614636 <b>87145</b>
4-1/2 x 1-3/4 x 3/8 x 1/8	5	Coarse	CS34	614636 <b>87170</b>
	5	Medium	MS34	614636 <b>87165</b>
	5	Fine	FS34	614636 <b>87160</b>
4-1/2 x 1-3/4 x 1/2 x 3/16	5	Coarse	CS44	614636 <b>87185</b>
	5	Medium	MS44	614636 <b>87180</b>
	5	Fine	FS44	614636 <b>87175</b>
5 x 1 x 5/16 x 3/32	5	Medium	MS15	614636 <b>87195</b>
	5	Fine	FS15	614636 <b>87190</b>
Round Edge Slips – Soft Arkaı				
4 x 1-3/4 x 3/8 x 1/8	5	Extra Fine	SS4	614636 <b>87055</b>
Round Edge Slips – Hard Tran	slucent Arkans	as		
3 x 1-3/4 x 1/4 x 1/16	5	Ultra Fine	HS3	614636 <b>87040</b>
4 x 1-1/4 x 1/4 x 1/8	5	Ultra Fine	HS14	614636 <b>87050</b>
4 x 1-3/4 x 3/8 x 1/8	5	Ultra Fine	HS4	614636 <b>87045</b>
All Ol's says hall a set of				

All Slips are bulk packed.

Industrial Market - Full-Line



### Specialty Stones





Better choice for specific sharpening or deburring applications

# SPECIALTY STONES

 Norton continues to offer specialty stones with optimum specifications and unique shapes that conform to, and quickly sharpen, specific tools

#### Specialty Stones for Machine Tools

#### **Gouge Sharpening Stone**

This stone has a unique shape for sharpening and lapping inside and outside curved surfaces on gouges and other cutting tools.

#### **Jointer Stones**

These stones provide a fast method of restoring and maintaining the cutting edges of mechanical jointing devides on automatic planers.

#### **Machine Knife Stone**

Crystolon (silicon carbide) machine knife stones offer both coarse and fine sides for sharpening and honing paper and cloth-cutting knives and planer knives on the machine. The groove around the middle of the stone protects fingers and provides a secure hold.

#### **Reamer Stones**

Durable, fast-cutting stones designed for imparting a professional edge on reamers, taps, and rough rounders on shoe machine tools.

#### **Boat Stones**

Boat Stones are medium grit, medium grade stones that are easy to hold and use. Excellent for deburring and breaking sharp edges on dies, fixtures and machined parts, and for deburring grinder magnetic chucks.

		TIER	BETTER	
	QTY./	0000		"
SIZE	CASE	SPEC.	PRODUCT #	PART #
Gouge Sharpening Stone – India (Alumin	um Oxide)			
6 x 2 x 1 x 1/2 x 3/8	5	Fine	FS76	614636 <b>87305</b>
Jointer Stones				
4 x 3/4 x 3/8 – Crystolon (Silicon Carbide)	5	Medium	JE74	614636 <b>87335</b>
Machine Knife Stone - Crystolon (Silicon	Carbide)			
4" Diam. x 1-1/2" Thick	5	Coarse/Fine	JB74	614636 <b>87570</b>
Reamer Stones - India (Aluminum Oxide)				
4-1/2 x 1 x 5/16	10	Medium	MT124	614636 <b>87420</b>
	10	Fine	FT124	614636 <b>87415</b>
5 x 1 x 3/16	10	Medium	MT125	614636 <b>87430</b>
	10	Fine	FT125	614636 <b>87425</b>
6 x 1 x 1/4	10	Medium	MT126	614636 <b>87440</b>
	10	Fine	FT126	614636 <b>87435</b>
Boat Stone - Crystolon (Silicon Carbide)				
9 x 2-1/2 x 1-1/2	10	37C80-HV		614636 <b>10369</b>
Boat Stone – India (Aluminum Oxide)				
9 x 2-1/2 x 1-1/2	10	38A60-IVBE		614636 <b>10503</b>

Boat and Reamer Stones are bulk packed. All these other Specialty Stones are packed in individual boxes within a case.



#### Large Specialty Stones

#### **Tradesmen's Utility Stones**

Used for sharpening trimming knives and as an abrasive file in many different industries. The JT910 does not have a handle, while the JT920 and JT930 have wooden handles.

#### **Sickle and Scythe Stones**

These silicon carbide stones quickly produce a fast-cutting edge on sickles, scythes, and brush hooks. These stones are most frequently chosen where the speed of sharpening is the primary consideration.

		T	ER: BETTER	
SIZE	QTY./ Case	SPEC.	PRODUCT #	PART #
Tradesmen's Utility Stones – Crystolon	(Silicon Ca	rbide)		
10 x 1-1/4 x 3/4	10	Medium	JT910	614636 <b>87665</b>
14-3/4 Overall (with Handle)	10	Coarse/Fine	JT930	614636 <b>87675</b>
	10	Medium	JT920	614636 <b>87670</b>
Sycle and Scythe Stones				
10 x 1-1/4 x 3/4 Crystolon (Silicon Carbide)	10	Coarse	TJ3	614636 <b>87731</b>
10 x 1-5/16 x 3/4 India (Aluminum Oxide)	10	Coarse	TD1	614636 <b>87715</b>
Utility File - Crystolon (Silicon Carbide	)			
14 Overall (w/ Handle)	10	Coarse	JD2	614636 <b>87750</b>
All Large Specialty Stones are bulk packed.				

#### **Utility File**

A long wedge-shaped stone with four flat sides designed for sharpening coarse cutting edges on cutting implements and edged garden tools. Wooden handles make them easy to use. They will outlast and out-sharpen metal files.





## **Retail Packaged Sharpening Products**

Our retail-packaged line brings Norton quality to your distributor showroom, vending machine, tool crib, and your tool box. Each stone is specifically designed for a popular sharpening application and packaged to sell or carry to the job site.



SIZE (L x W x H)SPEC.QTY./ CASEPART #Axe and Hatchet Sharpener $3 \times 5/8$ roundCoarse/Fine Crystolon (Silicon Carbide)1007660785316Pocket Knife Sharpener $3 \times 7/8 \times 3/8$ Fine Crystolon (Silicon Carbide)507660787600 $3 \times 7/8 \times 3/8$ with caseMedium India (Aluminum Oxide)507660787937 $3 \times 1-1/2 \times 1/2$ with caseCoarse/Fine India (Aluminum Oxide)507660787630Economy Tool & Knife Benchstone6Coarse/Fine Crystolon (Silicon Carbide)507660787933 $6 \times 2 \times 3/4$ Coarse/Fine India569210426152 $8 \times 2 \times 3/4$ Coarse/Fine India (Aluminum Oxide)1061463685755Chisel & Planer Blade Sharpener $8 \times 2 \times 3/4$ Coarse/Fine India (Aluminum Oxide)1007660787936Household Knife & Tool Sharpener $7-1/2$ Fine Crystolon (Silicon Carbide)507660787936Household Knife & Tool Sharpener7-1/2Fine Crystolon (Silicon Carbide)507660787939Farm Tool Sharpener9-1/2 x 1-3/8 x 1/2Medium Crystolon (Silicon Carbide)1007660787938Sharpening Stone Oil4-1/2 oc.Oil507660787938Sharpening Steel1/2 x 1-3/8 x 1/2Medium Crystolon (Silicon Carbide)1007660787938Sharpening Steel1/2 x 10Round file with rubber ha			TIFR	BETTER	
SiZE (L x W x H)SPEC.CASEPART #Axe and Hatchet SharpenerCoarse/Fine Crystolon (Silicon Carbide)1007660785316Pocket Knife Sharpener3 x 7/8 x 3/8Fine Crystolon (Silicon Carbide)5076607876003 x 7/8 x 3/8 with caseMedium India (Aluminum Oxide)5076607879373 x 1-1/2 x 1/2 with caseCoarse/Fine India (Aluminum Oxide)507660787630Economy Tool & Knife Benchstone6 $x 2 x 3/4$ Coarse/Fine Crystolon (Silicon Carbide)507660787933 $6 x 2 x 3/4$ Coarse/Fine India569210426152 $8 x 2 x 3/4$ Coarse/Fine India569210426633Coarse/Fine IndiaCoarse/Fine India (Aluminum Oxide)1061463685755 $61463685755$ $61463685755$ Chisel & Planer Blade Sharpener $8 x 2 x 3/4$ Coarse/Fine India (Aluminum Oxide)1007660787936Household Knife & Tool Sharpener $7-1/2$ Fine Crystolon (Silicon Carbide)507660787939Farm Tool Sharpener $7-1/2$ Fine Crystolon (Silicon Carbide)1007660787939Farm Tool Sharpener $9-1/2 x 1-3/8 x 1/2$ Medium Crystolon (Silicon Carbide)1007660787938Sharpening Stone Oil $4-1/2 o.c.$ Oil507660787938Aray & Goarden Tool Sharpener $9-1/2 x 1-3/8 x 1/2$ Medium Crystolon (Silicon Carbide)1007660787938Sharpening Stone Oil $4-1/2 o.c.$ Oil507660787938Sharpening Steel $1/2 x 10$ Round file with rubber handle866253					
3 x 5/8 roundCoarse/Fine Crystolon (Silicon Carbide)1007660785316Pocket Knife Sharpener3 x 7/8 x 3/8Fine Crystolon (Silicon Carbide)5076607876003 x 7/8 x 3/8 with caseMedium India (Aluminum Oxide)5076607879373 x 1-1/2 x 1/2 with caseCoarse/Fine India (Aluminum Oxide)507660787630Economy Tool & Knife Benchstone $6 x 2 x 3/4$ Coarse/Fine Crystolon (Silicon Carbide)507660787933 $6 x 2 x 3/4$ Coarse/Fine India569210426152 $8 x 2 x 3/4$ Coarse/Fine India (Aluminum Oxide)1069210426633Coarse/Fine IndiaCoarse/Fine India (Aluminum Oxide)1061463685755Chisel & Planer Blade Sharpener $8 x 2 x 3/4$ Coarse/Fine India (Aluminum Oxide)1007660787936Household Knife & Tool Sharpener $7-1/2$ Fine Crystolon (Silicon Carbide)507660787939Farm Tool Sharpener9-1/2 x 1-3/8 x 1/2Medium Crystolon (Silicon Carbide)1007660787938Sharpening Stone Oil4-1/2 oz.Oil07600787938Sharpening Steel1/2 x 1-3/8 x 1/2Medium Crystolon (Silicon Carbide)1007660787938Sharpening Steel1/2 x 1-3/8 x 1/2Medium Crystolon (Silicon Carbide)1007660787938Sharpening Steel1/2 x 1-3/8 x 1/2Medium Crystolon (Silicon Carbide)	SIZE (L x W x H)	SPEC.		PART #	
Pocket Knife Sharpener $3 \times 7/8 \times 3/8$ Fine Crystolon (Silicon Carbide)507660787600 $3 \times 7/8 \times 3/8$ with caseMedium India (Aluminum Oxide)507660787937 $3 \times 1-1/2 \times 1/2$ with caseCoarse/Fine India (Aluminum Oxide)507660787630Economy Tool & Knife Benchstone6Coarse/Fine Crystolon (Silicon Carbide)507660787933 $6 \times 2 \times 3/4$ Coarse/Fine Crystolon (Silicon Carbide)507660787933Coarse/Fine India $6 \times 2 \times 3/4$ Coarse/Fine India5692104261528 $8 \times 2 \times 3/4$ Coarse/Fine India (Aluminum Oxide)1069210426633Coarse/Fine India (Aluminum Oxide) $6 \times 2 \times 3/4$ Coarse/Fine India (Aluminum Oxide)1007660787936Chisel & Planer Blade Sharpener82 × 3/4Coarse/Fine India (Aluminum Oxide)1007660787936Household Knife & Tool Sharpener7-1/2Fine Crystolon (Silicon Carbide)507660787939Farm Tool Sharpener9-1/2 × 1-3/8 × 1/2Medium Crystolon (Silicon Carbide)1007660787938Sharpening Stone Oil4-1/2 oz.Oil507660787938Sharpening Steel101007660787940Sharpening Steel101010101/2 × 10Round file with rubber handle866253240433Vitrified Dressing StickVitrified Dressing Stick507660787940	<b>Axe and Hatchet Sharper</b>	ner			
$\begin{array}{c c c c c c c } 3 \times 7/8 \times 3/8 & Fine Crystolon (Silicon Carbide) & 5 & 07660787600 \\ 3 \times 7/8 \times 3/8 & with case & Medium India (Aluminum Oxide) & 5 & 07660787937 \\ 3 \times 1-1/2 \times 1/2 & with case & Coarse/Fine India (Aluminum Oxide) & 5 & 07660787630 \\ \hline \hline \\ \hline $	3 x 5/8 round	Coarse/Fine Crystolon (Silicon Carbide)	10	076607 <b>85316</b>	
$\begin{array}{c c c c c c c } 3 \times 7/8 \times 3/8 \mbox{ with case } & Medium India (Aluminum Oxide) & 5 & 07660787937 \\ \hline 3 \times 1-1/2 \times 1/2 \mbox{ with case } & Coarse/Fine India (Aluminum Oxide) & 5 & 07660787630 \\ \hline Economy Tool & Knife Benchstone & & & & \\ \hline Coarse/Fine Crystolon (Silicon Carbide) & 5 & 07660787933 \\ \hline Coarse/Fine India & 5 & 69210426152 \\ \hline 8 \times 2 \times 3/4 & Coarse/Fine India (Aluminum Oxide) & 10 & 69210426633 \\ \hline Coarse/Fine India (Aluminum Oxide) & 10 & 69210426633 \\ \hline Coarse/Fine India (Aluminum Oxide) & 10 & 07660787936 \\ \hline Chisel & Planer Blade Sharpener & & & \\ \hline 8 \times 2 \times 3/4 & Coarse/Fine India (Aluminum Oxide) & 10 & 07660787936 \\ \hline Household Knife & Tool Sharpener & & & \\ \hline 7-1/2 & Fine Crystolon (Silicon Carbide) & 5 & 07660787939 \\ \hline Farm Tool Sharpener & & & \\ \hline 10 \times 1-1/4 \times 3/4 & Coarse Crystolon (Silicon Carbide) & 10 & 07660787730 \\ \hline Lawn & & Garden Tool Sharpener & & \\ \hline 9-1/2 \times 1-3/8 \times 1/2 & Medium Crystolon (Silicon Carbide) & 10 & 07660787938 \\ \hline Sharpening Stone Oil & & & \\ \hline 4-1/2 \ Oxin & & \\ \hline 1/2 \times 10 & Round file with rubber handle & 8 & 66253240433 \\ \hline Vitrified Dressing Stick & & \\ \hline \end{array}$	<b>Pocket Knife Sharpener</b>				
$\begin{array}{c c c c c c } 3 \times 1-1/2 \times 1/2 \mbox{ with case } & Coarse/Fine India (Aluminum Oxide ) & 5 & 07660787630 \\ \hline Economy Tool & Knife Benchstone & & & & \\ \hline Coarse/Fine Crystolon (Silicon Carbide) & 5 & 07660787933 \\ \hline Coarse/Fine India & 5 & 69210426152 \\ \hline 8 \times 2 \times 3/4 & Coarse/Fine India (Aluminum Oxide) & 10 & 69210426633 \\ \hline Coarse/Fine India (Aluminum Oxide) & 10 & 61463685755 \\ \hline Chisel & Planer Blade Sharpener & & & \\ \hline Coarse/Fine India (Aluminum Oxide) & 10 & 07660787936 \\ \hline Household Knife & Tool Sharpener & & & \\ \hline 7-1/2 & Fine Crystolon (Silicon Carbide) & 5 & 07660787939 \\ \hline Farm Tool Sharpener & & & \\ \hline 10 \times 1-1/4 \times 3/4 & Coarse Crystolon (Silicon Carbide) & 10 & 07660787730 \\ \hline Lawa & Garden Tool Sharpener & & & \\ \hline 9-1/2 \times 1-3/8 \times 1/2 & Medium Crystolon (Silicon Carbide) & 10 & 07660787938 \\ \hline Sharpening Stone Oil & & & \\ \hline 4-1/2 \ Oxil & Oxid & 5 & 07660787940 \\ \hline Sharpening Steel & & & \\ \hline 1/2 \times 10 & Round file with rubber handle & 8 & 66253240433 \\ \hline Vitrified Dressing Stick & & \\ \hline \end{array}$	3 x 7/8 x 3/8		5	076607 <b>87600</b>	
Economy Tool & Knife Benchstone           6 x 2 x 3/4         Coarse/Fine Crystolon (Silicon Carbide)         5         07660787933           6 x 2 x 3/4         Coarse/Fine India         5         69210426152           8 x 2 x 3/4         Coarse/Fine Crystolon         10         69210426633           Coarse/Fine India         10         69210426633           Coarse/Fine India (Aluminum Oxide)         10         61463685755           Chisel & Planer Blade Sharpener         5         07660787936           Household Knife & Tool Sharpener         7         7           7-1/2         Fine Crystolon (Silicon Carbide)         5         07660787939           Farm Tool Sharpener         7         7         7         7         7         7         60arse Crystolon (Silicon Carbide)         10         07660787939           Farm Tool Sharpener         7<	3 x 7/8 x 3/8 with case	Medium India (Aluminum Oxide)	5	076607 <b>87937</b>	
6 x 2 x 3/4         Coarse/Fine Crystolon (Silicon Carbide)         5         07660787933           Coarse/Fine India         5         69210426152           8 x 2 x 3/4         Coarse/Fine Crystolon         10         69210426633           Coarse/Fine India (Aluminum Oxide)         10         61463685755           Chisel & Planer Blade Sharpener         3         5         07660787936           Household Knife & Tool Sharpener         7         7         7         7         7         6         07660787939           Farm Tool Sharpener         7	3 x 1-1/2 x 1/2 with case	Coarse/Fine India (Aluminum Oxide )	5	076607 <b>87630</b>	
Coarse/Fine India         5         69210426152           8 x 2 x 3/4         Coarse/Fine Crystolon         10         69210426633           Coarse/Fine India (Aluminum Oxide)         10         61463685755           Chisel & Planer Blade Sharpener         8         2         x 3/4         Coarse/Fine India (Aluminum Oxide)         10         07660787936           Household Knife & Tool Sharpener         7         7         7         Fine Crystolon (Silicon Carbide)         5         07660787939           Farm Tool Sharpener         7         7         Fine Crystolon (Silicon Carbide)         5         07660787939           Farm Tool Sharpener         9         10         07660787730         1           Lawn & Garden Tool Sharpener         9         10         07660787938           Sharpening Stone Oil         4         -1/2 oz.         0il         07660787938           Sharpening Steel         10         10         07660787940           Sharpening Steel         10         10         07660787940           Sharpening Steel         10         12         10           1/2 x 10         Round file with rubber handle         8         66253240433           Vitrified Dressing Stick         5         5         5 <td>Economy Tool &amp; Knife Be</td> <td>enchstone</td> <td></td> <td></td>	Economy Tool & Knife Be	enchstone			
8 x 2 x 3/4         Coarse/Fine Crystolon         10         69210426633           Coarse/Fine India (Aluminum Oxide)         10         61463685755           Chisel & Planer Blade Sharpener             8 x 2 x 3/4         Coarse/Fine India (Aluminum Oxide)         10         07660787936           Household Knife & Tool Sharpener              7-1/2         Fine Crystolon (Silicon Carbide)         5         07660787939           Farm Tool Sharpener           10         07660787939           Farm Tool Sharpener           10         07660787939           Farm Tool Sharpener           0         07660787730           Lawn & Garden Tool Sharpener           0         07660787938           Sharpening Stone Oil                9-1/2 x 1-3/8 x 1/2         Medium Crystolon (Silicon Carbide)         10         07660787938            Sharpening Stone Oil                1/2 x 10         Round file with rubber handle         8         66253240433            Vitrified Dressing Stick	6 x 2 x 3/4	Coarse/Fine Crystolon (Silicon Carbide)	5	076607 <b>87933</b>	
Coarse/Fine India (Aluminum Oxide)         10         61463685755           Chisel & Planer Blade Sharpener         8 × 2 × 3/4         Coarse/Fine India (Aluminum Oxide)         10         07660787936           Household Knife & Tool Sharpener         7-1/2         Fine Crystolon (Silicon Carbide)         5         07660787939           Farm Tool Sharpener         10         07660787939         10         7660787939           Farm Tool Sharpener         9         10         07660787930         10         10           Lawn & Garden Tool Sharpener         9         9         10         07660787938         10         07660787938           Sharpening Stone Oil         4         -         -         4         -         7         -         10         07660787938         10         07660787938         10		Coarse/Fine India	5		
Chisel & Planer Blade Sharpener           8 x 2 x 3/4         Coarse/Fine India (Aluminum Oxide)         10         07660787936           Household Knife & Tool Sharpener           7-1/2         Fine Crystolon (Silicon Carbide)         5         07660787939           Farm Tool Sharpener           10 x 1-1/4 x 3/4         Coarse Crystolon (Silicon Carbide)         10         07660787730           Lawn & Garden Tool Sharpener           9-1/2 x 1-3/8 x 1/2         Medium Crystolon (Silicon Carbide)         10         07660787938           Sharpening Stone Oil           4-1/2 OZ.         Oil         07660787940           Sharpening Steel           1/2 x 10         Round file with rubber handle         8         66253240433           Vitrified Dressing Stick	8 x 2 x 3/4		10		
8 x 2 x 3/4         Coarse/Fine India (Aluminum Oxide)         10         07660787936           Household Knife & Tool Sharpener         Fine Crystolon (Silicon Carbide)         5         07660787939           Farm Tool Sharpener         U         10         07660787939           Farm Tool Sharpener         0         0         07660787730           Lawn & Garden Tool Sharpener         0         0         07660787938           9-1/2 x 1-3/8 x 1/2         Medium Crystolon (Silicon Carbide)         10         07660787938           Sharpening Stone Oil         4		Coarse/Fine India (Aluminum Oxide)	10	614636 <b>85755</b>	
Household Knife & Tool Sharpener           7-1/2         Fine Crystolon (Silicon Carbide)         5         07660787939           Farm Tool Sharpener           10 x 1-1/4 x 3/4         Coarse Crystolon (Silicon Carbide)         10         07660787730           Lawn & Garden Tool Sharpener         9-1/2 x 1-3/8 x 1/2         Medium Crystolon (Silicon Carbide)         10         07660787938           Sharpening Stone Oil         4         -1/2 oz.         Oil         07660787940           Sharpening Steel         -         -         1/2 x 10         Round file with rubber handle         8         66253240433           Vitrified Dressing Stick         -         -         -         -         -         -	Chisel & Planer Blade St	narpener			
7-1/2         Fine Crystolon (Silicon Carbide)         5         07660787939           Farm Tool Sharpener         0         0         07660787730           Lawn & Garden Tool Sharpener         10         07660787730           9-1/2 x 1-3/8 x 1/2         Medium Crystolon (Silicon Carbide)         10         07660787938           Sharpening Stone Oil         10         07660787938         07660787938           4-1/2 oz.         Oil         5         07660787940           Sharpening Steel         10         07660787940           1/2 x 10         Round file with rubber handle         8         66253240433           Vitrified Dressing Stick         U         U         U	8 x 2 x 3/4	Coarse/Fine India (Aluminum Oxide)	10	076607 <b>87936</b>	
Farm Tool Sharpener           10 x 1-1/4 x 3/4         Coarse Crystolon (Silicon Carbide)         10         07660787730           Lawn & Garden Tool Sharpener         9-1/2 x 1-3/8 x 1/2         Medium Crystolon (Silicon Carbide)         10         07660787938           Sharpening Stone Oil         4-1/2 oz.         Oil         5         07660787940           Sharpening Steel         1/2 x 10         Round file with rubber handle         8         66253240433           Vitrified Dressing Stick	Household Knife & Tool	Sharpener			
10 x 1-1/4 x 3/4       Coarse Crystolon (Silicon Carbide)       10       07660787730         Lawn & Garden Tool Sharpener       9-1/2 x 1-3/8 x 1/2       Medium Crystolon (Silicon Carbide)       10       07660787938         9-1/2 x 1-3/8 x 1/2       Medium Crystolon (Silicon Carbide)       10       07660787938         Sharpening Stone Oil       10       07660787940         4-1/2 oz.       0il       5       07660787940         Sharpening Steel       1/2 x 10       Round file with rubber handle       8       66253240433         Vitrified Dressing Stick       Vitrified Dressing Stick       Vitrified Dressing Stick       Vitrified Dressing Stick	7-1/2	Fine Crystolon (Silicon Carbide)	5	076607 <b>87939</b>	
Lawn & Garden Tool Sharpener           9-1/2 x 1-3/8 x 1/2         Medium Crystolon (Silicon Carbide)         10         07660787938           Sharpening Stone Oil         4-1/2 oz.         0il         5         07660787940           Sharpening Steel         1/2 x 10         Round file with rubber handle         8         66253240433           Vitrified Dressing Stick         Vitrified Dressing Stick         Vitrified Dressing Stick         Vitrified Dressing Stick	Farm Tool Sharpener				
9-1/2 x 1-3/8 x 1/2         Medium Crystolon (Silicon Carbide)         10         07660787938           Sharpening Stone Oil	10 x 1-1/4 x 3/4	Coarse Crystolon (Silicon Carbide)	10	076607 <b>87730</b>	
Sharpening Stone Oil         5         07660787940           4-1/2 oz.         Oil         5         07660787940           Sharpening Steel	Lawn & Garden Tool Sha	rpener			
4-1/2 oz.         0il         5         07660787940           Sharpening Steel	9-1/2 x 1-3/8 x 1/2	Medium Crystolon (Silicon Carbide)	10	076607 <b>87938</b>	
Sharpening Steel         Image: Starpening Steel <th image:="" starpening="" ste<="" td=""><td></td><td></td><td></td><td></td></th>	<td></td> <td></td> <td></td> <td></td>				
1/2 x 10     Round file with rubber handle     8     66253240433       Vitrified Dressing Stick	4-1/2 oz.	Oil	5	076607 <b>87940</b>	
Vitrified Dressing Stick	Sharpening Steel				
	1/2 x 10	Round file with rubber handle	8	662532 <b>40433</b>	
1 x 1 x 6 Medium Silicon Carbide 5 076607 <b>10466</b>	Vitrified Dressing Stick				
	1 x 1 x 6	Medium Silicon Carbide	5	076607 <b>10466</b>	



## Knife and Scissor Sharpener

The knife and scissor mechanical sharpener is a quick and portable tool for hundreds of sharpening applications.

SPECIFICATION	QTY./ Case	PART #
Knife and Scissor Sharpener		
Carbide. Case contains 4 each of red, green, and yellow.	12	076607 <b>87520</b>



## Non-Slip Silicon Sharpening Stone Mat

This thin and flexible 8" x 14" mat is large enough to handle all conventionally-sized sharpening stones. A textured surface keeps the mat firmly in place during use. Ideal for use with stones sold without a non-skid base. It can also be used in conjunction with stone holders to keep them extra secure.

Can be rolled or folded for compact storage. Easily cleaned with soap and water.

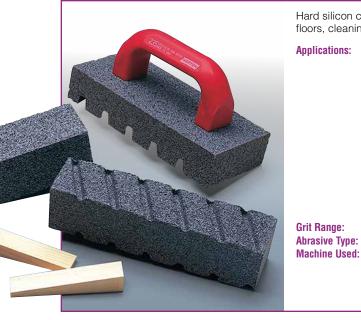
SPECIFICATION	QTY./ Case	PART #
Non-Slip Silicon Sharpening Stone Mat		
8 x 14	25	690786 <b>48467</b>

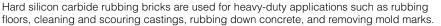
## Norton Professional Sharpening Products and Dressing Sticks

See the "Norton Professional Sharpening Products and Dressing Sticks Catalog #200" on nortonabrasives.com to view the complete list and descriptions of our many sharpening products.



## **PRECISION OFFHAND/PORTABLE Rubbing Bricks**





#### **Applications:**

Floor Rubbing Bricks – are used to rub down concrete and remove mold marks. These are designed to fit the chucks of common concrete floor grinding equipment. Reusable wooden wedges anchor the bricks to the equipment chucks.

Plain Hand Rubbing Bricks – are the choice of mechanics and foundry workers for dressing grinding wheels and cleaning or scouring castings.

Fluted Hand Rubbing Bricks - are used by masons and stone workers for rubbing down concrete and removing mold marks. The diagonal flutes provide sharp edges, a clean shearing action, and carry away debris.

Fluted Hand Rubbing Bricks with Handle – make quick work of removing mold marks and rubbing down concrete. The firmly attached handle reduces fatigue and facilitates overhead, wall, and floor work.

Griddle Bricks - quickly clean away carbon build-up and other residue on your grill without leaving fibers, which grill brushes often do.

6-120 Silicon Carbide



ELECTRIC FLOOR STRIPPER













QTY./ CASE	SPEC.	ABRASIVE	PART #
ing Bricks with	Wooden We	dges	
6	C6-R	Silicon Carbide	614636 <b>53292</b>
6	C10-R	Silicon Carbide	614636 <b>53293</b>
6	C24-R	Silicon Carbide	614636 <b>53294</b>
6	C80-R	Silicon Carbide	614636 <b>53295</b>
		6 C6-R 6 C10-R 6 C24-R	6         C6-R         Silicon Carbide           6         C10-R         Silicon Carbide           6         C24-R         Silicon Carbide

SIZE (L x W x H)	QTY./ CASE	PART #
Wooden Wedges		
	6	614636 <b>85297</b>

SIZE (L x W x H)	QTY./ CASE	SPEC.	ABRASIVE	PRODUCT #	PART #
<b>Plain Hand Rubbin</b>	ng Bricks				
8 x 2 x 2	5	C24	Silicon Carbide	BP28	614636 <b>87830</b>

SIZE (L x W x H)	QTY./ CASE	SPEC.	ABRASIVE	PRODUCT #	PART #		
Fluted Hand Rubbing Bricks							
6 x 2 x 2	5	C20	Silicon Carbide	BF26	614636 <b>87840</b>		
8 x 2 x 2	5	C20	Silicon Carbide	BF28	614636 <b>87845</b>		

SIZE (L x W x H)	QTY./ CA	SE SPEC.	ABRASIVE	PRODUCT #	PART #
<b>Fluted Hand Rubb</b>	ing Bricks v	with Handle			
6 x 3 x 1	5	C20	Silicon Carbide	BFH6	614636 <b>87800</b>
8 x 3-1/2 x 1-1/2	5	C20	Silicon Carbide	235	614636 <b>87795</b>

SIZE (L x W x H)	QTY./ CASE	SPEC.	ABRASIVE	PART #
Griddle Brick				
4-1/2 x 3 x 2	5	Medium	Alundum	614636 <b>87870</b>

# Precision Grinding Wheels

# improve your **PROCESS, PRODUCTIVITY, AND COST POSITION**

You know the industry-leading performance of our engineered abrasives. Norton R&D has now created new formulations of these abrasives with our exclusive, proprietary Norton Vitrium<sup>3</sup> (VS3) bond. You won't get better productivity from any other grinding wheels and segments.

- Cooler cutting with better chip clearance; improved coolant flow; significantly reduced burn
- · Reduced wheel loading
- Improved part quality
- Improved precision profile; ultra-radius accuracy
- Extended wheel life
- Reduced dressing frequency and cost
- Improved cycle and process time
- Able to run at higher operating speed; increased throughput and productivity
- Leverage existing equipment; optimize machine efficiency



## iGrind App

Created by Norton engineers and updated based on feedback from you, the Norton iGrind app features calculators and conversion tools designed to help optimize your grinding processes.

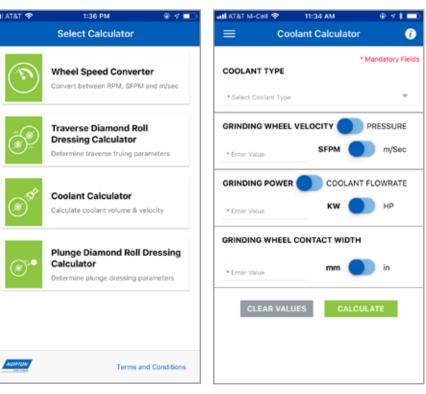
With Norton iGrind, you can calculate the starting parameters for traverse or plunge truing your grinding wheel, determine the ideal setup for delivering coolant to the grinding zone, and convert wheel speeds between RPM, SFPM (Surface Feet Per Minute), and M/Sec to ensure a safe grinding operation.

#### nortonabrasives.com/en-us/igrind

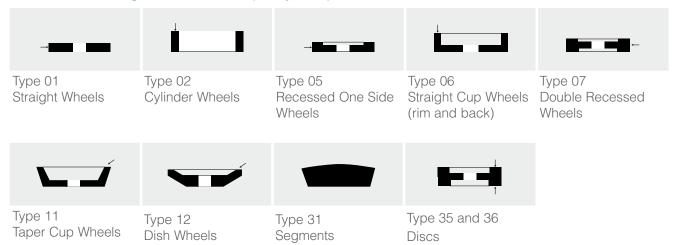
#### App Features:

- · Wheel Speed Convertor
- Traverse Diamond Roll Dressing Calculator
- Coolant Calculator
- Plunge Diamond Roll Dressing Calculator
- Stationary Tool Dressing Calculator





## Standard Grinding Wheel and Periphery Shapes



# PRECISION GRINDING WHEELS Bonded Abrasives Basics



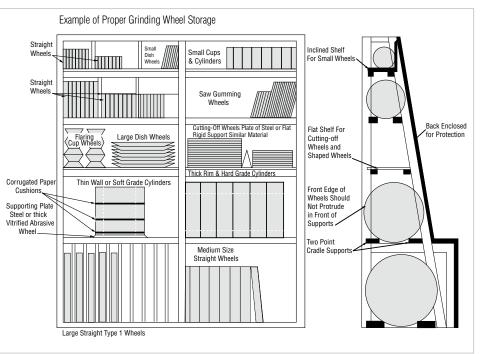
#### How to Read an Abrasive Product Specification

## Shelf Life and Proper Storage of Grinding Wheels

It has always been Saint-Gobain Abrasives recommendation that resinoid bonded grinding wheels be used within 2 years from the date of manufacture. This recommendation assumes that resinoid bonded grinding wheels have been stored under ideal storage conditions. It might be true that under ideal storage conditions resinoid bonded grinding

wheels can survive without any degradation in strength for well over two years. However, it is always wise to suspect any wheels over two years old and have them reinspected or re-speed tested to determine if there has been any degradation in strength. If the wheels are stored under less than ideal conditions, they might have a much shorter shelf life depending upon the severity of storage conditions. These same comments also apply to rubber and shellac bonded grinding wheels.

As for vitrified grinding wheels, the shelf life is less influenced by humidity and adverse storage conditions as compared to resinoid, rubber or shellac, but even vitrified grinding wheels do not have an infinite shelf life. The best procedure and the best rule of thumb is to have any wheel that is two years old or older re-speed tested and reinspected to ensure it is fit for use. The procedure for having this done and the charges will be explained by our Customer Service Department, but the cost of shipping as well as the cost of re-inspection is the customer's responsibility. Also, any wheels rejected or otherwise lost in the re-inspection process will also be the responsibility of the customer.



Keep in mind, however, that this procedure is good to verify the reliability of a product but must not be performed until you are ready to consume the wheel. If wheels are sent back after the two year time frame for re-inspection and re-testing and then put back on the shelf, there is no telling how long they will be fit for use after that last inspection. Therefore, these wheels must be consumed as soon as is practical.



The Norton bench and pedestal wheel line consists of numerous wheel diameters and arbor sizes, abrasive types and grit sizes. Our offering answers all metal removal, deburring, shaping and sharpening needs: white aluminum oxide for high-speed tool steels, brown aluminum oxide for carbon steel, and silicon carbide for non-ferrous metals and carbide tooling.

Applications: Size Range: Grit Range: Abrasive Types: Bushings: Machine Used:

Premium Ceramic Alumina, Aluminum Oxide, Silicon Carbide Telescopic arbor bushings to fit all popular grinders are packaged with the wheel

5" - 18"

24 - 150

BENCH

GRINDER

PEDESTAL GRINDER

Offhand deburring and sharpening of parts and tools

## Application/Grit Recommendation Guide

COARSER (GRINDING)

FINER (FINISHING)

24	36	46	60	80	100	150
Heavy Stock Removal						
	Medium Stock Removal					
		Light Stock Removal				
			Deburring/Shaping			
				Sharpening		
					Final Finishing	

# **ECH TIP**

- Unsecured machines can move, causing grinding breakage and injury. Fixed-based bench and pedestal grinders MUST be secured.
- Do not grind wood, plastic, or any other non-metallic material on a bench or pedestal grinder.
- All bench and pedestal wheels must be dressed to prevent loading. Loading can cause excessive heat, damage to the workpiece, and wheel breakage. Dressing exposes new cutting edges and provides chip clearance.
- Recommended starting dressing stick: 1" x 1" x 6" 37C24-SVK Part # 61463610462

It is the user's responsibility to refer to and comply with ANSI B7.1

## Bench and Pedestal Wheel Arbor Bushings

WHEEL Diameter	WHEEL Center Hole	1/2"	5/8"	3/4"	7/8"		1-1/4"
5", 6", 7"	1"	•	•	•	•		
5", 6", 7" 8"	1"		•	•	•		
10"	1-1/4"			•	•	•	
12" x 2"	1-1/4"					•	
12" and 14"	1-1/2"					•	•

These size bushings shipped free of charge with your wheel order.















# PREMIUM CERAMIC ALLIMINA 3SG

- · Type 01 straight wheel with ceramic alumina grain has fast cut, minimal burn, and long wheel life
- High performance bond for versatility and exceptional form holding
- · Especially great for hollow grinding of plane blades and chisels; telescoping bushings to fit popular arbor hole sizes

Better choice for light metal removal and sharpening of high-speed tool steels (55 Rc and higher)

# PREMIUM WHITE ALUMINUM OXIDE

- · Type 01 straight wheel with premium white aluminum oxide for maximum cut rate and cool grinding action on hardened or high-speed tool steels
- Vitrified bonded for superb shape holding and resistance to wear
- Better choice for deburring and tool sharpening on bench and pedestal grinders; telescoping bushings to fit popular arbor hole sizes

Better choice for light to medium stock removal

# **57A ALUMINUM OXIDE**

- Type 01 straight wheel, the better choice for the end-user that needs a specific grit size and hardness for engineered applications
- Vitrified bond for superb shape holding and resistance to wear
- · Excellent choice for deburring and tool sharpening on bench and pedestal grinders

Better choice for medium grit and grade for light to medium stock removal on carbide tooling and non-ferrous materials

## 39C SILICON CARBIDE

- Type 01 straight wheel with sharp, green silicon carbide; use for performance applications on carbide tooling and non-ferrous materials
- · Vitrified bond for superb shape holding and resistance to wear
- · Excellent choice for deburring and tool sharpening on bench and pedestal grinders

Good choice for all general-purpose bench and pedestal applications

# GEMINI ALUMINUM OXIDE

- Type 01 straight wheel with quality, aluminum oxide for general purpose bench and pedestal grinder applications on steel
- Vitrified bond for superb shape holding and resistance to wear
- Good choice for deburring and tool sharpening on bench and pedestal grinders; telescoping bushings to fit popular arbor hole sizes



- Type 01 straight wheel with sharp, green silicon carbide for general-purpose applications on carbide tooling and non-ferrous materials
- Vitrified bond for superb shape holding and resistance to wear
- · Available in many sizes and coarse to fine grits; for sharpening to fine shaping applications





		TIER:	BEST		BETTER		BETTER	~
		TRADENAME:	PREMIUM CE	RAMIC ALUMINA	PREMIUM ALUN	MINUM OXIDE	57A	
		ABRASIVE:	3SG Ceramic A	umina	White Aluminum	Oxide	Brown Aluminum	Oxide
	MAX.	MIN./STD.						
SIZE (D x T x H)	RPM	PKG.	SPEC	PART #	SPEC	PART #	SPEC	PART #
6 x 3/4 x 1	4,140*	1/5	3SG-46K	076607 <b>05411</b>	Medium 60	07660788246		
	4,140*	1/5	3SG-60I	076607 <b>04684</b>	Fine 100	076607 <b>88247</b>		
	4,140*	1/5	3SG-80K	076607 <b>05412</b>	Very Fine 150	076607 <b>88248</b>		
	4,140*	1/5	3SG-100I	076607 <b>04682</b>				
6 x 1 x 1	4,140*	1/5	3SG-46K	076607 <b>05413</b>	Medium 60	076607 <b>88261</b>		
	4,140*	1/5	3SG-80K	076607 <b>05414</b>	Fine 100	076607 <b>88262</b>		
	4,140	1/5			Very Fine 150	07660788263		
8 x 1 x 1	3,600	1/5			Medium 60	076607 <b>88281</b>		
	3,600	1/5	3SG-46K	076607 <b>05421</b>	Fine 100	076607 <b>88282</b>		
	3,600	1/5	3SG-60I	076607 <b>04659</b>	Very Fine 150	076607 <b>88283</b>		
	3,600	1/5	3SG-80K	076607 <b>05422</b>				
	3,600	1/5	3SG-100I	076607 <b>04657</b>				
10 x 1 x 1-1/4	2,485	1/5					57A46-MVBE	662531 <b>16274</b>
	2,485	1/5					57A60-MVBE	662531 <b>16273</b>
12 x 1 x 1-1/4	2,070	1/5					57A46-MVBE	662532 <b>20947</b>
12 x 2 x 1-1/2	2,070	1/4					57A36-0VBE	662532 <b>20952</b>
	2,070	1/4					57A46-MVBE	662532 <b>20953</b>
14 x 2 x 1-1/2	1,800	1/3					57A24-QVBE	662533 <b>19972</b>
	1,800	1/3					57A36-0VBE	662533 <b>19973</b>
	1,800	1/3					57A46-MVBE	662533 <b>19974</b>
14 x 2-1/2 x 1-1/2	1,800	1/2					57A24-QVBE	662533 <b>19976</b>
	1,800	1/2					57A46-MVBE	662533 <b>19975</b>
14 x 3 x 1-1/2	1,800	1/2					57A36-0VBE	662533 <b>19977</b>
18 x 3 x 1-1/2	1,275	1/2					57A24-QVBE	662534 <b>62610</b>

\* Max. RPM for Premium Ceramic Alumina Wheels is 5,410

## Bench and Pedestal Wheel Arbor Bushings

WHEEL Diameter	WHEEL Center Hole	1/2"	5/8"	3/4"	7/8"		1-1/4"
5", 6", 7"	1"	•	•	•	•		
8"	1"		•	•	•		
10"	1-1/4"			•	•	•	
12" x 2"	1-1/4"					•	
12" and 14"	1-1/2"					•	•

These size bushings shipped free of charge with your wheel order.







39C (GREEN) / 37C (GRAY)



**GEMINI SILICON CARBIDE** Green Silicon Carbide

	I NAI				396 (UNEEN) / 376 (UNAT)			UEIWINI SILICUN CANDIDE		
	A	BRASIVE:	Brown Aluminum	Oxide		Silicon Carbide			Green Silicon Car	bide
017F (D T II)	MAX.	MIN./ STD.	SPEC	PART #	MIN., Std. PKG.		PART #	MIN./ STD.	SPEC	PART #
SIZE (D x T x H) 5 x 1/2 x 1	RPM	PKG.		076607 <b>88202</b>	PKG.	3PE6	PARI #	PKG.	3PE6	PARI #
5 X 1/2 X 1	4,965	1/5	Medium 60/80							
F 0/4 1	4,965	1/5	Fine 100/120	076607 <b>88201</b> 076607 <b>88210</b>						
5 x 3/4 x 1	4,965	1/5	Medium 60/80							
<b>F f f</b>	4,965	1/5	Fine 100/120	07660788205						
5 x 1 x 1	4,965	1/5	Medium 60/80	07660788225				4.15	Madiana 00	00050000574
6 x 1/2 x 1	4,140	1/5	Coarse 36/46	662528 <b>36132</b>				1/5	Medium 60	662528 <b>36571</b>
	4,140	1/5	Medium 60/80	662528 <b>36131</b>				1/5	Fine 80	662528 <b>36572</b>
0 0/4 4	4,140	1/5	Fine 100/120	662528 <b>36133</b>				1/5	Extra Fine 120	662528 <b>36573</b>
6 x 3/4 x 1	4,140	1/5	Coarse 36/46	07660788245				1/5	Medium 60	662528 <b>37190</b>
	4,140	1/5	Medium 60/80	076607 <b>88240</b>				1/5	Fine 80	662528 <b>37191</b>
	4,140	1/5	Fine 100/120	076607 <b>88235</b>				1/5	Extra Fine 120	662528 <b>37192</b>
6 x 1 x 1	4,140	1/5	Coarse 36/46	076607 <b>88260</b>				1/5	Medium 60	662528 <b>37187</b>
	4,140	1/5	Medium 60/80	076607 <b>88255</b>				1/5	Fine 80	662528 <b>37193</b>
	4,140	1/5	Fine 100/120	076607 <b>88250</b>				1/5	Extra Fine 120	662528 <b>37194</b>
7 x 1 x 1	3,600	1/5	Coarse 36/46	076607 <b>88275</b>				1/5	Medium 60	662529 <b>42300</b>
	3,600	1/5	Medium 60/80	076607 <b>88270</b>				1/5	Fine 80	662529 <b>42301</b>
	3,600	1/5	Fine 100/120	076607 <b>88265</b>				1/5	Extra Fine 120	662529 <b>42302</b>
8 x 3/4 x 1	3,600	1/5	Coarse 36/46	076607 <b>88278</b>						
	3,600	1/5	Medium 60/80	076607 <b>88277</b>						
	3,600	1/5	Fine 100/120	662530 <b>42317</b>						
8 x 1 x 1	3,600	1/5	Very Coarse 24	662530 <b>44454</b>				1/5	Medium 60	662530 <b>44087</b>
	3,600	1/5	Coarse 36/46	076607 <b>88286</b>				1/5	Fine 80	662530 <b>44534</b>
	3,600	1/5	Medium 60/80	076607 <b>88285</b>				1/5	Extra Fine 120	662530 <b>44535</b>
	3,600	1/5	Fine 100/120	076607 <b>88280</b>						
10 x 1 x 1-1/4	2,485	1/2	Very Coarse 24	662531 <b>60788</b>				1/2	Medium 60	662531 <b>44536</b>
	2,485	1/2	Coarse 36/46	076607 <b>88295</b>				1/2	Fine 80	662531 <b>60366</b>
	2,485	1/2	Medium 60/80	076607 <b>88290</b>						
	2,485	1/2	Fine 100/120	662531 <b>60350</b>						
10 x 1-1/4 x 1-1/4	2,485	1/2	Coarse 36/46	662531 <b>61250</b>						
	2,485	1/2	Medium 60/80	662531 <b>61251</b>						
10 x 1-1/2 x 1-1/4	2,485	1/2	Coarse 36/46	662531 <b>61393</b>	1/5	39C60-IVMT	662531 <b>16265</b>			
	2,485	1/2	Medium 60/80	662531 <b>61395</b>						
12 x 1-1/2 x 1-1/2	2,070	1/2	Coarse 36/46	662532 <b>63052</b>						
,=,=	2,070	1/2	Medium 60/80	662532 <b>63053</b>						
12 x 2 x 1-1/4	2,070	., =						1/2	Medium 60	662532 <b>63359</b>
	2,070							1/2	Fine 80	662532 <b>63360</b>
12 x 2 x 1-1/2	2,070	1/2	Very Coarse 24	662532 <b>63054</b>				1/2		30200200000
	2,070	1/2	Coarse 36/46	66253263055						
	2,070	1/2	Medium 60/80	66253263056	1/4	39C60-KVMT	662532 <b>20942</b>			
14 x 2 x 1-1/2	1,800	1/2		002002000000	1/4	37C24-RVK	662533 <b>19967</b>			
17 1 4 1 1 1 1 1 4	1,800				1/3	39C60-JVMT	662533 <b>19968</b>			
	1,000				1/3	29000-14141	00200013308			

## Bench and Pedestal Wheel Arbor Bushings

WHEEL	WHEEL						
DIAMETER	CENTER HOLE	1/2"	5/8"	3/4"	7/8"		1-1/4"
5", 6", 7"	1"	•	•	•	•		
8"	1"		•	•	•		
10"	1-1/4"			•	•	•	
12" x 2"	1-1/4"					•	
12" and 14"	1-1/2"					•	•
<b>TI 1</b>	1.1 1.1 1.4	6.1	•11		1		

These size bushings shipped free of charge with your wheel order.



# PRECISION GRINDING WHEELS Sawgumming Wheels



Keep circular saws, band saws and other cutting tools razor sharp when you use the NorZon NZ ZA Type 01 sawgumming wheel. Featuring a resin bond to provide a smooth performance and deliver exceptional strength, this hardy wheel is specially designed for use in timber industries and for woodworking and saw manufacturing applications. Ideal for frequent use, the wheel has a zirconia alumina abrasive that ensures sharp cuts while it enhances the wheel's durability.

Applications: Size Range: Abrasive Grain: Shape: Machine Used: Tool Sharpening 12" Zirconia Alumina Type 01 Straight





Best choice for saw sharpening in the timber, woodworking, and saw manufacturing industries

# NORZON NZ ZIRCONIA ALUMINA

- Durable, sharp zirconia alumina abrasive delivering the highest performance under frequent use conditions
- Strong, yet smooth-running resin bond
- Designed to excel at shaping and resharpening various types of saws including large circular and band saw blades used primarily for timber harvesting

			TIER:	BEST
			TRADENAME:	NORZON NZ
			ABRASIVE:	Zirconia Alumina
SIZE (D x T x H)	MAX. RPM	STD. PKG.	SPEC	PART #
Type 01 Straight				
12 x 5/8 x 1-1/4	3,025	5	SG2981	662532 <b>62303</b>
12 x 3/4 x 1-1/4	3,025	5	SG2181	662532 <b>62305</b>
12 x 3/4 x 1-1/4	3,025	5	SG2981	662532 <b>62306</b> NS
12 x 3/4 x 1-1/4	3,025	5	SG2981	662532 <b>62307</b>
12 x 7/8 x 1-1/4	3,025	5	SG2981	662532 <b>62462</b>
12 x 7/8 x 1-1/4	3,025	5	SG2181	662532 <b>62461</b> NS
12 x 1 x 1-1/4	3,025	5	SG2981	662532 <b>62487</b> NS

NS Non-stock, Contact your Norton representative for current order quantities and lead-times.





Used on surface, cylindrical, and tool and cutter grinders, Norton precision, form-holding vitrified toolroom wheels maximize your productivity. Available in latest-generation ceramic alumina, aluminum oxide, and silicon carbide – for every ferrous and non-ferrous MRO, small job shop, and production operation.

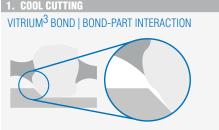
Applications: Shapes:

Size Range: Grit Range: Abrasive Grain: Surface grinding, tool and cutter grinding, and resharpening Type 01 Straight, Type 02 Cylinder, Type 05 and 07 Recessed 1 and 2 Sides, Type 06 and 11 Straight and Flaring Cups, Type 12 Dish, Type 20 Concaved 1 Side, and Type 35 Plate Mounted Disc 3/4" – 18" diameter 46 – 220 Ceramic Alumina, Aluminum Oxide, Silicon Carbide

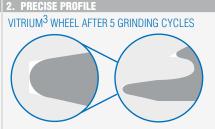
### Material-to-Product Recommendation Guide

#### PERFORMANCE/PRODUCTIVITY **APPLICATION / MATERIAL** Narrow Contact Area Medium Contact Area Wide Contact Area BETTER BETTER BETTER GOOI **Tool Resharpening** Heavy Stock Removal (> .004) HSS & Tool Steel RC 50-68 5SG46-KVS 32A46-JVBE 38A46-JVBE 5SG46-GVSP 32A46-GVBEP 38A46-GVBEP 3SGR46-GVP2 48A46-GVP2 38A46-GVP2 Moderate Stock Removal (.002-.004) HSS & Tool Steel RC 50-68 5SG60-KVS 32A60-KVBE 38A60-KVBE 5SG60-JVS 32A60-JVBE 38A60-JVBE 5SG60-GVSP 32A60-GVBEP 38A60-GVBEP 3SGR60-GVP2 48A60-GVP2 Carbide 39C60-JVMT 39C60-JVMT Surface Grinding Heavy Stock Removal (> .004) HSS & Tool Steel RC 50-68 5NQ46-JVS 32A46-JVBE 38A46-JVBE 5SG46-IVS 32A46-IVBE 38A46-IVBE 5SG46-GVSP 32A46-GVBEP 38A46-GVBEP 400 Series Stainless 3SGR46-GVP2 48A46-GVP2 38A46-GVP2 Soft Steels RC 30-45 5SG46-KVS 32A46-KVBE 38A46-KVBE 5SG46-JVS 32A46-JVBE 38A46-JVBE 5SG46-HVSP 32A46-HVBEP 38A46-HVBEP 300 Series Stainless 3SGR46-HVP2 48A46-HVP2 38A46-HVP2 Cast Iron: Ductile & Gray 5SG46-KVS 32A46-KVBE 38A46-KVBE 5SG46-JVS 32A46-JVBE 38A46-JVBE 5SG46-HVSP 32A46-HVBEP 38A46-HVBEP 3SGR46-GVP2 48A46-HVP2 38A46-HVP2 Non-ferrous Alloys 39C46-JVMT 39C46-IVMT Moderate Stock Removal (.002-.004) HSS & Tool Steel RC 50-68 5NQ60-JVS 32A60-JVBE 38A60-JVBE 5SG60-IVS 32A60-IVBE 38A60-IVBE 5SG60-GVSP 32A60-GVBEP 38A60-GVBEP 400 Series Stainless 3SGR60-GVP2 48A60-GVP2 Soft Steels RC 30-45 5SG60-KVS 32A60-KVBE 38A60-KVBE 5SG60-JVS 32A60-JVBE 38A60-JVBE 3SGR60-HVP2 32A60-HVBEP 38A60-HVBEP 38A60-HVP2 300 Series Stainless 48A60-HVP2 Cast Iron: Ductile & Gray 5SG60-KVS 32A60-KVBE 38A60-KVBE 5SG60-JVS 32A60-JVBE 38A60-JVBE 3SGR60-HVP2 32A60-HVBEP 38A60-HVBEP 48A60-HVP2 38A60-HVP2 Non-ferrous Alloys 39C60-JVMT 39C60-IVMT Light Stock Removal and Finishing (<.001) HSS & Tool Steel RC 50-68 32A80-IVBE 38A80-IVBE 38A80-HVBE 32A80-JVBE 38A80-JVBE 32A80-HVBE 400 Series Stainless Soft Steels RC 30-45 32A80-KVBF 38A80-KVBE 32A80-JVBF 38A80-JVBE 32A80-IVBE 38A80-IVBF 300 Series Stainless 32A80-KVBE 38A80-KVBE 32A80-IVBE 38A80-IVBE Cast Iron: Ductile & Gray 32A80-JVBE 38A80-JVBE Nonferrous Alloys 39C80-JVMT 39C80-IVMT 39C80-HVMT

#### Upgrade to Vitrium<sup>3</sup> to improve your process and productivity in 3 ways Vitrium<sup>3</sup> bond (VS3) wheels for enhanced-performance are available with these abrasives: NQN, NQ, SG, 32A, and 48A



Improved holding power (using less bond-to-abrasive ratio) exposes a larger grain surface area, improving freer cut rate.



Superior grain-holding properties significantly improve wheel form and corner holding vs. other bond systems – reducing dressing time and dresser wear.



High Speed – Norton Vitrium<sup>3</sup> bond provides the ultimate wheel strength. This allows for high speed operation on equipment designed and rated for high speed.



#### Vitrified Wheel Bonds

#### Bond Description

VS3	Quantum (white) and Norton SG (white): Patented technology produces a strong, exceptionally cool-cutting bond with unprecedented form holding; able to run at higher operating speed; increased throughput and productivity; versatile, for all areas of contact
VS3P	Quantum (white) Norton SG (white): Porous bond; use where heat is an issue; patented technology produces a strong, exceptionally cool- cutting bond with unprecedented form holding; versatile, for all areas of contact
VS	Quantum (white) and Norton SG (blue): High stock removal; narrow/medium contact area; roughing/finishing; cool cutting
VSP	Quantum (white) and Norton SG (blue): Porous bond; use where heat is an issue; high stock removal; medium/wide contact area; cool cutting; high chip clearance
VBE	32A (purple), 38A (white) and 57A (brown): General purpose; narrow/medium contact area; versatile; economical.
VBEP	32A (purple) and 38A (white): Porous bond; use where heat is an issue; medium/wide contact area; cool cutting; high chip clearance; high stock removal
V	38A (orange): For fine grit, form/corner holding applications; narrow contact area
VK	37C (black) and 39C (green): Designed specifically for silicon carbide abrasives; medium to narrow area of contact ; for non-steel applications
VMT	Bond specifically formulated for use with silicon carbide abrasives
VCP	32A (purple) and 23A (blue/grey): Induced-pore, wide contact area, surface/creepfeed grinding applications
VP2	3SGR (ruby), 48A (ruby), 25A (pink) and 38A (white): Unique, controlled-porosity (NORPOR) bond for heat-sensitive applications

# TECH TIP

#### SELECTNG A WHEEL WITH THE CORRECT BOND TYPE

- Use VBE, V, VS, VS3, VK, and VMT bonds for general purpose applications or medium contact areas.
- Use VBEP, VSP, VS3P, VCP, and VP2 bonds on wide contact areas where heat is an issue.



It is the user's responsibility to refer to and comply with ANSI B7.1

### Application/Grit Recommendation Guide

Grit	Requirement	Finish	Minimum Corner Radius
46	General Purpose	32 Ra and rougher	0.020"
60	Commercial Finish	32 Ra and better	0.016"
80 - 100	Fine Finish	20 Ra and better	0.0105"
120	Very Fine Finish	10 Ra and better	0.006"
150	Corner-Form Holding		0.005"
180	Corner-Form Holding		0.0035"
220	Corner-Form Holding		0.0026"

### Cross Reference Guide

NORTON	CAMEL	CINCINNATI	RADIAC	TYROLIT	WINTERTHUR
Quantum 5NQ	_	5M5B	—	_	—
3SGR	AS3	3BP	7BP, 8BP	_	—
5SG	SZA	5MSB	7BW, 8BW	_	—
25A	PA	12A	RAA	88A	57A
32A	AZ	4A, 12A, 29A, 32A	32A, WRA	90A	67A, 68A
38A	83A, WA, AZ (Blue)	9A, 10A, 11A, 82A	WA, 9A	88A, 89A	53A, 49A, 42A
48A	_	_	RA	91A	68A
53A	91A, DA	29A, 97A	43A, 45A, 97A, WPA	50A	61A, 64A
57A	94A, CGW, A	A, AK	A	A, 52A	A
37C	_	6C	С	10	С
39C	—	5C	GC	С	11C



## Take Advantage of VMT Technology!

VMT bond technology, along with advanced silicon carbide grain, offers wheels which excel in grinding a wide range of non-ferrous and hard-to-grind materials

Features & Benefits

- Improved form holding
- Higher wheel life
- Reduced power draw
- Shorter grind cycles
- Increased productivity



### Starting Recommendations for Truing and Dressing Norton Toolroom Wheels

#### TRUING & DRESSING: DRESSING STICK STARTING RECOMMENDATIONS

Size/ Spec.	High Performance Stick Part #	Size/ Spec.	Conventional Stick Part #
3 x 1/2 x 1/4" Norbide	614636 <b>10148</b>	6 x 1 x 1" 37C24-SVK	614636 <b>10462</b>
		8 x 1 x 1" 37C24-SVK	614636 <b>10471</b>
		Other sizes are available. See	the Dressing Stick section.

#### DRESSING: SINGLE POINT DRESSING TOOL STARTING RECOMMENDATIONS

		Ceramic (NQ, Norto 37C & 39C Wheels		25A, 32A, 38A, 48A, 53A, 57A, 64A, 86A Wheels		
Wheel Sizes	Tool Shank Diameter	Product No.	Part #	Product No.	Part #	
Up to 7"	3/8	BCSG2M6	662601 <b>57007</b>	BC2M6	662601 <b>95000</b>	
	7/16	BCSG2M7	662601 <b>56905</b>	BC2M7	662601 <b>95001</b>	
8" to 10"	3/8	BCSG3M6	662601 <b>57008</b>	BC3M6	662601 <b>95002</b>	
	7/16	BCSG3M7	662601 <b>56906</b>	BC3M7	662601 <b>95003</b>	
12" to 14"	3/8	BCSG5M6	662601 <b>57009</b>	BC5M6	662601 <b>95004</b>	
	7/16	BCSG5M7	662601 <b>56907</b>	BC5M7	662601 <b>95005</b>	

These tools are a standard recommendation; see the "Diamond Tool" section for additional tools

See the Fliesen Tool section for Furioso tools, engineered specifically for Quantum vitrified wheel dressing

## <u>TECH TIP</u>

#### Wheel Dressing

#### Single Point Diamond Tools

- Rigidly mount Single Point tools at a 10°-15° angle to the wheel centerline with a line drawn through the center of the wheel, pointing in the direction of wheel travel
- Point of contact should be slightly below centerline of wheel
- Use coolant whenever possible
- Normal infeed is .001" per pass
- Lead selections range from .002" .010" per wheel revolution
- Rotate the tool 1/4 turn periodically to maintain a sharp point
- Use VBE, V, VS, VK bonds for general purpose applications or medium contact areas.
- Use VBEP, VSP, VS3P, VCP, VP2 bonds on wide contact areas where heat is an issue.

#### Multi-Point Diamond Tools

- Most multi-point tools are used for straight face dressing
- · Tool should have full face contact with the wheel
- With new tool, 3 to 5 passes at .005" per pass should be taken to expose diamonds
- Infeed per pass .001" .002"
- Use coolant whenever possible
- Use appropriate lead (and traverse rate)

Contact your Norton representative for proper tool selection for Targa (TG) wheels



It is the user's responsibility to refer to and comply with ANSI B7.1

#### **Dressing Ceramic Wheels**

- Use our specially designed Norton SG diamond tools when dressing ceramic wheels
- When first using a Norton SG tool, make 3 to 5 passes at .005" infeed to ensure full face contact between the dressing tool and wheel face
- Reduce normal dressing infeed by half. Do not exceed infeed of .002" per pass.
- The lead selection should be between .006" .030" per wheel revolution. Faster traverse with Norton SG tools generally provides an open wheel face that can maximize productivity of the ceramic abrasive.
- To optimize applications using ceramic abrasives and/ or tools, normal dressing parameters must change.
   Reduce infeed by 25%. Significant reductions in the amount of infeed and frequency of dress will result in substantially lower cost per part ground.
- See the Fliesen Tool section for Furioso tools, engineered specifically for Quantum vitrified wheel dressing.



## Troubleshooting Guide

- Check the obvious first. Before changing the grinding wheel specification, investigate the following most common causes for most grinding problems:
- 1. Diamond dressing tool condition (check if worn or dull, rotate tool or replace if necessary)
- 2. Coolant direction, volume and filtration
- 3. Wheel dressing procedures (dress more open to free up cut rate, dress more closed to improve finish)

PROBLEM	POSSIBLE CAUSE	CORRECTION		
Workpiece burn	Poor coolant direction	Redirect coolant into grinding zone		
	Restricted or low coolant volume	Increase coolant volume		
	Wheel too hard	Use one grade softer wheel		
	Wheel structure too closed	Use porous bond wheel		
	Wheel dressed too fine	Dress wheel coarser, more "open"		
	Worn dressing tool	Inspect, rotate or replace dressing tool		
	Work speed too slow	Increase work speed		
	Infeed too fast	Reduce stock removed per pass or upgrade to 5SG or 5NQ		
Vheel loading and glazing	Wheel too fine	Use coarser grit or softer grade wheel		
	Wheel too hard	Use one grade softer wheel		
	Too durable abrasive	Use a sharper, more friable abrasive		
	Poor coolant quality	Change coolant or use high detergent type		
	Wheel structure too closed	Use a porous bond wheel		
	Wheel too finely dressed	Dress wheel very open		
	Diamond dressing tool worn	Replace diamond and dress coarse (open)		
	Depth of cut too small	Increase feed and traverse speed		
Chatter	Unsupported work	Increase work support		
	Machine vibration	Check for worn bearings		
	Too heavy cut rate	Reduce cut rate		
	Wheel too hard	Use one grade softer wheel		
	Wheel structure too closed	Use a porous bond wheel		
	Wheel out of balance	Check wheel balance or try new wheel		
Chatter marks on workpiece	Worn spindle bearings	Check and correct for truth and end play		
	Wheel out of truth	Redress wheel and check mounting		
	Poorly clamped wheel	Check tightness of mounting nuts		
	Glazed face of wheel	Redress wheel with sharp dressing tool		
Poor surface finish	Incorrect wheel dress	Dress wheel finer (slow down dressing tool traverse)		
	Worn dressing tool	Inspect, rotate, or replace dressing tool		
	Too coarse grit size	Use a finer grit size		
	Wheel too hard	Use softer grade		
Not holding form	Wheel too soft	Use one grade harder wheel		
	Wheel structure too open	Use a more closed wheel structure		
Not holding corner	Incorrect wheel dress	Dress wheel finer. Face and side true wheel.		
-	Too large grit size	Use smaller grit size (maximum grit diameter less than 1.5 times		
		corner radius)		
	Wheel too soft	Use harder grade wheel		
	Wheel structure too open	Use more closed structure wheel		





Best choice for versatility, maximum performance and cost savings

# QUANTUM (5NQ) CERAMIC ALUMINA

- Revolutionary, proprietary, engineered ceramic grain shape and chemistry for all low-, medium- and high-force
  applications ranging from cast iron, to stainless steel, and hard-to-grind Inconel and titanium
- Proven tough vitrified bond stands up to extreme grinding forces; perform well on old and new CNC cutting tool, cylindrical and surface grinding machines
- 33% to 100% longer life, 30% higher MRR (material removal rate), and 15% lower threshold power versus competitive ceramic products

Best choice for high productivity, low total per-part grinding cost

# SG CERAMIC ALUMINA

- Exceptionally high-performance ceramic alumina and friable aluminum oxide abrasive blend for fast stock removal, cool, superior cutting; 3 - 5 times more life than aluminum oxide wheels; double rough stock removal rate versus conventional abrasives
- High performance bond for versatility (for grinding high speed tool steels, hardened and soft steels, and aerospace alloys) and exceptional form holding
- Self-sharpening abrasive minimizes burn and dressing to maximize sharp edge on tools and dies for longer life in production

Better choice for medium-to-heavy stock removal

# 32A ALUMINUM OXIDE

- Strong, sharp monocrystalline aluminum oxide grain, ideal for precision production medium-to-heavy stock removal applications
- The most versatile vitrified bond, especially recommended for CNC cutting tool machines, and cylindrical and surface grinding
- · Grinds with an exceptional cool, fast cutting action, requires minimum dressing

#### Good choice for light grinding of tool steel

# 38A ALUMINUM OXIDE

- Friable aluminum oxide abrasive for cool and burn-free cutting toolroom applications with light-to-moderate feed rates
- The most versatile vitrified bond, especially recommended for CNC cutting tool machines, and cylindrical and surface grinding applications on hard and very heat-sensitive high-speed tool steels; cool fast cutting
- · Consistent quality for excellent balance and dimensional accuracy time after time



# GEMINI ALUMINUM OXIDE

- · Specially blended aluminum oxide abrasive for many surface and cylindrical grinding applications
- · Durable vitrified bond for high stock removal on narrow to medium contact areas
- Good general-purpose choice when a broad range of parts are ground on one machine





## Vitrified Wheels For Steel Applications

		TIFR·	BEST	2	BETTER		1	GOOD	3
		TRADENAME:	QUANTUM / NO		32A		-	38A	
N7E (D T II)	MAY DD	-	Ceramic Alumina		Aluminum Oxide	DADT #	MIN (CTD DI/O	Aluminum Oxide	
		M MIN./STD. PKG.	SPEC.	PART #	SPEC.	PART #	MIN./STD. PKG.	SPEC.	PART #
ype 01 Straig									
2 x 1/2 x 3/8	16,235	10/50			32A60-KVBE	662434 <b>28214</b>			
3 x 1/4 x 1/2	10,825	10/50			32A60-KVBE	662435 <b>28696</b>	10/50	00400 11/05	000 1050000
x 1/2 x 3/8	10,825	10/50			32A60-KVBE	662435 <b>28825</b>	10/50	38A60-JVBE	662435 <b>29032</b>
x 1/2 x 1/2 x 1 x 1/2	10,825 10,825	10/50			32A60-KVBE	662435 <b>28828</b>	10/10	38A60-MVBE	662435 <b>29145</b>
× 1 × 1/2	10,825						10/10	38A80-MVBE	662435 <b>29146</b>
x 1/4 x 1/2	8,120	1/10			32A60-KVBE	662435 <b>29532</b>	1/10	38A60-KVBE	662435 <b>29777</b>
,	8,120	.,					1/10	38A100-IVBE	662435 <b>29782</b>
x 1/4 x 3/4	8,120	1/10			32A60-KVBE	662435 <b>29736</b>			
x 1/2 x 1/2	8,120						1/10	38A60-KVBE	662435 <b>29947</b>
	8,120						1/10	38A100-KVBE	662435 <b>29954</b>
x 1/2 x 3/4	8,120	1/10			32A60-KVBE	662435 <b>29849</b>	1/10	38A60-KVBE	662435 <b>29961</b>
	8,120	1/10			32A80-KVBE	662435 <b>29850</b>	1/10	00100 NB/DE	
x 1 x 1/2	8,120	1/10				000000000000	1/10	38A60-MVBE	662435 <b>30126</b>
x 1/8 x 1-1/4	4,140	1/10			32A80-KVBE	662528 <b>35361</b> 662528 <b>35784</b>	1/10	38A150-LVBE	662528 <b>35506</b>
x 1/4 x 1/2 x 1/4 x 1-1/4	4,140 4,140	1/10 1/10			32A60-KVBE 32A60-KVBE	662528 <b>35786</b>	1/10	38A60-KVBE	662528 <b>35803</b>
X 1/4 X 1-1/4	4,140	1/10			JZAUU-KVDE	00232033700	1/10	38A80-KVBE	662528 <b>35807</b>
	4,140						1/10	38A150-KV	662528 <b>35759</b>
x 1/2 x 1/2	4,140	1/10			32A60-KVBE	662528 <b>36394</b>	1/10	38A60-KVBE	662528 <b>36530</b>
X 1/2 X 1/2	4,140	1,10			OENOU NUDE	0020200001	1/10	38A80-KVBE	662528 <b>36548</b>
x 1/2 x 1-1/4	4,140	1/10			32A46-KVBE	662528 <b>36380</b>	1/10	38A46-KVBE	662528 <b>36520</b>
	4,140	1/10	5SG60-KVS	662528 <b>03344</b>	32A60-KVBE	662528 <b>36396</b> B	1/10	38A60-KVBE	66252836533
	4,140	1/10			32A80-JVBE	662528 <b>36405</b>	1/10	38A80-KVBE	662528 <b>36550</b>
	4,140						1/10	38A120-KVBE	662528 <b>36664</b>
x 3/4 x 1/2	4,140	1/10			32A60-KVBE	662528 <b>37420</b>			
x 3/4 x 5/8	4,140						1/10	38A60-KVBE	662528 <b>37444</b>
x 3/4 x 1-1/4	4,140	1/10			32A60-KVBE	662528 <b>37421</b>	1/10	38A60-KVBE	662528 <b>37445</b>
x 1 x 1-1/4	4,140	1/10			32A60-KVBE	662528 <b>37921</b> B	4/40		00050000010
x 1/8 x 1-1/4	3,275	1/10			32A60-IVBE	662529 <b>39112</b>	1/10	38A80-IVBE	662529 <b>39219</b> 662529 <b>39223</b>
x 1/4 x 1-1/4	3,600 3,600	1/10			32A46-HVBE	662529 <b>39543</b>	1/10 1/10	38A100-KVBE 38A46-HVBE	662529 <b>39223</b>
X 1/4 X 1-1/4	3,600	1/10	5NQ46-IVS3	662434 <b>95257</b>	32A46-IVBE	662529 <b>39543</b>	1/10	38A46-IVBE	662529 <b>39691</b>
	3,600	1/10	5NQ60-JVS3	662532 <b>93579</b>	32A46-JVBE	662529 <b>39545</b>	1/10	38A46-JVBE	66252909755
	3,600	1/10	011000	00200200010	32A46-KVBE	662529 <b>39862</b>	1/10	38A60-HVBE	662529 <b>39695</b>
	3,600	1/10	5SG46-IVS	662529 <b>40207</b> B	32A60-HVBE	662529 <b>39547</b>	1/10	38A60-IVBE	662529 <b>39696</b>
	3,600	1/10			32A60-IVBE	662529 <b>39548</b> B	1/10	38A60-JVBE	662529 <b>39698</b>
	3,600	1/10	5SG60-IVS	662529 <b>39459</b> B	32A60-IVBE	662532 <b>88569</b> S	1/10	38A60-KVBE	662529 <b>39700</b>
	3,600	1/10			32A60-JVBE	662529 <b>39549</b> B	1/10	38A80-HVBE	662529 <b>39707</b>
	3,600	1/10			32A60-KVBE	662529 <b>39552</b> B	1/10	38A80-IVBE	662529 <b>39808</b>
	3,600	1/10	5SG60-JVS	662529 <b>39460</b>	32A60-KVBE	662532 <b>88570</b> S	1/10	38A80-JVBE	662529 <b>39809</b>
	3,600	1/10	5SG60-KVS	662529 <b>39461</b> B	00400 11/05	000500000000	1/10	38A80-KVBE	662529 <b>39812</b>
	3,600	1/10	F0000 11/0	00050000400	32A80-HVBE	662529 <b>39557</b>	1/10	38A100-IVBE	662529 <b>39823</b>
	3,600	1/10	5SG80-IVS	662529 <b>39462</b>	32A80-IVBE	662529 <b>39658</b> B	1/10	201100 11/05	6605000000
	3,600	1/10	5SG80-JVS 5SG80-KVS	662529 <b>39463</b> 662529 <b>39464</b>	32A80-IVBE 32A80-JVBE	662532 <b>88571</b> S 662529 <b>39660</b> B	1/10	38A100-JVBE 38A100-KVBE	662529 <b>39826</b> 662529 <b>39827</b>
	3,600 3,600	1/10 1/10	5SG100-JVS	662529 <b>39464</b>	32A80-JVBE 32A80-KVBE	662529 <b>39662</b> B	1/10 1/10	38A100-KVBE 38A100-LVBE	662529 <b>39827</b>
	3,600	1/10	5SG100-JVS 5SG100-KVS	662529 <b>39468</b> B	32A80-KVBE	662532 <b>88572</b> S	1/10	38A120-JVBE	662529 <b>39833</b>
	3,600	1/10		JULULUUJTUU D	SENIO INDE	302002 <b>30312</b> 0	1/10	38A120-KVBE	662529 <b>39834</b>
	3,600	1/10			32A100-IVBE	662529 <b>39670</b> B	1/10	38A150-KVBE	662529 <b>39838</b>
	3,600	1/10			32A100-JVBE	662529 <b>39672</b>	1/10	38A150-LVBE	662529 <b>39839</b>
	3,600	1/10			32A100-IVBE	662532 <b>88573</b> S	1/10	38A150-MV	662529 <b>39521</b>
	3,600	1/10			32A100-KVBE	662529 <b>39673</b> B	1/10	38A220-KV	662529 <b>39528</b>
	3,600	1/10					1/10	38A220-LV	662529 <b>39529</b>
	3,600	1/10			32A120-IVBE	662529 <b>39680</b>	1/10	38A220-LVBE	662529 <b>39847</b>
	3,600	1/10			32A120-KVBE	662529 <b>39682</b>	1/10	38A220-MV	662529 <b>39530</b>
0.10	3,600	1/10			32A220-LVBE	662529 <b>39689</b>			
x 3/8 x 1-1/4	3,600	1/10			32A60-KVBE	662529 <b>40276</b>	1/10	38A60-KVBE	662529 <b>40294</b>
	3,600	1/10			32A80-KVBE	662529 <b>40284</b>	1/10	38A80-IVBE	662529 <b>40297</b>



### Vitrified Wheels For Steel Applications continued

		TIFO			F					
		TRADENAME:		RTON SG	BETTER 32A / 48A		-	GOOD 38A / 25A / GEN	IINI	
SIZE (D x T x H)	MAY DD	ABRASIVE: M MIN./STD. PKG.		PART #	Aluminum Oxide SPEC.	PART #	MIN./STD. PKG.	Aluminum Oxide	PART #	
			SPEG.	FANI #	JFEG.	FANI#	WIN./STD. FKU.	JFEG.	FANI#	
Type 01 Straig										
7 x 1/2 x 1-1/4	3,600	1/10	5NQ46-HVS3	662533 <b>75053</b>	32A46-FVBEP	662529 <b>41203</b>	1/10	25A46-HVP2	662529 <b>16219</b>	
	3,600	1/10	5NQ46-IVS3	690831 <b>59103</b>	32A46-GVBE	662529 <b>40862</b>	1/10	25A60-HVP2	662529 <b>16221</b>	
	3,600	1/10		0000150104	32A46-GVBEP	662529 <b>41204</b> B	1/10	38A46-GVBE	662529 <b>41022</b>	
	3,600	1/10	5NQ46-JVS3	690831 <b>59104</b>	32A46-HVBE	662529 <b>40863</b> B	1/10	38A46-GVBEP	662529 <b>41323</b>	
	3,600	1/10	5NQ60-GVS3P	690831 <b>59105</b>	32A46-HVBE	662532 <b>88775</b> S	1/10	38A46-HVBE	662529 <b>41023</b>	
	3,600	1/10	5NQ60-IVS3	662533 <b>75047</b>	32A46-HVBEP	662529 <b>41205</b> B	1/10		66050041004	
	3,600	1/10 1/10	5NQ60-JVS3	690831 <b>59106</b>	32A46-IVBE	662529 <b>40864</b> B	1/10 1/10	38A46-HVBEP 38A46-HVP2	662529 <b>41324</b> 662529 <b>16223</b>	
	3,600	1/10	3SGP46-GVSP	662529 <b>11717</b>	32A40-IVBE	662532 <b>88776</b> S	1/10	38A46-IVBE	662529 <b>16223</b>	
	3,600	1/10	3SGR46-HVP2	662529 <b>16211</b>	32A40-IVBE 32A46-IVBEP	662529 <b>41206</b>	1/10	38A46-JVBE	662529 <b>41024</b>	
	3,600	1/10	3SGR60-HVP2	662529 <b>16213</b>	JZA40-IVDLF	00232941200	1	38A46-JVBE	662532 <b>941020</b>	
	3,600	1/10	5SG46-GVSP	662529 <b>40522</b>	32A46-JVBE	662529 <b>40865</b> B	1/10	38A46-KVBE	662529 <b>41028</b>	
	3,600	1/10	J3040-0V3r	00232940322	32A40-JVBE	662532 <b>88777</b> S	1/10	38A60-HVBE	662529 <b>4102</b> 8	
	3,600	1/10	5SG46-HVSP	662529 <b>41130</b>	JZA40-JVDL	00233200777 3	1/10	38A60-HVBEP	662529 <b>41330</b>	
	3,600	1/10	5SG46-IVS	662529 <b>40193</b> B	32A46-KVBE	662529 <b>40867</b> B	1/10	38A60-IVBE	662529 <b>41036</b>	
	3,600	1/10	5SG46-IVS	662532 <b>88788</b> S	JZA40-INDL	00232340007 0	1/10	38A60-JVBE	662529 <b>41030</b>	
	3,600	1/10	JJU40-1VJ	00233200700 3	32A54-IVBE	662529 <b>40873</b>	1	38A60-JVBE	662532 <b>88766</b>	
	3,600	1/10	5SG46-IVSP	662529 <b>40523</b>	32A60-GVBEP	662529 <b>41313</b>	1/10	38A60-KVBE	662529 <b>41041</b>	
	3,600	1/10	5SG46-JVS	662529 <b>40194</b> B	32A60-HVBE	662529 <b>40879</b> B	1	JUAUU-INDL	00232341041	
	3,600	1/10	5SG46-JVS	662532 <b>88789</b> S	32A60-HVBEP	662529 <b>41314</b>	1/10	38A60-LVBE	662529 <b>11677</b>	
	3,600	1/10	5SG46-JVS3	662434 <b>95263</b>	32A60-IVBE	662529 <b>40880</b> B	1/10	38A80-HVBE	662529 <b>41047</b>	
	3,600	1/10	5SG46-KVS	662529 <b>40195</b>	32A60-IVBE	662532 <b>88779</b> S	1/10	38A80-IVBE	662529 <b>4104</b>	
	3,600	1/10	5SG60-GVSP	662529 <b>40524</b>	02/100 1102	002002001100	1/10	38A80-JVBE	662529 <b>41049</b>	
	3,600	1/10	5SG60-IVS	662529 <b>40196</b> B	32A60-JVBE	662529 <b>40882</b> B	1/10	38A80-KVBE	662529 <b>41054</b>	
	3,600	1/10	00000 110	002020401000	32A60-JVBEP	662529 <b>41316</b>	1	00/100 11/102	00202041004	
	3,600	1/10			02/100 01021	00202011010	1/10	38A80-LVBE	662529 <b>41056</b>	
	3,600	1/10	5SG60-IVSP	662529 <b>40525</b>	32A60-KVBE	662529 <b>40885</b> B	1/10	38A100-IVBE	662529 <b>41163</b>	
	3,600	1/10	5SG60-JVS	662529 <b>40197</b> B	32A60-KVBE	662532 <b>88782</b> S	1/10	38A100-JVBE	662529 <b>41165</b>	
	3,600	1/10		002020101010	32A60-LVBE	662529 <b>40888</b>	1/10	38A100-KVBE	662529 <b>41168</b>	
	3,600	1/10			32A80-HVBE	662529 <b>40894</b>	1/10	38A120-JVBE	662529 <b>41174</b>	
	3,600	1/10	5SG60-KVS	662529 <b>40198</b>	32A80-IVBE	662529 <b>40895</b> B	1/10	38A120-KVBE	662529 <b>41175</b>	
	3,600	1/10	5SG60-LVS	662529 <b>40199</b>	32A80-IVBE	662532 <b>88783</b> S	1/10	38A150-JVBE	662529 <b>41179</b>	
	3,600	1/10	5SG80-IVS	662529 <b>40200</b>	32A80-JVBE	662529 <b>40897</b> B	1/10	38A150-MV	662529 <b>40595</b>	
	3,600	1/10	5SG80-IVSP	662529 <b>40527</b>	32A80-KVBE	662529 <b>40899</b> B	1/10	38A220-QV	662529 <b>40605</b>	
	3,600	1/10	5SG80-JVS	662529 <b>40201</b> B	32A80-KVBE	662532 <b>88784</b> S				
	3,600	1/10			32A80-LVBE	662529 <b>40900</b>	10/10	Gemini 46-I	662532 <b>46800</b>	
	3,600	1/10	5SG80-KVS	662529 <b>40202</b>	32A100-IVBE	662529 <b>40907</b>	10/10	Gemini 46-J	662532 <b>46802</b>	
	3,600	1/10	5SG80-LVS	662529 <b>40203</b>	32A100-JVBE	662529 <b>41008</b>				
	3,600	1/10	5SG100-JVS	662529 <b>40204</b>	32A120-LVBE	662529 <b>41018</b> B				
	3,600	1/10	5SG100-KVS	662529 <b>40205</b>	32A120-LVBE	662532 <b>88786</b> S				
	3,600	1/10	-		48A46-HVP2	662529 <b>16215</b> B	10/10	Gemini 60-K	662532 <b>46821</b>	
	3,600	1/10			48A60-HVP2	662529 <b>16217</b> B				
x 5/8 x 1-1/4	3,600	1/10			32A60-IVBE	662529 <b>41762</b>				
7 x 3/4 x 1-1/4	3,600	1/10	5SG46-IVS	662529 <b>42304</b>	32A46-GVBEP	662529 <b>42070</b>	1/10	38A46-HVBE	662529 <b>41950</b>	
	3,600	1/10	5SG46-KVS	662529 <b>42305</b>	32A46-HVBE	662529 <b>41930</b>	1/10	38A46-KVBE	662529 <b>41954</b>	
	3,600	1/10	5SG60-JVS	662529 <b>42307</b>	32A46-IVBE	662529 <b>41931</b>	1/10	38A60-IVBE	662529 <b>42207</b>	
	3,600	1/10	5SG60-KVS	662529 <b>42308</b>	32A46-KVBE	662529 <b>41935</b>	1/10	38A60-KVBE	662529 <b>42060</b>	
	3,600	1/10			32A60-IVBE	662529 <b>41938</b>				
	3,600	1/10			32A60-KVBE	662529 <b>41943</b>				
	3,600	1/10			32A80-IVBE	662529 <b>41946</b>				
x 1 x 1-1/4	3,600	1/10	5SG60-JVS	662529 <b>42429</b>	32A46-HVBE	662529 <b>42513</b>	1/10	38A46-HVBE	662529 <b>42534</b>	
	3,600	1/10	5SG60-KVS	662529 <b>42430</b>	32A46-JVBE	662529 <b>42268</b>				
	3,600	1/10			32A60-IVBE	662529 <b>42524</b>				

B Best Seller; performs well in a variety of applications for many satisfied customers \$ Single Pack

If you don't see the toolroom wheel you need in our stock listing contact your Norton rep for made-to-order availability including wheels made with our revolutionary new premium Quantum Prime ceramic and Vitrium<sup>3</sup> bond wheels.



### Vitrified Wheels For Steel Applications continued

			C	C	-			C	6
		7100	DECT	and the second	DETTED			0000	
		TRADENAME:	BEST QUANTUM / NOF	TON SC	BETTER 32A / 48A		l	GOOD 38A / 25A / GI	MINI
		ABRASIVE:		SIUN 30	Aluminum Oxide		-	Aluminum Oxid	
SIZE (D x T x H)		MIN./STD. PKG.		PART #	SPEC.	PART #	MIN./STD. PKG.		PART #
		MIN./STD. I KU.	51 20.		51 20.		MIN./STD. I Ku.	01 20.	
Type 01 Straigh	ELONGE ELONG								
8 x 1/4 x 1-1/4	3,105 / 3,600*	1/10	5SG60-KVS	662530 <b>43351</b> *	32A46-HVBE	662530 <b>43412</b>	1/10	38A60-IVBE	662530 <b>43431</b> *
	3,105 / 3,600*	1/10	5SG80-KVS	662530 <b>43353</b> *	32A46-IVBE	662530 <b>43310</b>	1/10	38A60-JVBE	662530 <b>43432</b> *
	3,600	1/10			32A46-KVBE	662530 <b>43413</b>	1/10	38A60-KVBE	662530 <b>10825</b>
	3,600	1/10			32A60-IVBE	662530 <b>43416</b> B	1/10	38A80-IVBE	662530 <b>43437</b>
	3,600	1/10			32A60-IVBE	662532 <b>88796</b> S	1/10	38A80-JVBE	662530 <b>43439</b>
	3,600	1/10			32A60-JVBE	662530 <b>43417</b>	1/10	38A80-KVBE	662530 <b>43461</b>
	3,600	1/10			32A60-KVBE	662530 <b>43399</b>	1/10	38A100-IVBE	662530 <b>43445</b>
	3,600	1/10			32A80-IVBE	662530 <b>43421</b>	1/10	38A100-KVBE	662530 <b>43447</b>
	3,600	1/10			32A80-KVBE	662530 <b>43458</b> B	1/10	38A120-KVBE	662530 <b>43450</b>
	3,600	1/10			32A80-KVBE	662532 <b>88797</b> S	1/10	38A150-KVBE	662530 <b>43451</b>
	3,600	1/10			32A80-LVBE	662530 <b>43425</b>			
	3,600	1/10			32A100-IVBE	662530 <b>43426</b>			
	3,600	1/10			32A100-KVBE	662530 <b>43428</b>			
8 x 3/8 x 1-1/4	3,600	1/10			32A60-KVBE	662530 <b>43565</b>			
8 x 1/2 x 1-1/4	3,105 / 3,600*	1/10	5NQ46-HVS3	662533 <b>87211</b>	32A46-GVBEP	662530 <b>43882</b> B	1/10	25A46-HVP2	662530 <b>19354</b> *
	3,105	1/10	5NQ46-IVS3	690831 <b>59107</b>	32A46-HVBE	662530 <b>43712</b> B	1/10	38A46-HVBE	662530 <b>43746</b>
	3,105	1/10			32A46-HVBE	662532 <b>88800</b> S			
	3,105 / 3,600*	1/10	5NQ46-JVS3	690831 <b>59108</b> *	32A46-HVBEP	662530 <b>43883</b> *† B		38A46-HVBEP	662530 <b>43891</b> †
	3,105	1/10					1/10	38A46-IVBE	662530 <b>43749</b>
	3,105 / 3,600*	1/10	5NQ60-GVS3P	690831 <b>59109</b>			1/10	38A46-JVBE	662530 <b>43752</b> *
	3,105 / 3,600*	1/10			32A46-IVBE	662530 <b>43713</b> B	1/10	38A46-KVBE	662530 <b>43762</b> *
	3,600	1/10	5NQ60-JVS3	690831 <b>59110</b>			1/10	38A60-HVBE	662530 <b>43756</b>
	3,600	1/10			32A46-JVBE	662530 <b>43715</b> B	1/10	38A60-IVBE	662530 <b>43757</b>
	3,105 / 3,600*	1/10	3SGP46-HVSP	662530 <b>11505</b>	32A46-JVBE	662532 <b>88801</b> * S	1/10	38A60-JVBE	662530 <b>43858</b> *
	3,600	1/10	3SGP46-JVH	662530 <b>13796</b>			1/10	38A60-KVBE	662530 <b>43861</b>
	3,600	1/10	3SGR46-GVP2	662530 <b>19345</b>	32A46-KVBE	662530 <b>43716</b> B	1/10	38A80-IVBE	662530 <b>43866</b>
	3,600	1/10	3SGR46-HVP2	662530 <b>19346</b>			1/10	38A80-JVBE	662530 <b>13787</b>
	3,600	1/10	3SGR60-HVP2	662530 <b>19348</b>	32A60-GVBEP	662530 <b>43887</b> †	1/10	38A80-KVBE	662530 <b>43869</b>
	3,105 / 3,600*	1/10	5SG46-GVSP	662530 <b>43649</b>	32A60-HVBE	662530 <b>43724</b> *	1/10	38A100-KVBE	662530 <b>43877</b> *
	3,600	1/10			32A60-HVBEP	662530 <b>43888</b>	10/10	Gemini 46-H	662532 <b>46841</b> *
	3,105 / 3,600*	1/10	5SG46-HVSP	662530 <b>43915</b> *†	32A60-IVBE	662530 <b>43725</b> * B	10/10	Gemini 46-I	662532 <b>46843</b>
	3,105 / 3,600*	1/10	5SG46-IVS	662530 <b>44089</b> B	32A60-IVBE	662532 <b>88802</b> * S	10/10	Gemini 46-J	662532 <b>46845</b> *
	3,105 / 3,600*	1/10	5SG46-IVS	662532 <b>88804</b> S	32A60-JVBE	662530 <b>43727</b> * B			
	3,105 / 3,600*	1/10			32A60-KVBE	662530 <b>43729</b> * B			
	3,105 / 3,600*	1/10	5SG46-IVSP	662530 <b>43650</b>	32A60-KVBE	662532 <b>88803</b> * S			
	3,600	1/10	5SG46-JVS	662530 <b>44090</b> B	32A80-HVBE	662530 <b>43733</b>			
	3,600	1/10	5SG46-JVS	662532 <b>88806</b> S	32A80-IVBE	662530 <b>43734</b>			
	3,600	1/10	5SG46-KVS	662530 <b>44091</b>	32A80-JVBE	662530 <b>43736</b>			
	3,600	1/10	5SG60-GVSP	662530 <b>43651</b> †	32A80-KVBE	662530 <b>43737</b>			
	3,600	1/10	5SG60-IVS	662530 <b>44092</b>	32A100-IVBE	662530 <b>43740</b>			
	3,600	1/10			32A100-KVBE	66253043742			
	3,600	1/10	5SG60-IVSP	662530 <b>43652</b>	48A46-HVP2	662530 <b>19350</b> B			
	3,600	1/10	5SG60-JVS	662530 <b>44093</b> B	=				
	3,600	1/10	5SG60-KVS	662530 <b>44094</b>					
		1/10	5SG80-JVS	662530 <b>44096</b>					
	2 000								
	3,600 3,600	1/10	5SG80-KVS	662530 <b>44097</b>					

B Best Seller; performs well in a variety of applications for many satisfied customers

S Single Pack

\* Indicates wheel max RPM has been tested to 3,600 as explained in the tech tip below

#### Continued

## TECH TIP

- \* 8" Type 01 and Type 05 Vitrified Toolroom Wheels' Maximum Operating Speeds:
- Stock NorPor VP2 wheels = 3,600 RPMs
- All other 46 grit, J grade and harder = 3,600 RPMs
- All other 54 grit, I grade and harder = 3,600 RPMs
- All other 60 grit and finer, H grade and harder = 3,600 RPMs
- † Exceptions to the rule: speed-tested to 3,600 RPM
  All other specifications = 3,105 RPMs
- It is the user's responsibility to refer to and comply with ANSI B7.1



### Vitrified Wheels For Steel Applications continued

				-					
		TIFR	BEST	-	BETTER			GOOD	
		TRADENAME:		TON SG	32A / 48A			38A / 57A	
		ABRASIVE:			Aluminum Oxide		-	Aluminum Oxide	
SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.		PART #	SPEC.	PART #	MIN./STD. PKG.		PART #
Type 01 Straig									
•• •			5110 / 0 II /00						
8 x 3/4 x 1-1/4	3,105	1/10	5NQ46-IVS3	690831 <b>59111</b>	32A46-GVBEP	662530 <b>44195</b>	1/10	38A46-HVBE	662530 <b>44175</b>
	3,105	1/10	5110.40 11/00	00000480440	32A46-HVBE	662530 <b>44159</b>	1/10	38A46-IVBE	662530 <b>44177</b>
	3,600	1/10	5NQ46-JVS3	690831 <b>59112</b>	32A46-HVBEP	662530 <b>44196</b> *†		38A46-KVBE	662530 <b>44180</b>
	3,105 / 3,600*	1/10			32A46-IVBE	662530 <b>44215</b>	1/10	38A60-IVBE	662530 <b>44184</b> *
	3,105 / 3,600*	1/10			32A46-JVBE	662530 <b>44161</b> *			
	3,105 / 3,600*	1/10	5NQ60-GVS3P	690831 <b>59113</b>	32A46-KVBE	662530 <b>44165</b> *			
	3,600	1/10	5NQ60-JVS3	690831 <b>59114</b>	32A60-GVBEP	662530 <b>44198</b>			
	3,600	1/10			32A60-HVBE	662530 <b>44168</b>			
	3,105 / 3,600*	1/10	5SG46-IVS	662530 <b>44098</b>	32A60-IVBE	662530 <b>44169</b> *			
	3,600	1/10	3SGP46-JVH	662530 <b>13792</b>	32A60-JVBE	662530 <b>44171</b>			
	3,600	1/10	5SG46-JVS	662530 <b>44099</b> B	32A60-KVBE	662530 <b>44173</b>			
	3,600	1/10			32A80-KVBE	662530 <b>44064</b>			
	3,600	1/10	5SG60-IVS	662530 <b>44101</b>					
	3,600	1/10	5SG60-JVS	662530 <b>44102</b>					
	3,600	1/10	5SG60-KVS	662530 <b>44103</b>					
3 x 1 x 1-1/4	3,105 / 3,600*	1/10	5SG46-KVS	662530 <b>02588</b> *	32A46-HVBE	662530 <b>44616</b>	1/10	38A46-IVBE	662530 <b>44636</b>
	3,105 / 3,600*	1/10	5SG60-GVSP	662530 <b>03228</b> *†	32A46-IVBE	662530 <b>44617</b>	1/10	38A60-IVBE	662530 <b>44456</b> *
	3,600	1/10	5SG60-IVS	662530 <b>02639</b>	32A46-KVBE	662530 <b>44622</b>	1/10	57A60-MVBE	662530 <b>44270</b>
	3,600	1/10			32A60-IVBE	662530 <b>44624</b>			
	3,600	1/10			32A60-KVBE	662530 <b>44629</b>			
10 x 1/4 x 3	2,485						1	38A80-KVBE	662531 <b>49572</b>
10 x 1/2 x 3	2,485	1			32A60-JVBE	662531 <b>49729</b>	1	38A60-KVBE	662531 <b>49859</b>
	2,485						1	38A80-KVBE	662531 <b>49865</b>
10 x 3/4 x 3	2,485	1			32A46-IVBE	662531 <b>60024</b>	1	38A46-JVBE	662531 <b>60158</b>
	2,485	1			32A60-IVBE	662531 <b>60137</b>	1	38A60-IVBE	662531 <b>60163</b>
	2,485	1			32A60-KVBE	662531 <b>60143</b>			
10 x 1 x 1-1/4	2,485	1			32A60-KVBE	662531 <b>60774</b>			
10 x 1 x 2	2,485	1			32A46-IVBE	66253160749			
10 x 1 x 3	2,485	1	5SG46-GVSP	662531 <b>60494</b>	32A46-HVBE	662531 <b>60747</b>	1	38A46-IVBE	662531 <b>60889</b>
	2,485	1	5SG46-IVS	662531 <b>60400</b>	32A46-IVBE	662531 <b>60750</b>	1	38A46-JVBE	662531 <b>60892</b>
	2,485	1	5SG46-JVS	662531 <b>60401</b>	32A46-JVBE	66253160754	1	38A60-IVBE	662531 <b>60898</b>
	2,485	1			32A46-KVBE	662531 <b>60758</b>	1	38A60-KVBE	66253160900
	2,485	1	5SG46-KVS	662531 <b>60402</b>	32A60-IVBE	662531 <b>60769</b>			
	2,485	1		00200100100	32A60-KVBE	662531 <b>60777</b>			
	2,485	1	5SG60-IVS	662531 <b>60403</b>	32A80-KVBE	662531 <b>60782</b>			
	2,485	1	5SG60-JVS	662531 <b>60404</b>					
	2,485	1	5SG60-KVS	662531 <b>60405</b>					
12 x 1/2 x 3	2,070	2			32A60-JVBE	662532 <b>62134</b>			
	2,070	2			32A80-5VBE	662532 <b>62110</b>			
12 x 1/2 x 5	2,070	2			32A60-KVBE	662532 <b>62107</b>			
	2,070	2			32A80-KVBE	662532 <b>62111</b>			
12 x 3/4 x 3	2,070	1	5SG46-IVS	662532 <b>62204</b>	32A46-GVBEP	662532 <b>62392</b>	1	38A46-JVBE	662532 <b>62281</b>
12 1 0/4 1 0	2,070	1	JJU <del>1</del> U-1VJ	00200202204	32A40-GVBEF	662532 <b>62262</b>	1	JUNHU-JVDL	00200202201
	2,070	1			32A40-HVBE	662532 <b>62260</b>			
	2,070	1							
	2,070	1			32A60-IVBE	662532 <b>62270</b>			
	2,070	1			32A60-KVBE	662532 <b>62273</b>			

B Best Seller; performs well in a variety of applications for many satisfied customers

S Single Wheel Pack

\* Indicates wheel max RPM has been tested to 3,600 as explained in the tech tip below

## TECH TIP

- \* 8" Type 01 and Type 05 Vitrified Toolroom Wheels' Maximum Operating Speeds:
- Stock NorPor VP2 wheels = 3,600 RPMs
- All other 46 grit, J grade and harder = 3,600 RPMs
- All other 54 grit, I grade and harder = 3,600 RPMs
- All other 60 grit and finer, H grade and harder = 3,600 RPMs
- † Exceptions to the rule: speed-tested to 3,600 RPM
- All other specifications = 3,105 RPMs

It is the user's responsibility to refer to and comply with ANSI B7.1



#### Vitrified Wheels For Steel Applications continued

		TIED.	BEST		BETTER			GOOD	6
				DTON CO					
		TRADENAME:			32A / 48A		_	38A	
			Ceramic Alumina		Aluminum Oxide			Aluminum Oxid	
SIZE (D x T x H) Type O1 Straigh		MIN./STD. PKG.	SPEC.	PART #	SPEC.	PART #	MIN./STD. PKG.	SPEC.	PART #
12 x 1 x 3	2,070 / 2,710*	1	3SGR46-HVP2	662532 <b>20885</b> *	32A46-GVBEP	662532 <b>62840</b>	1	38A46-HVBE	662532 <b>62700</b>
	2,070	1	5SG46-HVSP	662532 <b>62488</b>	32A46-HVBE	662532 <b>62562</b>	1	38A46-IVBE	662532 <b>62702</b>
	2,070	1	5SG46-IVS	662532 <b>62500</b>	32A46-HVBEP	662532 <b>62842</b>	1	38A46-JVBE	662532 <b>62704</b>
	2,070	1	5SG46-JVS	662532 <b>62501</b>	32A46-IVBE	662532 <b>62564</b>	1	38A60-IVBE	662532 <b>62713</b>
	2,070	1	5SG46-JVS3	662434 <b>95317</b>	32A46-JVBE	662532 <b>62567</b>	1	JUAUU TVDL	00200202110
	2,070	1	5SG46-KVS	662532 <b>62502</b>	32A46-KVBE	662532 <b>62572</b>			
	2,070	1	JJU40-IN/J	00233202302	32A60-HVBE	662532 <b>62580</b>			
	2,070	1	5SG60-GVSP	662532 <b>62593</b>	32A60-IVBE	662532 <b>62580</b>			
	2,070	•			32A60-KVBE				
	,	1	5SG60-IVS	662532 <b>62503</b>		662532 <b>62689</b>			
	2,070	1	5SG60-JVS	662532 <b>62504</b>	32A80-KVBE	662532 <b>62532</b>			
	2,070 / 2,710*	1	5SG60-KVS	662532 <b>62505</b>	48A60-HVP2	662532 <b>20891</b> *			
l2 x 1 x 5	2,070	1	5SG46-GVSP	662532 <b>62594</b>	32A46-GVBEP	662532 <b>62841</b>	1	38A46-IVBE	662532 <b>62703</b>
	2,070	1	5SG46-IVS	662532 <b>62508</b>	32A46-HVBE	662532 <b>62563</b>	1	38A60-KVBE	662532 <b>62719</b>
	2,070	1	5SG46-JVS	662532 <b>62509</b> B	32A46-IVBE	662532 <b>62565</b>			
	2,070	1	5SG46-KVS	662532 <b>62510</b>	32A46-KVBE	662532 <b>62573</b>			
	2,070	1	5SG60-GVSP	662532 <b>62595</b>					
	2,070	1	5SG60-IVS	662532 <b>62511</b>	32A60-IVBE	662532 <b>62582</b>			
	2,070	1	5SG60-JVS	662532 <b>62512</b>	32A60-JVBE	662532 <b>62686</b>			
	2,070	1	5SG60-KVS	662532 <b>62513</b>	32A60-KVBE	662532 <b>62691</b> B			
	2,070	1	5SG80-JVS	662532 <b>62515</b>	32A80-JVBE	662532 <b>62696</b>			
	2,070	1			32A80-KVBE	662532 <b>62697</b>			
12 x 1-1/4 x 3	2,070	1			32A46-IVBE	662532 <b>62301</b>			
12 x 1-1/2 x 1-1/4		1			32A46-KVBE	66253263146			
12 x 1-1/2 x 3	2,070	1	5SG46-IVS	662532 <b>02820</b>	32A46-HVBE	662532 <b>63143</b>			
2	2,070	1		00200202020	32A46-IVBE	662532 <b>63144</b>			
	2,070	1			32A60-JVBE	662532 <b>63123</b>			
2 x 1-1/2 x 5	2,070	1	5NQ46-IVS3	690831 <b>59115</b>	32A46-GVBEP	662532 <b>63192</b>	1	38A46-IVBE	662532 <b>14987</b>
12 × 1 1/2 × 5	2,070	1	5110-10105	0000100110	32A46-HVBE	662532 <b>63128</b>	1	JUNTO IVDL	00200214301
	2,070	1	5NQ46-JVS3	690831 <b>59116</b>	32A46-IVBE	662532 <b>63145</b>			
	2,070	1	JNQ40-JV33	09003133110					
	,	1		600001 <b>60117</b>	32A46-JVBE	662532 <b>63120</b>			
	2,070	•	5NQ60-GVS3P	690831 <b>59117</b>	32A60-HVBE	662532 <b>63149</b>			
	2,070	1	5NQ60-JVS3	690831 <b>59118</b>	32A60-KVBE	662532 <b>63034</b>			
	2,070	1	3SGP60-GVSP	662532 <b>15030</b>					
	2,070	1	5SG46-GVSP	662532 <b>03453</b>					
	2,070	1	5SG46-IVS	662532 <b>02842</b>					
	2,070	1	5SG46-JVS	662532 <b>02926</b>					
	2,070	1	5SG60-GVSP	662532 <b>62596</b>					
12 x 2 x 1-1/4	2,070	1			32A46-KVBE	662532 <b>63461</b>			
	2,070	1			32A46-MVBE	662532 <b>63463</b>			
2 x 2 x 3	2,070	1			32A46-IVBE	662532 <b>63459</b>			
2 x 2 x 5	2,070	1			32A46-HVBE	662532 <b>63403</b>			
	2,070	1			32A46-IVBE	662532 <b>62302</b>			
	2,070	1			32A60-KVBE	662532 <b>63465</b>			
4 x 1/2 x 5	1,800	1	5SG80-KVS	662533 <b>63814</b>	32A60-KVBE	662533 <b>63761</b>			
14 x 3/4 x 5	1,800	1		33200000014	32A60-KVBE	662533 <b>63772</b>			
4 x 1 x 3	1,800	1	5SG46-IVS	662533 <b>63960</b>	JENOU INVDE				
14140	1,800	1	100-0100	0020000000000	32A46-IVBE	662533 <b>63914</b>			
	1,000	1			JZHHU-IVDE	0020000014			

\* 12" Type 01 Wheel Maximum RPM: NORPOR VP2 Wheels = 2,710; all others = 2,070 B Best Seller; performs well in a variety of applications for many satisfied customers

To maximize the performance of these wheels and finished part quality, refer to the beginning of this section and the "Dressing Solutions" section for truing and dressing products.

If you don't see the toolroom wheel you need in our stock listing contact your Norton rep for made-to-order availability including wheels made with our revolutionary new premium Quantum Prime ceramic and Vitrium<sup>3</sup> bond wheels.



### Vitrified Wheels For Steel Applications continued

		TIFR	BEST	C	BETTER			GOOD	3
		TRADENAME:		RTON SG	32A			38A / 57A	
		ABRASIVE:			Aluminum Oxide		_	Aluminum Oxide	)
SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.		PART #	SPEC.	PART #	MIN./STD. PKG.		PART #
Type 01 Straig	ht								
14 x 1/2 x 5	1,800	1	5SG80-KVS	662533 <b>63814</b>	32A60-KVBE	662533 <b>63761</b>			
14 x 3/4 x 5	1,800	1	J3000-KV3	00233303014	32A60-KVBE	662533 <b>63772</b>			
14 x 1 x 3	1.800	1	5SG46-IVS	662533 <b>63960</b>	32A46-IVBE	662533 <b>63914</b>			
14 X 1 X 3	1,800	1	33040-113	00233303900	32A60-IVBE	662533 <b>63927</b>			
14 x 1 x 5	1,800	1	5SG46-GVSP	662533 <b>64108</b>	32A46-GVBEP	662533 <b>64074</b>	1	38A46-HVBE	662533 <b>64043</b>
14 / 1 / 3	1,800	1	5SG46-HVSP	662533 <b>13990</b>	32A46-HVBE	662533 <b>63913</b>	1	38A60-IVBE	662533 <b>63947</b>
	1,800	1	5SG46-IVS	662533 <b>63970</b>	32A46-IVBE	662533 <b>63915</b>	1	38A60-JVBE	662533 <b>64051</b>
	1,800	1	5SG46-JVS	662533 <b>63971</b>	32A46-JVBE	662533 <b>63919</b>	1	38A60-KVBE	662533 <b>64053</b>
	1,800	1	00010 000	0020000011	32A46-KVBE	662533 <b>63921</b>	1	38A80-KVBE	662533 <b>64058</b>
	1,800	1	5SG60-IVS	662533 <b>63974</b>	32A60-GVBEP	662533 <b>64077</b>	1	57A60-KVBE	662533 <b>64065</b>
- - - -	1,800	1	5SG60-IVSP	662533 <b>63871</b>	32A60-HVBE	662533 <b>63926</b>	1	57A60-LVBE	662533 <b>64066</b>
	1,800	1	5SG60-JVS	662533 <b>63975</b>	32A60-JVBE	662533 <b>63930</b>	1	57A80-MVBE	662533 <b>64070</b>
	1,800	1	5SG60-KVS	662533 <b>63976</b>	32A60-KVBE	662533 <b>63932</b>		OTTIOO INTEE	00200001010
	1,800	1	5SG80-JVS	662533 <b>63979</b>	32A60-LVBE	662533 <b>64035</b>			
	1,800	1	5SG80-KVS	662533 <b>64003</b>	32A80-JVBE	662533 <b>64038</b>			
	1,800	1	00000 1110	0020004000	32A80-KVBE	662533 <b>64039</b>			
14 x 1 x 8	1,800	1			32A60-IVBE	662533 <b>63887</b>			
14 x 1-1/2 x 5	1,800	1	5NQ46-HVS3	662533 <b>87216</b>	32A46-GVBEP	662533 <b>64238</b>	1	38A46-HVBE	662533 <b>13968</b>
11/2/10	1.800	1		00200001210	32A46-HVBE	662533 <b>64335</b> B	1	38A46-HVBEP	662533 <b>13969</b>
	1,800	1	5NQ46-IVS3	690831 <b>59119</b>	32A46-HVBEP	662533 <b>64243</b>	1	38A46-IVBE	662533 <b>64090</b>
	1,800	1	5NQ46-JVS3	690831 <b>59120</b>	32A46-IVBE	662533 <b>64336</b>	1	38A46-JVBE	662533 <b>64240</b>
	1,800	1			32A46-JVBE	662533 <b>64337</b>	1	38A60-IVBE	662533 <b>64247</b>
	1,800	1			32A46-KVBE	662533 <b>64339</b>	· ·	00.000	0020000
	1,800	1	5NQ60-GVS3P	690831 <b>59122</b>	32A60-HVBE	662533 <b>64340</b>			
	1.800	1	5NQ60-JVS3	690831 <b>59124</b>	32A60-IVBE	662533 <b>64239</b>			
	1,800	1			32A60-JVBE	662533 <b>64341</b>			
	1,800	1	3SGP46-GVSP	662533 <b>06780</b>	32A60-KVBE	662533 <b>64342</b>			
	1,800	1	3SGP46-HVSP	662533 <b>07025</b>	32A80-JVBE	662533 <b>64246</b>			
	1.800	1	3SGP46-JVH	662533 <b>13976</b>					
	1,800	1	5SG46-GVSP	662533 <b>64320</b>					
	1,800	1	5SG46-HVSP	662533 <b>02625</b>					
	1,800	1	5SG46-IVS	662533 <b>64097</b>					
	1.800	1	5SG46-IVSP	662533 <b>02498</b>					
	1,800	1	5SG46-JVS	662533 <b>64098</b> B					
	1,800	1	5SG60-IVS	662533 <b>64100</b>					
	1,800	1	5SG60-JVS	662533 <b>64101</b>					
	1,800	1	5SG60-KVS	662533 <b>02160</b>					
	1,800	1	5SG80-KVS	662533 <b>63815</b>					
4 x 2 x 5	1,800	1	5SG60-JVS	662533 <b>64414</b>	32A46-IVBE	662533 <b>64323</b>			
	1,800	1			32A46-JVBE	662533 <b>64508</b>			
	1,800	1			32A46-KVBE	662533 <b>64509</b>			
	1.800	1			32A60-KVBE	662533 <b>64510</b>			

B Best Seller; performs well in a variety of applications for many satisfied customers

### Dressing: Single Point Dressing Tool Starting Recommendations

		Ceramic (NQ, Norto	n SG, TG, etc.), 37C & 39C Wheels	1	25A, 32A, 38A, 48A
WHEEL SIZES	TOOL SHANK DIAMETER	PRODUCT NO.	PART #		PRODUCT NO.
12" to 14"	3/8"	BCSG5M6	662601 <b>57009</b>		BC5M6
	7/16"	BCSG5M7	662601 <b>56907</b>		BC5M7
	standard recommendation; see t ol section for Furioso tools, engir			Alte	2
					-

i	25A, 32A, 38A, 48A	A, 53A, 57A, 64A, 86A Wheels
	PRODUCT NO.	PART #
	BC5M6	662601 <b>95004</b>
	BC5M7	662601 <b>95005</b>
3		



### Vitrified Wheels For Steel Applications continued

		TIER	BEST	C	BETTER			GOOD	3
		TRADENAME:	QUANTUM / NO	RTON SG	32A / 23A / 48	A		38A / 53A / 5	7A
			Ceramic Alumina		Aluminum Oxide			Aluminum Oxio	
SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.		PART #	SPEC.	PART #	MIN./STD. PKG.		PART #
Type 02 Cylinder									
	202				001404055				
6 x 1 x 4	3,600	1/10			32A46-KVBE	662528 <b>38308</b>	1/10	38A80-HVBE	662528 <b>38314</b>
Rim 1" Plate A47466	3,600	1/10			32A60-JVBE	662528 <b>38309</b>			
8 x 2 x 5-1/2	2,865						1/8	53A46-KVBE	66050044049
Rim 1-1/4"	2,000						1/0	JSA40-RVDE	662530 <b>44942</b>
Plate A50831									
10 x 2 x 7-1/2	2,295	1			32A54-JVG	662531 <b>61687</b>	1	53A60-KVG	662531 <b>61701</b>
Rim 1-1/4"	2,200				OLMOT OVG	00200101001	1	00/100 1110	00200101101
(ME62845)									
Plate A110170									
11 x 5	1,910	1			32A30-HVBE	662531 <b>61800</b>			
Rim 1" (ME33437)									
Tape Wound									
11 x 5	1,740	1			32A36-EVBEP	662531 <b>61780</b>	1	38A46-GVBE	662531 <b>61807</b>
Rim 1" (ME52726)	1,910	1			32A36-GVBEP	662531 <b>61808</b>			
Tape Wound	1,910	1			32A46-HVBE	662531 <b>61893</b>			
18 x 5 Rim 1-1/2"	1,065	1			32A30-E19VCP	662534 <b>65142</b>			
(ME15536)									
Tape Wound 18 x 5 Rim 1-1/2"	1,170	1			23A30-F19VCP	662534 <b>65235</b>			
(ME52719) Tape Wound	1,170	I			23430-1 19401	00203403233			
Includes Strips									
Type 05 Recessed 0						00040407500			
3/4 x 3/4 x 1/4 Recess 1/S 3/8 x 3/8	43,290	5/40			32A60-KVBE	662434 <b>27582</b>			
1 x 1 x 1/4 Recess 1/S 1/2 x 1/2	32,470	5/40			32A60-KVBE	662434 <b>27769</b>			
1 x 1 x 3/8	32,470	5/40			32A60-KVBE	662434 <b>27773</b>			
Recess 1/S 1/2 x 1/2	,	-,							
1-1/4 x 1 x 3/8	25,975	5/40			32A60-KVBE	662434 <b>27799</b>			
Recess 1/S 5/8 x 1/2	,								
1-1/2 x 1 x 3/8	25,975	5/40			32A60-KVBE	662434 <b>27938</b>			
Recess 1/S 5/8 x 1/2									
1-1/2 x 1 x 3/8	21,645	5/40			32A60-KVBE	662434 <b>27937</b>			
Recess 1/S 3/4 x 1/2	40.005	E (40)			00400 10 005	00040400000			
$2 \times 1 \times 3/8$	16,235	5/40			32A60-KVBE	662434 <b>28329</b>			
Recess 1/S 3/4 x 1/2	16,235	10/20			32A60-KVBE	66040400000			
2 x 1-1/2 x 5/8 Recess 1/S 1 x 3/4	10,233	10/30			JZAOU-KVBE	662434 <b>28332</b>			
7 x 3/4 x 1-1/4	3,600	1/10	5SG46-IVS	662529 <b>41976</b>	32A46-HVBE	662529 <b>42209</b>	1/10	38A46-IVBE	662529 <b>42222</b>
Rec 1/S 2-3/4 x 1/4	3,600	1/10		00202041370	32A46-IVBL	662529 <b>42205</b>	1/10	38A60-IVBE	662529 <b>42225</b>
	3,600	1/10			32A46-JVBE	662529 <b>42213</b>	1/10	JUNIOU TYDE	JULULJTLLLJ
	3,600	1/10			32A60-IVBE	662529 <b>42217</b>			
	3,600	1/10			32A60-JVBE	662529 <b>42218</b>			
	3,600	1/10			32A60-KVBE	662529 <b>42205</b>			
7 x 1 x 1-1/4	3,600	1/10			32A46-GVBEP	662529 <b>42826</b>			
Rec 1/S 2-3/4 x 1/2	3,600	1/10	3SGR46-HVP2	662529 <b>16228</b>	32A46-HVBE	662529 <b>42688</b>			
					32A46-HVBEP	662529 <b>42828</b>			
100 1/0 2 0/ 1/2 1/2	3,600		5SG46-IVS	662529 <b>42318</b>	SZA40-TIVDEF	UULULUTULU			
100 1/0 2 0/1 / 1/2		1/10 1/10	5SG46-IVS	662529 <b>42318</b>	32A40-HVBE	662529 <b>42691</b>			
	3,600	1/10	5SG46-IVS 5SG46-JVS	662529 <b>42318</b> 662529 <b>42427</b>					
	3,600 3,600	1/10 1/10			32A46-IVBE	662529 <b>42691</b>			
	3,600 3,600 3,600	1/10 1/10 1/10			32A46-IVBE 32A46-KVBE	662529 <b>42691</b> 662529 <b>42708</b>			
	3,600 3,600 3,600 3,600 3,600	1/10 1/10 1/10 1/10	5SG46-JVS	662529 <b>42427</b>	32A46-IVBE 32A46-KVBE 32A60-IVBE	662529 <b>42691</b> 662529 <b>42708</b> 662529 <b>42699</b>			

Continued

If you don't see the toolroom wheel you need in our stock listing contact your Norton rep for made-to-order availability including wheels made with our revolutionary new premium Quantum Prime ceramic and Vitrium<sup>3</sup> bond wheels.



### Vitrified Wheels For Steel Applications continued

		TIER:	BEST		BETTER			GOOD	0
		TRADENAME:	QUANTUM / NO	DRTON SG	32A / 48A		-	38A / GEMIN	
		ABRASIVE:	Ceramic Alumin	а	Aluminum Oxid	e	_	Aluminum Oxio	le
SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.	SPEC.	PART #	SPEC.	PART #	MIN./STD. PKG.	SPEC.	PART #
Type 05 Recessed	One Side 🛛 🔼								
7 x 1 x 1-1/4	3,600	1/10	5NQ46-IVS3	662533 <b>50691</b>	32A46-HVBE	662529 <b>42689</b>	1/10	38A46-HVBE	662529 <b>42707</b>
Rec 1/S 3 x 1/2	3,600	1/10	5SG46-IVS	662529 <b>01814</b>	32A46-IVBE	662529 <b>42690</b>	1/10	38A46-IVBE	662529 <b>42809</b>
100 1/0 0 X 1/2	3,600	1/10	30040 103	00202001014	32A60-IVBE	662529 <b>42686</b>	1/10	38A46-KVBE	662529 <b>42793</b>
	3,600	1/10	5SG60-IVS	662529 <b>06907</b>	JZA00-IVDL	00232342000	1/10	38A60-IVBE	662529 <b>42755</b>
	3,600	1/10	33000-143	00202000007			1/10	38A60-JVBE	662529 <b>42816</b>
	3,600						1/10	38A60-KVBE	662529 <b>42817</b>
	3,600						10/10	Gemini 46-J	662532 <b>46835</b>
′ x 1-1/4 x 1-1/4	3,600	1/5			32A46-HVBE	662529 <b>42833</b>	10/10	Gemma 40-3	00233240033
Rec 1/S 2-3/4 x 5/8	3,600	1/5			32A40-ITVBL	662529 <b>42859</b>			
160 1/0 2-0/4 x 0/0	3,600	1/5			32A00-IVBE	662529 <b>42835</b>			
′ x 1-1/2 x 1-1/4	3,600	1/5			32A00-JVBE 32A46-IVBE	662529 <b>42833</b>			
Rec 1/S 2-3/4 x 3/4	,				32A40-IVBE	662529 <b>42844</b>			
	3,600	1/5 1/10				662530 <b>44213</b>			
3 x 3/4 x 1-1/4	3,105	1/10			32A46-IVBE	002030 <b>44213</b>			
Rec 1/S 3-1/4 x 1/4	2 600						10/10	Comini 46	660500 <b>46050</b>
3 x 1 x 1-1/4	3,600						10/10	Gemini 46-J	662532 <b>46850</b>
Rec 1/S 3 x 1/2	0.105	1/10	FCC 4C IV/C	00050040540		00050044700			
3 x 1 x 1-1/4 Rec 1/S 3-1/4 x 1/2	3,105	1/10	5SG46-IVS	662530 <b>13543</b>	32A46-IVBE	662530 <b>44790</b>			
	3,600	1/10	500 40 IV/0	00050000000	32A46-JVBE	662530 <b>44382</b>			
	3,600	1/10	5SG46-JVS	662530 <b>03301</b>					
	3,600	1/10			32A60-IVBE	662530 <b>44753</b>			
	3,600	1/10			32A60-KVBE	662530 <b>44810</b>			
0 x 3/4 x 2 Rec Side A 5 x 3/16 Face Bev Side A 75 Deg from 1/8" Flat	2,485	1			32A60-JVBE	662531 <b>60189</b>			
12 x 1-1/2 x 3 Rec 1/S 6 x 1/2	2,070	1			32A46-IVBE	662532 <b>63186</b>			
2 x 1-1/2 x 5	2,070 / 2,710*	1	3SGR46-HVP2	662532 <b>20904</b> *	32A46-HVBEP	662532 <b>63180</b>	1	38A46-IVBE	662532 <b>63175</b>
lec 1/S 7-1/2 x 1/2	2,070	1	5SG46-GVSP	662532 <b>63127</b>	32A46-IVBE	662532 <b>63166</b>			
	2,070	1			32A46-JVBE	662532 <b>63169</b>			
	2,070	1	5SG46-IVS	662532 <b>02883</b>	32A46-KVBE	662532 <b>63170</b>			
	2,070	1			32A60-KVBE	662532 <b>63172</b>			
			5SG60-IVSP	662532 <b>63050</b>					
4 x 1-1/2 x 5	1,800 / 2,320*	1			32A46-HVBE	662533 <b>64359</b>			
Rec 1/S 8 x 1/2	1,800 / 2,320*	1	3SGR46-HVP2	662533 <b>19954</b> *	32A46-IVBE	662533 <b>64300</b>			
	1,800 / 2,320*	1	3SGR60-HVP2	662533 <b>19956</b> *	32A46-KVBE	662533 <b>64362</b>			
	1,800	1	5SG46-IVS	662533 <b>64102</b>	32A60-JVBE	662533 <b>64364</b>			
	1,800	1	5SG46-IVS3	662434 <b>94106</b>	32A60-KVBE	662533 <b>64365</b>			
	1,800	1	5SG46-JVS	662533 <b>64103</b>					
	1,800	1	5SG60-IVS	662533 <b>64104</b>					
	1,800	1	5SG60-JVS	662533 <b>64105</b>					
4 x 2 x 5	2,320	1			48A46-HVP2	662533 <b>19941</b>	1	25A46-HVP2	662533 <b>19945</b>
Rec 1/S 8 x 1/2	2,320	1	3SGR46-HVP2	662533 <b>19937</b>	10/110/110/12	30200010041	1	38A46-HVP2	662533 <b>19949</b>
	2,320		30011011012	30200013301			1	38A60-HVP2	662533 <b>19951</b>
4 x 2 x 5	1,800	1			32A60-KVBE	662533 <b>64390</b>	1	00/100 11112	00200013331

\* 12" Type 05 Wheel Maximum RPM: NORPOR VP2 Wheels = 2,710; all others = 2,070

\* 14" Type 05 Wheel Maximum RPM: NORPOR VP2 Wheels = 2,320; all others = 1,800

To maximize the performance of these wheels and finished part quality, refer to the beginning of this section and the "Dressing Solutions" section for truing and dressing products.

If you don't see the toolroom wheel you need in our stock listing contact your Norton rep for made-to-order availability including wheels made with our revolutionary new premium Quantum Prime ceramic and Vitrium<sup>3</sup> bond wheels.



## Vitrified Wheels For Steel Applications continued

			BEST NORTON SG		BETTER 32A / 48A		I	G00D 38A / 25A / 53	3
			Ceramic Alumina		<b>32A / 46A</b> Aluminum Oxide		-	Aluminum Oxid	
SIZE (D x T x H)	MAX. RP	MIN./STD. PKG.		PART #	SPEC.	PART #	MIN./STD. PKG.		PART #
Type 06 Straight Cup			0.10.				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
3-1/2 x 1-1/2 x 1/2 Rim 1/2" Back 1/2"	6,550						1/10	38A60-KVBE	662435 <b>29372</b>
100mm x 50mm x 20mm Rim 10mm, Back 13mm	6,550						1/10	38A80-JVBE	662435 <b>30429</b>
4 x 1-1/2 x 1/2 Rim 1/2" Back 1/2"	5,730	1/10			32A60-KVBE	662435 <b>30218</b>			
4 x 1-1/2 x 1-1/4 Rim 1/2" Back 1/2"	5,730						1/10	38A60-KVBE	662435 <b>30221</b>
4 x 2 x 20mm Rim 3/8" Back 1/2"	5,730						1/10	38A80-JVBE	662435 <b>30523</b>
5 x 1-1/2 x 1-1/4	4,585	1/10			32A46-KVBE	662528 <b>30832</b>	1/10	38A46-KVBE	662528 <b>30842</b>
Rim 3/8" Back 3/8"	4,585	1/10			32A60-JVBE	662528 <b>30837</b>	1/10	38A60-KVBE	662528 <b>30846</b>
Face Y (ME19243)	4,585	1/10			32A60-KVBE	662528 <b>30838</b>			
5 x 2 x 5/8 Rim 1/2" Back 1/2"	4,585	1/10			32A60-JVBE	662528 <b>30987</b>			
6 x 1-1/2 x 1/2 Rim 1" Back 1/2"	3,820	1/10			32A46-KVBE	662528 <b>38458</b>			
6 x 2 x 1-1/4	3,820	1/10			32A46-IVBE	662528 <b>38544</b>	1/10	38A60-KVBE	662528 <b>38486</b>
Rim 1/2" Back 1/2"	3,820	1/10			32A60-JVBE	662528 <b>38538</b>			
7 x 2 x 1-1/4 Rim 1/2" Back 1/2"	3,275	1/8			32A46-JVBE	662529 <b>42856</b>			
9-1/2 x 1-1/2 x 1-1/2 Rim 1-1/2" Back 5/8"	2,415						1	53A46-LVBE	662531 <b>49136</b>
10 x 4 x 1-1/2 Rim 1-1/4" Back 1" Tape Wound	2,295						1	38A46-IVBE	662531 <b>61797</b>
12 x 2-1/2 x 7 Rim 1-1/2" Back 7/8"	1,910	1			32A46-LVBE	662532 <b>63614</b>			
Type 07 Recessed Two	Sides								
12 x 2 x 3 Rec 2/S 5-1/2 x 3/8	2,070	1			32A46-IVBE	662532 <b>63588</b>			
12 x 2 x 3	2,070	1			32A46-HVBE	662532 <b>63590</b>			
Rec 2/S 7-1/4 x 1/2	2,070	1			32A46-JVBE	662532 <b>63348</b>			
12 x 2 x 5 Rec 2/S 7-1/4 x 1/2	2,070	1			32A46-IVBE	662532 <b>63594</b>			
12 x 2 x 5	2,070	1	5SG46-JVS	662532 <b>09930</b>	32A46-HVBE	662532 <b>63591</b>	1	38A46-IVBE	662532 <b>63600</b>
Rec 2/S 7-1/2 x 1/2	2,070	1			32A46-HVBEP	662532 <b>63603</b>			
	2,070	1			32A46-JVBE	662532 <b>63483</b>			
	2,070	1			32A46-KVBE	662532 <b>63596</b>			
	2,070	1			32A60-IVBE	662532 <b>63597</b>			





### Vitrified Wheels For Steel Applications continued

			7		6				
		TIER:	BEST		BETTER			GOOD	
		TRADENAME:			32A			38A	
		ABRASIVE:	Ceramic Alumina		Aluminum Oxide		_	Aluminum Oxide	
SIZE (D x T x H)	MAX. RPI	M MIN./STD. PKG.	SPEC.	PART #	SPEC.	PART #	MIN./STD. PKG.	SPEC.	PART #
Type 11 Flaring Cup		1							
3/2-1/4 x 1-1/4 x 3/4	7,640	1/10			32A60-JVBE	662435 <b>29183</b>	1/10	38A60-JVBE	662435 <b>29197</b>
Rim 1/4" Back 3/8" Face Z (ME21560)	7,640	1/10			32A60-KVBE	662435 <b>29187</b>			
3-1/2/2-3/4 x 1-1/2 x 1-1/4 Rim 1/4" Back 3/8" Face Z (ME24327)	7,640	1/10			32A60-KVBE	662435 <b>29358</b>			
4/3 x 1-1/2 x 1-1/4	5,730	1/5	5SG46-IVSP	662435 <b>30127</b>	32A46-IVBE	662435 <b>30240</b>	1/10	38A46-KVBE	662435 <b>30378</b>
Rim 1/4" Back 1/2"	5,730	1/5	5SG46-KVS	662435 <b>03342</b>		662435 <b>30246</b>	1/10	38A60-JVBE	662435 <b>30387</b>
Face Z (ME19237)	5,730	1/5	F0000 11/2	00040585555	32A60-JVBE	662435 <b>30256</b>	1/10	38A60-KVBE	662435 <b>30390</b>
	5,730	1/5	5SG60-JVS	662435 <b>30415</b>	32A60-KVBE	662435 <b>30361</b>	1/10	38A80-JVBE	662435 <b>30393</b>
	5,730	1/5	F0000 11/0	00040500447	204.00 1/1/05	00040500000	1/10	38A80-KVBE	662435 <b>30395</b>
	5,730 5,730	1/5 1/5	5SG60-LVS 5SG80-JVS	662435 <b>30417</b> 662435 <b>30419</b>	32A80-KVBE	662435 <b>30368</b>			
4-1/2/3-3/4 x 2 x 1-1/4 Rim 1/4"	5,730	1/5	33000-343	002433 <b>30419</b>	32A46-KVBE	662528 <b>30539</b>			
Back 1/2"(ME20115)									
5/3-3/4 x 1-3/4 x 1-1/4	4,585	1/5	5SG46-KVS	662528 <b>03291</b>	32A46-JVBE	662528 <b>30858</b>	1/5	38A46-KVBE	662528 <b>30971</b>
Rim 1/4" Back 1/2" Face Z (ME21563)	4,585	1/5	5SG60-KVS	662528 <b>30737</b>	32A46-KVBE	662528 <b>30859</b>	1/5	38A60-JVBE	662528 <b>30973</b>
1 aug 2 (IVIL21303)	4,585 4,585	1/5 1/5	5SG60-LVS	662528 <b>30736</b>	32A60-JVBE	662528 <b>30962</b>	1/5	38A60-KVBE	662528 <b>30975</b>
	4,585	1/5	33600-LV3	00202030730	32A60-JVBE	662528 <b>30964</b>			
6/4-1/2 x 2 x 1-1/4	3,820	1/5			32A46-JVBE	662528 <b>38491</b>	1/5	38A46-KVBE	662528 <b>38495</b>
Rim 3/8" Back 1/2"	3,820	1/5			32A46-KVBE	662528 <b>38528</b>	1/5	38A60-KVBE	662528 <b>38497</b>
Face Z (ME19241)	3,820	1/5			32A60-JVBE	662528 <b>38492</b>	.,.		
7/5 x 2 x 1-1/4 Rim 3/4" Back 1/2" (ME19242)	3,275	1/8			32A46-JVBE	662529 <b>42959</b>	1/8	38A46-HVBE	662529 <b>42963</b>
Type 12 Dish 🛛 🔪									
4 x 1/2 x 3/4 (ME19226)	6,207	1/10			32A60-KVBE	662435 <b>30067</b>			
6 x 1/2 x 1-1/4	4,140	1/10	5SG60-LVS	662528 <b>36574</b>	32A46-JVBE	662528 <b>36860</b>	1/10	38A60-JVBE	662528 <b>36977</b>
(ME19229)	4,140	1/10			32A60-JVBE	662528 <b>36966</b>			
6 x 3/4 x 1-1/4	4,140	1/10	5SG60-KVS	662528 <b>37771</b>	32A46-KVBE	662528 <b>37732</b>			
(ME19230)	4,140	1/10			32A60-JVBE	662528 <b>37734</b>			
	4,140	1/10			32A60-KVBE	662528 <b>37735</b>			
7 x 1/2 x 1-1/4	3,600	1/10			32A46-KVBE	662529 <b>41644</b>			
(ME13717) 8 x 3/4 x 1-1/4 (ME19231)	3,600 3,600	1/10			32A60-KVBE	662529 <b>41647</b>	1/10	38A60-KVBE	662530 <b>44319</b>
10 x 1 x 1 (ME38702)	2,485	1			32A54-JVBE	662531 <b>61196</b>			
10 x 1 x 1-1/4 (ME38702)	2,485	1			32A54-JVBE	662531 <b>61197</b>			
Type 20 Concave One S	ide 🔝								
14 x 1-1/2 x 5	1,800	1	5SG60-JVS	662533 <b>02265</b>	32A60-JVBE	662533 <b>64250</b>			
Concave from Periphery 1/2" Deep to 8" Flat Spot	1,800	1			32A60-KVBE	662533 <b>64332</b>			
Type 35 Plate Mounted	Disc								
9 x 2 x 4-15/16	2,550	1			32A46-MVBE	662530 <b>49115</b>			
Rim 2-1/32" (ME31130)	2,550	1			32A60-J25VCF2	662530 <b>06557</b>			
Plate A47248	2,550	1			32A70-JVBEP	662530 <b>49112</b>			

If you don't see the toolroom wheel you need in our stock listing contact your Norton rep for made-to-order availability including wheels made with our revolutionary new premium Quantum Prime ceramic and Vitrium<sup>3</sup> bond wheels.





These sharp silicon carbide, vitrified wheels are used for grinding non-ferrous applications.

#### Applications:

Shapes: Size Range: Grit Range: Abrasive Grain: Use 39C (green silicon carbide) for cemented carbides, titanium, metal matrix composites and plasma sprayed materials. Use 37C (black silicon carbide) on 300 series stainless steels, irons, nonferrous metals (aluminum, brass, bronze and copper) and non-metallic materials (stone, marble, rubber, ceramics and glass). Type 01 Straight, Type 02 Cylinder, and Type 05 Recessed 1 Side 3" – 14" diameter 24 – 120 39C Green Silicon Carbide, 37C Black Silicon Carbide

Vitrified Wheels For Non-Ferrous Applications

			GOOD	
		TRADENAME:	39C / 37C	
		ABRASIVE:	Silicon Carbide	
SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.	SPEC.	PART #
Type 01 Straight				
3 x 1/2 x 1/2	10,825	10/50	37C60-MVMT	662435 <b>29041</b>
3 x 1 x 1/2	10,825	10/10	37C60-MVMT	662435 <b>29166</b>
	10,825	10/10	37C80-HVMT	662435 <b>29170</b>
	10,825	10/10	37C80-MVMT	662435 <b>29171</b>
	10,825	10/10	37C100-HVMT	662435 <b>29172</b>
	10,825	10/10	37C100-MVMT	662435 <b>29070</b>
3-1/2 x 1-1/2 x 7/8	7,095	1/10	37C24-SVK	662435 <b>29339</b>
(ME622)	7,095	1/10	37C30-SVK	662435 <b>29338</b>
4 x 1/2 x 1/2	8,120	1/10	37C60-MVMT	662435 <b>29960</b>
	8,120	1/10	39C100-IVMT	662435 <b>30064</b>
6 x 1/2 x 1-1/4	4,140	1/10	39C60-IVMT	662528 <b>36706</b>
	4.140	1/10	39C80-IVMT	662528 <b>36816</b>
	4,140	1/10	39C100-IVMT	662528 <b>36827</b>
	4,140	1/10	39C120-IVMT	662528 <b>36836</b>
6 x 3/4 x 1-1/4	4,140	1/10	39C60-IVMT	662528 <b>37584</b>
	4,140	1/10	39C80-IVMT	66252837598
	4,140	1/10	39C100-IVMT	66252837717
6 x 1 x 1-1/4	4,140	1/10	39C60-IVMT	66252838161
	4,140	1/10	39C80-IVMT	662528 <b>38173</b>
7 x 1/4 x 1-1/4	3,600	1/10	39C80-JVMT	662529 <b>40007</b>
	3,600	1/10	39C100-IVMT	662529 <b>40109</b>
	3,600	1/10	39C120-IVMT	66252940111
7 x 1/2 x 1-1/4	3,600	1/10	37C46-JVMT	662529 <b>41488</b>
	3,600	1/10	37C60-0VMT	662529 <b>41498</b>
	3,600	1/10	39C60-IVMT	662529 <b>41609</b>
	3,600	1/10	39C60-JVMT	662529 <b>41611</b>
	3,600	1/10	39C60-KVMT	662529 <b>41613</b>
	3,600	1/10	39C80-IVMT	662529 <b>41617</b>
	3,600	1/10	39C80-JVMT	662529 <b>41618</b>
	3,600	1/10	39C100-HVKMT	662529 <b>41622</b>
	3,600	1/10	39C100-IVMT	662529 <b>41624</b>
	3,600	1/10	39C120-IVMT	662529 <b>41632</b>
7 x 3/4 x 1-1/4	3,600	1/10	39C80-JVMT	662529 <b>42096</b>
	3,600	1/10	39C100-JVMT	662529 <b>42104</b>
7 x 1 x 1-1/4	3,600	1/10	39C60-IVMT	662529 <b>42666</b>
	3,600	1/10	39C80-IVMT	662529 <b>42413</b>
	3,600	1/10	39C120-IVMT	662529 <b>42416</b>
8 x 1/4 x 1-1/4	3,600	1/10	39C80-IVMT	662530 <b>14526</b>
8 x 3/8 x 1-1/4	3,600	1/10	39C80-IVMT	699366 <b>64144</b>
8 x 1/2 x 1-1/4	3,600	1/10	39C60-IVMT	662530 <b>44013</b>
· ·	3,600	1/10	39C80-IVMT	662530 <b>44015</b>

		TIER:	G00D	
		TRADENAME:	39C / 37C	
	MAX. RPM	ABRASIVE:	Silicon Carbide	DADT #
SIZE (D x T x H)		MIN./STD. PKG.	SPEC.	PART #
Type 01 Straight				
8 x 3/4 x 1-1/4	3,600	1/10	39C60-JVMT	662530 <b>44312</b>
	3,600	1/10	39C80-IVMT	662533 <b>50645</b>
	3,600	1/10	39C100-IVMT	662530 <b>44314</b>
8 x 1 x 1-1/4	3,600	1/10	39C60-JVMT	662530 <b>44770</b>
	3,600	1/10	39C80-IVMT	662530 <b>44425</b> B
	3,600	1/10	39C100-IVMT	662530 <b>44379</b>
10 x 1 x 3	2,485	1	39C60-JVMT	662531 <b>60348</b>
10 x 1-1/2 x 2	2,485	1	39C60-JVMT	662531 <b>61640</b>
12 x 1 x 3	2,070	1	39C60-IVMT	662532 <b>62985</b>
12 x 1 x 5	2,070	1	39C60-IVMT	662532 <b>62884</b>
	2,070	1	39C80-JVMT	662532 <b>62988</b>
14 x 1 x 5	1,800	1	39C60-JVMT	662533 <b>64206</b>
	1,800	1	39C80-JVMT	662533 <b>64208</b>
14 x 1-1/2 x 5	1,800	1	39C60-JVMT	662533 <b>64242</b>
14 x 2 x 5	1,800	1	39C60-JVMT	662533 <b>64322</b>
Type 02 Cylinder				
6 x 1 x 4	3,600	1/10	39C60-IVMT	662528 <b>38322</b>
Rim 1"	3,600	1/10	39C60-JVMT	662528 <b>38324</b>
Plate A47466	3,600	1/10	39C80-IVMT	662528 <b>38327</b>
	3,600	1/10	39C100-IVMT	662528 <b>38330</b>
	3,600	1/10	39C120-IVMT	662528 <b>38193</b>
6 x 1-1/4 x 4 Rim 1" Plate A47466	3,600	1/10	39C60-IVMT	662528 <b>38345</b>
10 x 2 x 7	2,100	1	39C60-HVMT	662531 <b>61675</b>
Rim 1-1/2" Plate A83831	2,295	1	39C60-JVMT	662531 <b>61678</b>
Type 05 Recessed	d One Side			

14 x 1-1/2 x 5 1,800 1 39C60-IVMT Rec 1/S 8 x 1/2

B = Best Seller; performs well in a variety of applications for many satisfied customers

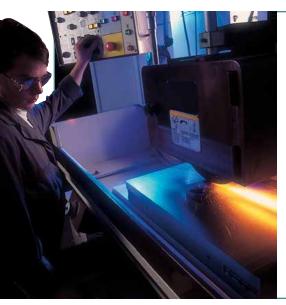


#### VMT Bond Technology

Lower power draw for reduced cycle time and improved wheel life.

66253364328





## PRECISION GRINDING WHEELS Large Surface Grinding Wheels

Large surface grinding wheels are generally used to grind flat stock or flat surfaces within a workpiece. These wheels are typically used on horizontal spindle machines. Applications can vary from heavy, rapid stock removal to precision tolerance operations.

#### Applications:

Shape:

Size Range:

Abrasive Grain:

Grinding large molds and dies
 Sharpening knives, blades and cutlery
 Manufacturing broaches
 Type 01 Straight, Type 07 Recessed 2 Sides
 Stock: 20" diameter
 1" - 6" thickness

· Producing flat stock

Aluminum Oxide

### Cross Reference Guide

	GOOD
NORTON	GEMINI
Camel	91A
Cincinnati Milacron	29A, 97A
Radiac	WAA, 97A, 45A



#### Good choice when a broad range of parts are ground on a few machines

## GEMINI ALUMINUM OXIDE BLEND

- · Specially blended aluminum oxide abrasive for many surface grinding applications
- · Porous bond is cool cutting on medium to wide contact areas; high chip clearance and stock removal
- Faster grinding rates remove stock, lower rates produce finer finishes; ideal when a broad range of tool steel parts are ground on a few machines

			TIFR:	GOOD	
			TRADENAME:	GEMINI	
			ABRASIVE:		
SIZE (D x T x H)	RECESS	MAX. RPM	STD. PKG.	SPEC.	PART #
Type 01 Straight W	heels				
20 x 1 x 8	-	1,625	1	Norton Gemini A46-H	662532 <b>46937</b>
20 x 2 x 10	-	1,625	1	Norton Gemini A36-J	662532 <b>46956</b>
Type 07 Recessed	Two Sides				
20 x 2 x 8	Recess 2 Sides 11-1/2 x 1/2	1,625	1	Norton Gemini 59A46-I	662532 <b>46949</b>
	Recess 2 Sides 11-1/2 x 1/2	1,625	1	Norton Gemini A46-G VSP	662532 <b>46953</b>
20 x 3 x 8	Recess 2 Sides 11-1/2 x 1/2	1,625	1	Norton Gemini A46-G VSP	662532 <b>46972</b>
	Recessed 2 Sides 11-1/2 x 1/2	1,625	1	Norton Gemini A46-H	662532 <b>46969</b>
	Recess 2 Sides 11-1/2 x 1/2	1,625	1	Norton Gemini A46-I	662532 <b>46960</b>
20 x 3 x 10	Recess 2 Sides 12-1/4 x 3/4	1,625	1	Norton Gemini 59A46-I VSP	662530 <b>58315</b>
	Recess Side A 12-1/2 x 1/2, Side B 12-1/2 x 1	1,625	1	Norton Gemini A36-J VSP	662532 <b>46980</b>
	Recess Side A 12-1/2 x 1/2, Side B 12-1/2 x 1	1,625	1	Norton Gemini A46-D VSP	662532 <b>46988</b>

There are many more sizes and specifications available made-to-your-order. Contact your Norton representative with your custom requirements.

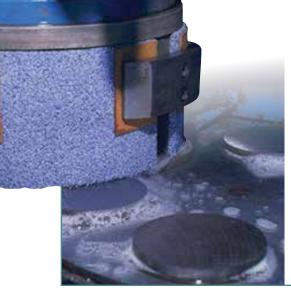


## PRECISION GRINDING WHEELS Surface Grinding Segments

Surface grinding segments are generally used to grind flat stock or flat surfaces within a workpiece. The segment moves over the workpiece in a flat plane or vice versa. Applications can vary from heavy, rapid stock removal to precision tolerance operations.

#### **Applications:**

- Vertical spindle surface grinding · Grinding large molds, dies and plates
- Producing flat stock
- **Abrasive Grain:**
- - · Sharpening knives, blades, cutlery Ceramic Alumina, Aluminum Oxide



### Material-to-Product Recommendation Guide

	HEAVY-DUTY				GENERAL-DUTY		
MATERIAL	QuantumX 20-G	QuantumX 30-F	86A24-G20VTX2	86A30-E20VTX2	Gemini 30-E	Gemini 30-F	Gemini 30-G
Aluminum				•	•		
Bronze (hard)							•
Cast Iron	•						•
Hastalloy			•		•		
Inconel		•			•		
Hardened Steel	•				•		
High Speed Steel	•				•		
Soft Steel			•	•			•
Stainless Steel 300				•	•		
Stainless Steel 400						•	

### Segment Blueprints



### **Troubleshooting Guide**

PROBLEM	CORRECTION
Segment acting too hard	Increase rate of downfeed
	Increase table rotation speed (watch amp-meter)
	Dress more frequently
	Consider reducing area of table load
Segment acting too soft	Decrease rate of downfeed
	Decrease table rotation speed
	Check for abnormal machine vibration
Glazing and/or burning	Choose a softer grade
	Increase table speed (watch amp-meter)

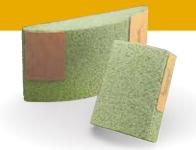
### FCH TIP

- Choose as coarse a grit size as possible in order to remove stock as quickly as possible (in big chips).
- To maximize production, choose the hardest grade possible that will not overload the machine.

It is the user's responsibility to refer to and comply with ANSI B7.1



## PRECISION GRINDING WHEELS Surface Grinding Segments



Best choice for all low-, medium-, and high-force applications ranging from cast iron, to stainless steel and hard-to-grind alloys

## QUANTUM AND QUANTUM X CERAMIC ALUMINA

- Revolutionary, versatile engineered ceramic grain shape and chemistry produce highest productivity with the lowest total grinding costs
- 33% to 100% longer life versus competitive ceramic products, 30% plus higher metal removal rate, with 15% plus lower threshold power
- Excellent performance on both old and new machines

Better choice for versatile, consistent performance

## 86A ALUMINUM OXIDE

- · Sharper aluminum oxide abrasive grain delivers cooler-cutting, consistent performance
- Segments available for Hanchett, Mattison Norton, Sterling, Abrasive Associates, Cortland, and Cortland Bonus
  Grind machines
- · Better choice with porous vitrified bond for increasesd chip clearance and cool cutting in heat-sensitive applications



Good choice when a broad variety of parts are ground on a few machines

## GEMINI ALUMINUM OXIDE BLEND

- · Specially blended aluminum oxide abrasive for many surface grinding applications
- The porous vitrified bond increases chip clearance and maximizes coolant flow, reduces loading, and is cool cutting in heat-sensitive applications
- For use in Hanchett, Mattison, and Norton, and Cortland and Cortland Bonus Grind chucks on surface grinding machines

									-	
				TIER:	BEST		BETTER		GOOD	
				TRADENAME:	QUANTUM/QUAN	TUM X	86A		GEMINI	
				ABRASIVE:	Ceramic Alumina		Aluminum Oxide		Aluminum Oxide	Blend
NIDTH	THICK	HEIGHT	BLUEPRINT NO.	STD. PKG.	SPEC.	PART #	SPEC.	PART #	SPEC.	PART #
i	1-1/2	6	ME20579	8	QUANTUMX 20-G	662533 <b>50603</b>			Gemini 30-E	662530 <b>50295</b>
				8			86A24-H20VTX2	662533 <b>50602</b>	Gemini 30-F	662530 <b>50297</b>
				8			86A30-F12VBEP	614636 <b>50273</b>	Gemini 30-G	662530 <b>50299</b>
-13/16	1-1/2	6	ME30309	8			86A24-G20VTX2	662533 <b>50595</b>		
1-1/4	2-1/4	6	ME30777	5	QUANTUMX 20-G	662533 <b>50607</b>	86A24-E12VBEP	614636 <b>50279</b>	Gemini 30-E	699366 <b>99706</b>
				5	QUANTUMX 20-H	662533 <b>50608</b>	86A24-G20VTX2	662533 <b>50605</b>	Gemini 30-F	699366 <b>99709</b>
				5	3NQP36-G12VSP	662532 <b>51527</b>			Gemini 30-G	699366 <b>99710</b>
				5			86A30-E12VBEP	614636 <b>50285</b>	Gemini 30-H	662434 <b>47588</b>
				5			86A30-F12VBEP	614636 <b>50287</b>		
				5			86A30-G12VBEP	614636 <b>50289</b>		
				5			86A46-D12VBEP	614636 <b>50442</b>		
1-1/4	2-1/4	8	ME30777	5	QUANTUMX 20-G	662533 <b>50612</b>	86A24-G20VTX2	662533 <b>50609</b>	Gemini 30-E	699366 <b>99712</b>
				5	QUANTUMX 20-H	662533 <b>50615</b>			Gemini 30-F	699366 <b>99716</b>
				5	QUANTUMX 30-E	662533 <b>87810</b>	86A30-E20VTX2	662533 <b>87812</b>	Gemini 30-G	699366 <b>99717</b>
				5	QUANTUMX 30-F	662533 <b>87811</b>	86A30-F20VTX2	662533 <b>87813</b>	Gemini 30-H	662434 <b>47591</b>
				5	3NQP30-F12VSP	662532 <b>38276</b>			Gemini 30-I	662434 <b>47592</b>
1-1/4	3	8	ME100703B	4	QUANTUMX 20-G	662533 <b>50623</b>	86A24-G20VTX2	662533 <b>50617</b>	Gemini 30-E	699366 <b>99725</b>
				4	QUANTUMX 20-H	662533 <b>50624</b>			Gemini 30-F	699366 <b>99727</b>
				4	QUANTUMX 30-E	662533 <b>87808</b>			Gemini 30-G	699366 <b>99728</b>
				4	QUANTUMX 30-F	662533 <b>87809</b>			Gemini 30-H	662434 <b>47594</b>
				4	3NQP30-F12VSP	690831 <b>56473</b>			Gemini 30-I	662434 <b>47595</b>
		1-5/8		10	Vitrified Burr Remover	614636 <b>50268</b> *				

\*Minimum Quantity = 2



## PRECISION GRINDING WHEELS Cylindrical Wheels



Cylindrical wheels are used most often when the part is held between centers and in chucks. There are three methods of cylindrical grinding: plunge, traverse, and angular.

- Plunge grinding wheel is thrust or plunged into the part
- Traverse grinding wheel moves across the part
- Angular grinding wheel contacts the part at an angle

Typical Industries:Automotive, shipbuilding, engine building, bearing, land- and air-based turbine blades,<br/>and toolroomShape:Type 01 Straight, Type 05 Recessed One Side, and Type 07 Recessed 2 SidesSize Range:16", 18", 20", 24" and 30" diameterAbrasive Grain:Ceramic Alumina and Aluminum Oxide

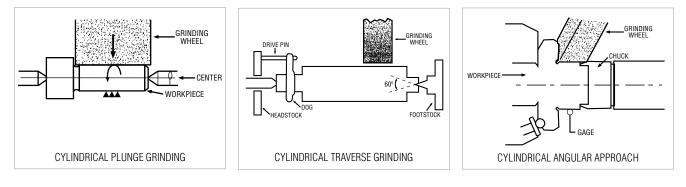
### Stationary Dressing Tool Recommendations for Cylindrical Wheels

		Single Point	t	Multi-Poin	ıt (Grit)				
Grinding Wheel Diameter	Diamond Carat Weight	Tool Product/Pai 0° Angle	t#	Tool Product/Pa 0° Angle	art #	Shape	Tool Product/F 15° Angle		Shape
16" - 20"	3/4	BC7M7	662601 <b>95007</b>	BC62	662601 <b>95012</b>	1/4 x 1/2 Rect.	BC63	662601 <b>95013</b>	1/4 x 1/2 Rect.
		NS7M7	662601 <b>95132</b>	2A6D7	662601 <b>95046</b>		2A6E7	662601 <b>95049</b>	
21" +	1	BC10M7	662601 <b>95009</b>	BC61	662601 <b>95011</b>	1/4 x 3/4 Rect.	BC60	662601 <b>95010</b>	1/4 x 3/4 Rect.
		NS10M7	662601 <b>95137</b>	1A6A7	662601 <b>95031</b>		1A6C7	662601 <b>95039</b>	

NS Single Point Diamond Tools are resettable. BC Diamond Tools are not resettable. All tools specified above have 7/16" diameter shanks.

### Troubleshooting Guide

PROBLEM	POSSIBLE CAUSES	SUGGESTED CORRECTION
Burn or cracks on workpiece	Wheel too hard	Try softer wheel or make wheel act softer (see Tech Tip on next page)
	Dress is too fine	Dress faster
	Nozzle not directing coolant properly	Redirect flow
	Work speed too slow or wheel speed too fast	Adjust speeds
	Wheel feed too slow causing excess contact time	Increase feed rate
Chatter marks on workpiece	Loose spindle, end play, bearing failure	Check wheel spindle on assembly
	Work drive faults, out-of-truth plate	Check gear action, truth, drive on pin pressure
	Wheel too hard, poor truing, poor mounting	Use softer grade; dress wheel correctly; secure mounting
Poor quality finish	Poor quality dressing	Reduce final depth of dress on wheel
	Diamond insecurely held	Check and replace diamond and secure properly
	Misalignment of head and tail stocks	Check for properly aligned workpiece
	Dirty coolant	Clean coolant frequently; use efficient filter
	Scored workpiece centers	Check and lap center holes as required





Best choice for highest productivity, lowest total per-part grinding cost

## 5SG CERAMIC ALUMINA/ALUMINUM OXIDE BLEND

- Exceptionally high-performing seeded gel ceramic alumina and friable aluminum oxide abrasive blend for fast stock removal, cool, superior cutting; 3 5 times more life than aluminum oxide wheels; 2 times stock removal rate vs. conventional abrasives
- High-performance versatile bond for cylindrical and surface grinding high-speed tool steels, hardened and soft steels, and aerospace alloys: exceptional form holding
- Self-sharpening abrasive minimizes burn and required dressing, to maximize sharp edge on tools and dies for longer life in production

Better choice for medium to heavy stock removal

## 32A ALUMINUM OXIDE

- Exceedingly strong, sharp monocrystalline aluminum oxide grain, for precision production medium to heavy stock removal applications
- The most versatile vitrified bond, especially recommended for toolroom, cylindrical, and surface grinding
- · Grinds with an exceptional cool; fast cutting action, requires minimum dressing

#### Better choice for longer wheel life

## 86A ALUMINUM OXIDE

- · Premium abrasive and superior bond system produce high grinding G-Ratios (metal removal/wheel wear) for increased productivity
- · Hold form for better part geometry; decreased dress frequency and/or dress compensation
- Engineered for easy use, grind cycles do not need to be altered, no special operator training is needed

#### Good choice for versatile performance at an economical price

## 64A ALUMINUM OXIDE BLEND

- · Specially blended aluminum oxide abrasive for production cylindrical applications
- A superior vitrified bond that maintains high grinding rates without wheel breakdown
- · Good choice for small job shops grinding numerous materials on a few machines

#### Good choice for smallest volume, lowest initial price applications

## **GEMINI 2 ALUMINUM OXIDE**

- Upgraded aluminum oxide abrasive blend delivers an efficient cut rate and improved grinding wheel life to your precision operations
- · Made in the USA, these quality, low initial price wheels are ideal for small- to medium-sized manufacturing facilities that perform a variety of jobs
- Carefully chosen, versatile specifications and sizes meet many cylindrical and surface grinding requirements

#### To make a wheel act softer:

- Increase work speed
- · Increase traverse speed
- Increase infeed
- Decrease wheel speed
- Increase dresser traverse rate
- Increase depth of dress per traverse
- Dress more often

- To make a wheel act harder:
- Decrease work speed
- · Decrease traverse speed
- Decrease infeed
- · Increase wheel speed (do not exceed MAX RPM marked on wheel)
- · Dress at slower traverse rate
- Decrease depth of dress per traverse

It is the user's responsibility to refer to and comply with ANSI B7.1

NURTUN NURTUN

NDITTON

MERTEIN



## PRECISION GRINDING WHEELS Cylindrical Wheels

	TRADENAME:	BEST 5SG		BETTER 32A, 86A		GOOD 64A, GEMINI, O	
	ABRASIVE:		na / Aluminum Oxide	Aluminum Oxide		Aluminum Oxide	K GEWINIZ
	ABRASIVE: STD.	Ceramic Alumi	ia / Aluminum Oxide	Aluminum Oxide		Aluminum Oxide	
IZE (D x T x H)	PKG.	SPEC.	PART #	SPEC.	PART #	SPEC.	PART #
ype 01 Straight							
6x1x5	1	5SG60-JVS	662534 <b>67007</b>	32A60-J8VBE	662534 <b>64836</b>	64A60-K8V127	662534 <b>66722</b>
	1			32A60-K5VBE	662534 <b>64837</b>	Gemini2 60-I	662434 <b>97801</b>
	1					Gemini2 60-K	662434 <b>95077</b>
	1					Gemini2 100-I	662434 <b>97804</b>
	1					Gemini2 100-M	662434 <b>97807</b>
6 x 1 x 8	1			32A60-K5VBE	662534 <b>64826</b>		
6 x 1-1/2 x 5	1	5SG60-KVS	662534 <b>67010</b>	32A46-H8VBE	662534 <b>64925</b>		
6 x 2 x 5	1			32A46-J8VBE	662534 <b>64995</b>	64A60-K8V127	662534 <b>6672</b> 1
	1			32A60-K5VBE	662534 <b>64960</b>	Gemini2 60-I	662434 <b>9781</b>
	1					Gemini2 100-I	662434 <b>9781</b> 2
3 x 1 x 5	1					Gemini2 60-I	662434 <b>8377</b> 7
	1					Gemini2 60-M	662434 <b>9761</b>
	1					Gemini2 100-M	662434 <b>9761</b>
8 x 2 x 5	1					64A60-K8V127	662534 <b>6671</b>
	1					Gemini2 60-I	662434 <b>8377</b>
0 x 1 x 8	1			86A60-J8V127	690786 <b>08982</b>		
	1			86A80-J8V127	690786 <b>08983</b>	0	000 40 4070 4
	1					Gemini2 60-M	662434 <b>9784</b>
	1					Gemini2 100-I	662434 <b>9784</b>
) x 1 x 10	1					Gemini2 60-I	6624349533
	1					Gemini2 60-K	662434 <b>9778</b>
	1					Gemini2 60-M	662434 <b>9779</b>
	1					Gemini2 100-I	662434 <b>9779</b>
	1					Gemini2 100-K	662434 <b>9779</b>
	1					Gemini2 100-M	6624349779
0 x 1 x 12	1					Gemini2 60-I	662434 <b>8378</b>
	1					Gemini2 60-K	662434 <b>9782</b>
	1					Gemini2 60-M	662434 <b>9783</b>
	1					Gemini2 100-I	662434 <b>9783</b>
	1			0044040055		Gemini2 100-M	662434 <b>9783</b>
0 x 1-1/2 x 5	1			32A46-H8VBE	690786 <b>65382</b>	04400 101/407	0007000074
0 x 2 x 5	1				00070005400	64A60-J8V127	690786 <b>6671</b>
) x 2 x 8	1			32A46-I8VBE	690786 <b>65433</b>	64A60-K8V127	690786 <b>6671</b>
	1			32A60-K5VBE	690786 <b>65490</b>	Gemini2 60-I	6624348378
0010	1					Gemini2 60-K	6624349785
0 x 2 x 10	1					Gemini2 100-I	662434 <b>9784</b>
0.0.10	1			00440-101/05	00070084455	Gemini2 100-K	662434 <b>9785</b> 0
D x 2 x 12	1			32A46-I8VBE	690786 <b>65455</b>	0	
000	1	_				Gemini2 100-K	662434 <b>9785</b> 4
0 x 3 x 8						64A46-I8V127	690786 <b>66447</b>
	1					64A60-J8V127	690786 <b>08140</b>
0	]					Gemini2 100-I	662434 <b>97862</b>
0 x 3 x 10						Gemini2 60-I	66243495333
0 x 3 x 12						Gemini2 60-I	6624348378
4 x 1 x 10						Gemini2 100-I	662434 <b>9786</b>
4 x 1 x 12						Gemini2 60-I	66243483790
						Gemini2 100-I	66243497866
4 x 2 x 12						Gemini2 100-M	662434 <b>9787</b>
4 x 2 x 12						64A60-K8V127	69083166710
4 y 9 y 10	I					64A80-K8V127	690831 <b>6671</b> 1
4 x 3 x 12	I					Gemini2 60-I	662434 <b>8379</b>
D x 2 x 12	1					64A60-J8V127	692104 <b>6670</b> 4
D x 3 x 12	1					64A60-J8V127	692104 <b>66697</b>
0 x 4 x 10	1					64A60-K8V127	692104666698
0 x 4 x 12	1					64A60-J8V127	69210401774
	1					Gemini2 60-J	662434 <b>9798</b> 9
ype 07 Recessed Two Sides							
8 x 2 x 8 Rec 2/S 10-1/2 x 1/2	1			32A46-I8VBE	662534 <b>65110</b>		

18 x 2 x 8 Rec 2/S 10-1/2 x 1/2	1	32A46-I8VBE	662534 <b>65110</b>		
20 x 2 x 8 Rec 2/S 11-1/2 x 1/2	1	32A46-I8VBE	690786 <b>65537</b>		
20 x 3 x 8 Rec 2/S 11-1/4 x 1/2	1	32A46-I8VBE	690786 <b>65686</b>		
20 x 3 x 8 Rec 2/S 11-1/2 x 1/2	1			Gemini 46-H	662532 <b>46969</b>
20 x 3 x 10 Rec 2/S 12-1/4 x 5/8	1	32A46-I8VBE	690786 <b>65575</b>		
20 x 6 x 10 Rec Side A 12-1/4 x 2 Rec Side B 12-1/4 x 1	1	32A46-I8VBE	690786 <b>65854</b>		
For additional stack aulindrical wheels, eas the large out	is a stinding wheel existing of this estated				

For additional stock cylindrical wheels, see the large surface grinding wheel section of this catalog

Contact your Norton representative with your custom cylindrical wheel requirements. There are many more sizes and specifications available made-to-your-order, including wheels made from Norton 55A and Quantum blank stock. See 55A and Quantum Blank Stock FastTrack Service catalog sections for more details. Ask about wheels made with our revolutionary new premium Quantum Prime ceramic grain and Vitrium3 bond.



## PRECISION GRINDING WHEELS Centerless and Feed Wheels

Centerless grinding is a production process that produces extremely close tolerances on metal cylindrical forms or parts. Centerless grinding is used on a wide variety of workpieces. The key components in the process are the grinding wheel, the work rest blade (used to support the work) and the regulating or "feed" wheel (the drive mechanism for the workpiece).

Applications:	<ul> <li>High production operations on large volume continuous grinding</li> </ul>
Applications.	
	Parts ranging from miniature roller bearings to train axles and bearings
	<ul> <li>Fastener and tool manufacturing</li> </ul>
	Steel mills
	<ul> <li>Automotive related components</li> </ul>
	Bearing
	Machine tools
	Aircraft
	<ul> <li>Turbine blades – land- and air-based</li> </ul>
Shape:	Centerless wheels: Type 01 Straight
	Feed wheels: Type 01 Straight and Type 07 Recessed 2 Sides
Size Range:	Centerless wheels: 16", 20", and 24" diameter
	Feed wheels: 12" and 14" diameter
Abrasive Grain:	Ceramic Alumina, Aluminum Oxide, Aluminum Oxide/Silicon Carbide Blend

### Material-to-Product Recommendation Guide

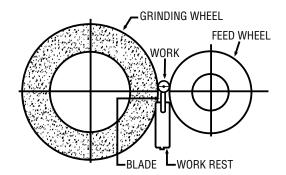
	55A60-KVS3	55A80-LVS3	32AC90-QB	32AC54-QB	2NQMC54-QB45
Alnico	•			•	
Cast Iron	•			•	
Hastalloy	•				
Inconel	•				
Stainless	•				
Stainless Steel 300	•				
Stainless Steel 400	•				
Steel - Hard or Soft					
Less than 1/2" Diameter		•			
5/8" to 2 1/2" Diameter	•				
Over 2 1/2" Diameter	•				•
High Speed (commercial finish)	•				•
High Speed (fine finish)			•		

### Stationary Dressing Tool Recommendations for Centerless Wheels

		Single Point	Indexable Single Point	Multi-point (Grit)			
Grinding Wheel Diameter	Diamond Carat Weight	Tool Product # Part # 0° Angle	Tool Product # Part # 0° Angle	Tool Product # Part # 0° Angle	Shape	Tool Product # Part # 15° Angle	Shape
11" - 14"	1/2	BC5M7 66260195005	BCUD5 66260195025	BC65 66260195015	3/8 Round	BC63 66260195013	1/4 x 1/2
		NS5M7 66260195127	NSUD5 66260195163	2R6K7 662601 <b>95096</b>		2A6E7 66260195049	Rectangle
15" - 20"	3/4	BC7M7 66260195007	N/A	BC62 66260195012	1/4 x 1/2	BC63 66260195013	1/4 x 1/2
		NS7M7 66260195132	NSUD7 66260195164	2A6D7 662601 <b>95046</b>	Rectangle	2A6E7 66260195049	Rectangle
21" +	1	BC10M7 66260195009	N/A	BC61 662601 <b>95011</b>	1/4 x 3/4	BC60 662601 <b>95010</b>	1/4 x 3/4
		NS10M7 66260195137	N/A	1A6A7 662601 <b>95031</b>	Rectangle	1A6C7 66260195039	Rectangle

### Stationary Dressing Tool Recommendations for Feed Wheels

			Indexable Si	ngle Point
Feed Wheel	Tool Carat	Tool Shank	Tool	Tool
Diameter	Weight	Diameter	Product #	Part #
Up to 14"	1/2	7/16"	NSUD5	662601 <b>95163</b>





## PRECISION GRINDING WHEELS Centerless and Feed Wheels

## TECH TIP

#### Proper Wheel Mounting

- 1. Thoroughly clean spindle and flange bearing area of all dirt and foreign material.
- 2. Inspect for worn, distorted or damaged areas on flanges and spindle.
- If mounting a wide centerless wheel on a spindle (i.e., twin-grip), do not use grease or other petroleum lubricants. Use a silicone spray lubricant on the spindle to ease mounting the wheel, if necessary.
- 4. Ensure mount up arrow is at the top of the wheel. In the case of butted sets, assemble so that the arrow is formed across the top of the wheel face.
- 5. Ensure proper blotters are installed; one on each flange mating surface. Always use new blotters.
- 6. Install blotter flange and snug up the bolts only finger tight.
- 7. Using a torque wrench, tighten all bolts in an alternating pattern from side to side to 15 foot pounds.
- 8. Repeat the same tightening sequence, increasing the torque to 35 foot pounds.
  - » for wide wheels (18"-20"), torque the bolts at 45 to 50 foot pounds
  - » for narrower wheels (2"-12"), a torque of 35 foot pounds is sufficient
- 9. Retorque the flange bolts to specification after the first eight hours of operation.

## TECH TIP

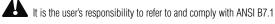
- To make a wheel act softer:
- Increase work speed/regulating wheel speed
- Increase throughput speed/regulating wheel speed
- · Increase infeed
- Decrease wheel speed
- Dress at a faster traverse rate

To make a wheel act harder:

- Decrease work speed/regulating wheel speed
- Decrease throughput speed/regulating wheel speed
- Decrease infeed
- Increase wheel speed (observe safe limits)

## TECH TIP

- · Use vitrified bond wheels for form holding and plunge grinding
- Use resinoid bond wheels for stock removal, long irregular parts and faster throughfeed grinding
- Vitrified Centerless Wheel Speeds:
  - » 64A46-KVCE wheels: 6,500 SFPM max. operating speed
  - » All other vitrified centerless stock products: 8,500 SFPM max. operating speed
  - » Always check wheel speed markings on wheels before running wheel







Best choice for cast iron to stainless and hard-to-grind materials and alloys (titanium, Inconel...)

## QUANTUM (2NQ) CENTURY45 CERAMIC ALUMINA

- · Proprietary 2NQ ceramic abrasive and Century45 (B45) resin bond formulation engineered specifically to maximize productivity of centerless applications
- Achieve over 30% improvement of stock removal, and up to 50% reduction in cycle time
- · Less grinding noise significantly improves operator safety

Better choice for performance to price ratio

## 55A-VS3 ALUMINUM OXIDE

- Monocrystalline 55A aluminum oxide offers superior performance on centerless plunge and throughfeed surface grinders with 2 plus times the life of competitive aluminum
  oxide wheels
- · Vitrium 3 VS3 bond allows cool cutting, high-speed, and precise form holding
- · Ideal for simple- to complex-shaped components, with increased productivity; more quality parts at low cost per part

Better choice when one wheel is used to grind several different materials

## 32AC ALUMINUM OXIDE / SILICON CARBIDE BLEND

- Aluminum oxide/silicon carbide abrasive blend in a strong resin bond is ideal when one wheel is used to grind several different materials from high-to-low tensile strength
- · Norton resin bond centerless wheels are the choice for stock removal, long irregular paths, and faster through feed grinding
- Ideal for full range of simple- to complex-shaped components

#### Good choice for hard-to-grind fasteners

## 57A ALUMINUM OXIDE WITH FINE / HARD SIDE

- Tough, durable aluminum oxide abrasive for heavy duty work
- · Superior vitrified bond system for longer wheel life and excellent form holding when toolroom and centerless grinding
- 3/16 inch thick fine/hard side provides good form holding while grinding stainless and Inconel fasteners

#### Good choice for grinding a variety of materials, economically

## 64A ALUMINUM OXIDE BLEND

- · Good intermediate type aluminum oxide abrasive blend for production centerless applications
- A superior vitrified bond that maintains high grinding rates without wheel breakdown
- Good choice for small job shops grinding numerous materials on a few machines

### Good choice for smallest volume, lowest initial price applications

## GEMINI 2 ALUMINUM OXIDE

- · Upgraded aluminum oxide abrasive blend delivers an efficient cut rate and improved grinding wheel life to your precision operations
- · Made in the USA, these quality, low initial price wheels are ideal for small- to medium-sized manufacturing facilities that perform a variety of jobs
- · Carefully chosen, versatile specifications and sizes meet many centerless grinding requirements



## PRECISION GRINDING WHEELS Centerless and Feed Wheels

### Centerless Wheels

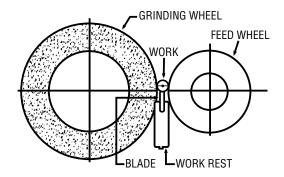
	TIER:	BEST		BETTER		BETTER		GOOD	
TRAL	ENAME:	QUANTUM CENT CENTERLESS RE	URY45 Sinoid Wheels	32AC / 32AC C Centerless R	ENTURY 45 Esinoid Wheels	55A Centerless V	/ITRIFIED WHEELS	53A, 57A,64A, CENTERLESS VI	
AE	BRASIVE:	Ceramic Alumina		Aluminum Oxide,		Aluminum Oxide	9	Aluminum Oxide	
	STD.								
SIZE (D x T x H)	PKG.	SPEC.	PART #	SPEC.	PART #	SPEC.	PART #	SPEC.	PART #
Type 01 Straight									
16 x 4 x 10	1							57A80-L8VCN	662534 <b>65001</b>
20 x 2 x 12	1								
20 x 4 x 12	1							64A60-KVCE	690786 <b>66723</b>
	1							64A80-LVCE	690786 <b>66727</b>
20 x 6 x 12	1	2NQMC54-QB45	662434 <b>96406</b>	32AC80-NB45	662434 <b>96398</b>	55A60-KVS3	662533 <b>87817</b>	64A60-KVCE	690786 <b>66729</b>
	1			32AC54-QB	690786 <b>66545</b>			Gemini 60-L	662532 <b>46994</b>
	1					55A80-MVS	662534 <b>90788</b>		
20 x 8 x 12	1	2NQMC54-QB45	662434 <b>96407</b>	32AC80-NB45	662434 <b>96400</b>	55A60-KVS3	662533 <b>87819</b>	64A60-KVCE	690786 <b>66748</b>
	1			32AC54-QB	690786 <b>66546</b>	55A80-LVS	662534 <b>90783</b>	64A60-LVCE	690786 <b>66749</b>
	1							64A80-KVCE	690786 <b>66751</b>
	1							Gemini 54-J	662532 <b>47001</b>
	1							Gemini2 60-K	662534 <b>51857</b>
24 x 2-1/2 x 12	1							57A A80/120 P/R	662534 <b>91223</b>
24 x 2-1/2 x 12	1								
w/ 3/16" fine/hard layer	1								
24 x 3 x 12	1							64A60-K8V127	690831 <b>66708</b>
24 x 4 x 12	1								
	1							Gemini2 100-L	662534 <b>51861</b>
24 x 6 x 12	1	2NQMC54-QB45	662434 <b>96408</b>	32AC80-NB45	662434 <b>96401</b>	55A80-LVS3	662533 <b>87821</b>	Gemini 60-K	662532 <b>47047</b>
	1			32AC54-QB	690831 <b>66547</b>			Gemini2 60-K	662534 <b>51862</b>
24 x 8 x 12	1	2NQMC54-QB45	662434 <b>96409</b>	32AC80-NB45	662434 <b>96403</b>	55A60-KVS	662534 <b>90791</b>		
	1			32AC54-QB	690831 <b>66548</b>	55A60-LVS	662534 <b>90762</b>		
	1					55A80-LVS3	662533 <b>87825</b>		
	1					55A60-MVS	662534 <b>90782</b>		
24 x 10 x 12	1	2NQMC54-QB45	662434 <b>96410</b>	32AC80-NB45	662434 <b>96404</b>	55A60-KVS3	662533 <b>87830</b>		
	1			32AC54-QB	690831 <b>66549</b>	55A80-LVS3	662533 <b>87828</b>		
24 x 20 x 12	1			32AC54-QB	690831 <b>66552</b>				
Composed of 2 Wheels 10" Thick (ME90362)	1			32AC54-SB	690831 <b>66553</b>				

### Rubber Bond Feed Wheels

	TIER:	BETTER	
	ABRASIVE:	Aluminum Oxide	
SIZE (D x T x H)	STD. PKG.	SPEC.	PART #
Type 07 Recessed Two	Sides 📄		
12 x 4 x 5 Rec 2 Sides 7-1/2 x 1/2	1	57A80-RR51	662532 <b>22844</b>
12 x 6 x 5 Rec Side A 7-1/2 x 1-1/2 Rec Side B 7-1/2 x 1/2	1	57A80-RR51	662532 <b>22846</b>
12 x 6 x 5 Rec 2 Sides 7-1/2 x 1-1/2	1	57A80-RR51	662532 <b>22847</b>
12 x 8 x 5 Rec Side A 7-1/2 x 2-1/2 Rec Side B 7-1/2 x 1-1/2	1	57A80-RR51	662532 <b>22850</b>
14 x 8 x 5 Rec Side A 8 x 2 Rec Side B 8 x 1-1/2	1	57A80-RR51	662533 <b>22859</b>
14 x 20 x 6 Rec 2 Sides 8-1/2 x 1-1/2 Butted Feed Wheels Composed of 2 Wheels 10" Thick (ME91512)	1	57A80-RR51	662533 <b>22196</b>

### Plastic Bond Feed Wheels

	TIER:	BETTER	
	ABRASIVE:	Aluminum Oxide	
SIZE (D x T x H)	STD. PKG.	SPEC.	PART #
Type 07 Recessed Two	Sides 📄		
12 x 8 x 5 Rec Side A 7-1/2 x 2-1/2 Rec Side B 7-1/2 x 1-1/2	1	57A80-RP4	662532 <b>22199</b>



There are many more sizes and specifications available made-to-your-order, including wheels made from our blank stock FastTrack Service for rush orders. Ask about wheels made with our revolutionary new premium Quantum Prime ceramic grain. Contact your Norton representative with your custom centerless requirements.



#### ADE IN UT ANNU POLICI AND ANNU POLICI

## PRECISION GRINDING WHEELS Creepfeed Blank Stock

Norton creepfeed wheels are the best performing creepfeed wheels in the industry. These high-performance blank stock wheels can be altered to your dimensional requirements.

Applications: Typical Industries: Size Range:

Grade/Porosity: Abrasive Grain: Heat-sensitive, porous grinding of difficult-to-grind alloys Aerospace, automotive, toolroom, gear, energy Blank Stock: 16" – 25" diameter Finished Wheel: 14" – 25" diameter C28 – F26 Ceramic Alumina, Fused Aluminum Oxide



Best choice for versatility, maximum performance, and highest productivity

# QUANTUM X CERAMIC ALUMINA AND VORTEX ALUMINUM OXIDE BLEND

- Leading Norton technologies produce the most free-cutting creepfeed wheel: patented pore-induced construction, a blend of Norton Quantum ceramic and Vortex aluminum oxide abrasives, and the newest, strongest Norton bond: Vitrium
- Excel on large area of contact applications with exceptional form and corner-holding and 20+% less power draw; best MRR vs. all other ceramic creepfeed wheels, with reduced cycle times of up to 50%
- · Versatile; for all low-, medium- and high-force applications on hard-to-grind Inconel, titanium, and aerospace alloys



Better choice for heat-sensitive, porous grinding of difficult-to-grind alloys

## VORTEX ENGINEERED ALUMINUM OXIDE

- · High-performance, engineered and optimally spaced fused aluminum oxide abrasive
- High metal removal rates; able to grind large areas of contact with exceptional part integrity and quality and superior surface finish
- Long wheel life: dramatically shorter grinding cycles = less wheel changes and more parts/wheel = high productivity

## Key Program Features

- Standard lead-time: 2 weeks
- Alteration Parameters:
  - » Diameter may be altered to 2" smaller than the original blank stock diameter



## PRECISION GRINDING WHEELS Creepfeed Blank Stock

	TIER: BEST		BETTER	
TRADE	QUANTUM X 3NQX,	TG	VORTEX	
	CERAMIC UNFINISH		A/O UNFINISHED	
SIZE (D x T x H)	SPEC.	UF BLANK PART #	SPEC.	UF BLANK PART #
Type 01 Straight				
12 x 1.750 x 3	3NQX60/1-D24VTX2	003105 <b>01586</b>		
12 x 3.500 x 3	3NQX60/1-E24VTX2	003105 <b>01589</b>		
12 x 1 x 3	3NQX60/1-E24VTX2	003105 <b>01590</b>		
12 x 3 x 3	TG2120/1-E24VTX2	003105 <b>01591</b>		
12 x 3.500 x 3	3NQX60/1-C28VTX2	003105 <b>03234</b>		
12 x 1.500 x 3	3NQX60/1-C28VTX2	003105 <b>03235</b>		
16 x 1 x 5	3NQX60-C28VTX2	00310438575		
	3NQX60-D+28VTX2	003104 <b>79157</b>		
	3NQX60-E24VTX2	00310425239		
	3NQX80-E+28VTX2	003104 <b>79160</b>		
16 x 3 x 5	3NQX60-C28VTX2	00310438656		
	3NQX60-D28VTX2	003104 <b>25240</b>		
	3NQX60-E24VTX2	003104 <b>25241</b>		
	3NQX80-E+28VTX2	003104 <b>79161</b>		
16 x 4 x 5			IPA60-D29VTX	003103 <b>12485</b>
			IPA60-E26VTX	003103 <b>12486</b>
16 x 5 x 5	3NQX60-D28VTX2	003104 <b>25242</b>		
	3NQX60-E24VTX2	00310425243		
16 x 6 x 5	3NQX80-E+28VTX2	00310479162		
20 x 1 x 8	3NQX60-C28VTX2	00310438658		
	3NQX60-D28VTX2	003104 <b>25244</b>		
	3NQX60-E24VTX2	003104 <b>25245</b>		
20 x 2-1/2 x 8			IPA60-F17VTX	003103 <b>03131</b>
			IPA80-D29VTX	003103 <b>03132</b>
20 x 3 x 8	3NQX60-C28VTX2	00310438659		
	3NQX60-D28VTX2	003104 <b>25256</b>		
	3NQX60-E24VTX2	00310425257		
20 x 4 x 8			IPA60-D29VTX	00310303133
			IPA60-E26VTX	003103 <b>03134</b>
20 x 5 x 8	3NQX60-D28VTX2	00310425258		
	3NQX60-E24VTX2	003104 <b>25259</b>		
20 x 6 x 8	3NQX60-C28VTX2	003104 <b>38660</b>	IPA60-C29VTX	003103 <b>25091</b>
24 x 4 x 8			IPA60-D29VTX	003104 <b>06547</b>
			IPA60-F26VTX	00310303135
25 x 2-1/2 x 8			IPA60-E26VTX	003104 <b>04613</b>
25 x 3-1/2 x 8			IPA60-E26VTX	003104 <b>04678</b>





## PRECISION GRINDING WHEELS Quantum Blank Stock

Norton Quantum vitrified wheels deliver the highest productivity of any wheel in the marketplace. They will grind with superior results in many applications. They can be altered to your specific needs within two weeks of receipt of your order.

#### **Applications:**

- Centerless plunge and throughfeed grinding
  Surface grinding

## Size Range:

Grit Range: Grade Range: Abrasive Grain: Surface grinoing
 Cylindrical grinding
 Blank Stock: 18" – 30" diameter
 Finished Wheel: 16" – 30" diameter
 60, 80, and 120
 I – M
 Ceramic Alumina



#### Best choice for versatility, maximum performance, and cost savings

## QUANTUM CERAMIC ALUMINA

- Revolutionary, sharp, durable engineered ceramic alumina grain shape and chemistry; highly-porous
- Perform well on old and new machines with 30%+ higher metal removal rate and 15%+ lower threshold power; achieve highest productivity with lowest total grinding cost
- Versatile; for all low-, medium- and high-force applications ranging from cast iron, to stainless steel and hard-to-grind Inconel and titanium

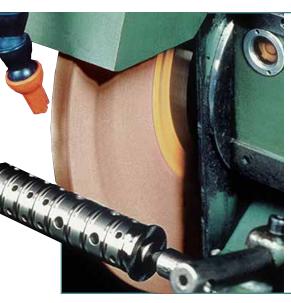
	TIER:	BEST	
	TRADENAME:	QUANTUM Ceramic Unfini	SHED BLANK STOCK
SIZE (D x T x H)		SPEC.	UNFINISHED BLANK PART #
Type 01 Straight			
18 x 1 x 5	<u></u>	3NQ80-K10VS	003104 <b>05993</b>
18 x 2 x 5		3NQ80-K10VS	003104 <b>05994</b>
18 x 3 x 5		3NQ80-K10VS	003104 <b>05995</b>
20 x 1 x 8		3NQ80-K10VS	003104 <b>05985</b>
20 x 1 x 12		3NQ80-K10VS	003104 <b>06017</b>
		3NQ120-MVS	003104 <b>05924</b>
20 x 2 x 8		3NQ80-K10VS	00310406036
20 x 3 x 8		3NQ80-K10VS	003104 <b>06037</b>
20 x 6 x 12		3NQ80-L10VS	003104 <b>06018</b>
20 x 8 x 12		3NQ80-L10VS	003104 <b>06026</b>
24 x 1 x 8		3NQ80-K10VS	003104 <b>06034</b>
24 x 1 x 12		3NQ80-K10VS	00310406038
24 x 2 x 8		3NQ80-K10VS	003104 <b>06035</b>
24 x 2 x 12		3NQ80-K10VS	00310406029
24 x 3 x 8		3NQ60-J10VS	003104 <b>25121</b>
		3NQ80-K10VS	003104 <b>06046</b>
24 x 3 x 12		3NQ60-J10VS	003104 <b>25120</b>
		3NQ80-K10VS	003104 <b>06030</b>
24 x 6 x 12		3NQ80-L10VS	003104 <b>06031</b>
24 x 8 x 12		3NQ80-L10VS	003104 <b>06032</b>
24 x 10 x 12		3NQ80-L10VS	003104 <b>06033</b>
30 x 2 x 12		3NQ80-I10VS	003104 <b>27211</b>
		3NQ80-J10VS	003104 <b>06047</b>
		3NQ80-K10VS	003104 <b>06048</b>
30 x 3 x 12		3NQ60-I10VS	00310427212

There are many finished sizes and specifications available. Contact your local Norton distributor or salesperson with your size and specification requirements for quantity guidelines, quotations and helpful ordering instructions.

Please note "2-week delivery request" if needed, on your order.







55A-VH blank stock wheels are competitively-priced, monocrystalline grain wheels specifically engineered for numerous carbon steel applications requiring moderate to heavy stock removal rates. They can be altered to your specific needs within two weeks of receipt of your order.

Applications:

Size Range:

Grit Range: Grade Range: Abrasive Grain: Centerless plunge and throughfeed grinding Surface grinding Cylindrical grinding Blank Stock: 18" – 42" diameter Finished Wheel: 16" – 42" diameter 60 – 120 I – M Aluminum Oxide



Better choice for precision grinding of carbon steel and cast iron

## 55A-VH ALUMINUM OXIDE

- Advanced combination of monocrystalline 55A aluminum oxide abrasive and superior VH bond
- Superior performance on centerless plunge and throughfeed, surface, and cylindrical grinders with up to 2X the life
  of competitive aluminum oxide wheels
- Ideal for simple- to complex-shaped components with increased productivity, more quality parts, and lowest cost per part

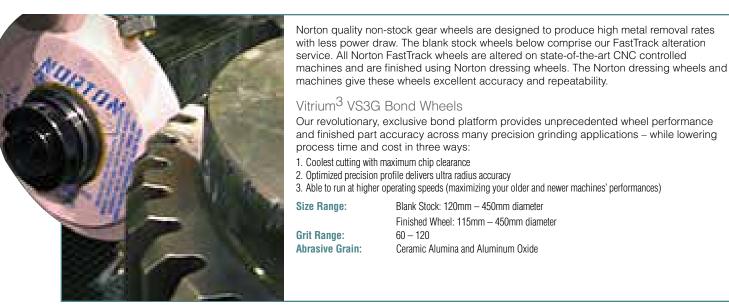
		TIER:	BETTER
		OTHER:	55A-VH Aluminum Oxide Unfinished Blank Stock
SIZE (D x T x H)	GRIT	GRADE	UNFINISHED BLANK PART #
Type 01 Straight			
18 x 1 x 5	80	К	003104 <b>04552</b>
18 x 2 x 5	80	K	003104 <b>04554</b>
18 x 3 x 5	80	К	003104 <b>04555</b>
20 x 1 x 8	60	К	003100 <b>20910</b>
20 x 1 x 12	100	K	003103 <b>02177</b>
	120	Μ	003100 <b>64512</b>
20 x 1-1/2 x 12	80	K	003103 <b>02221</b>
	100	K	003103 <b>02222</b>
20 x 2 x 8	80	К	003100 <b>20918</b>
	100	К	003100 <b>20920</b>
	120	М	003100 <b>64252</b>
20 x 3 x 8	80	К	003104 <b>25116</b>
20 x 3 x 12	80	К	003104 <b>25117</b>
20 x 6 x 12	80	К	003100 <b>20965</b>
24 x 1 x 8	80	К	003100 <b>21884</b>
24 x 1 x 12	60	К	003100 <b>20921</b>
	80	М	003100 <b>20923</b>
24 x 1-1/4 x 12	60	М	003103 <b>02224</b>
24 x 1-1/2 x 8	80	К	003103 <b>02223</b>
24 x 1-1/2 x 12	80	К	003103 <b>02225</b>
	80	М	003103 <b>02226</b>
24 x 2 x 8	80	К	003100 <b>21885</b>
24 x 2 x 12	60	К	003100 <b>20924</b>
	80		003100 <b>20926</b>
24 x 3 x 8	80	К	003100 <b>21757</b>
24 x 5 x 12	60	L	00310302227
24 x 6 x 12	60	K	003100 <b>20968</b>
24 x 10 x 12	80	K	003100 <b>20972</b>
42 x 1-1/2 x 12	60	M	003100 <b>20931</b>

There are many finished sizes and specifications available. Contact your local Norton distributor or salesperson with your size and specification requirements for quantity guidelines, quotations and helpful ordering instructions.

Please note "2-week delivery request" if needed, on your order.



## PRECISION GRINDING WHEELS Gear Wheel Blank Stock



Key Program Features

Standard lead time:

- Alteration Parameters:
- » 2 weeks
- Allefalloff Paralifieters:
   Diameter may be altered to 2" s
- » Diameter may be altered to 2" smaller than the original blank stock diameter
   » Thickness may be altered to 1/2 the original blank stock thickness
- Best choice for versatility, highest productivity, and lowest total cost

## QUANTUM X CERAMIC ALUMINA AND VORTEX ALUMINUM OXIDE BLEND

- Leading Norton technologies produce the most free-cutting gear wheels: patented pore-induced construction, Norton Quantum X ceramic alumina and Vortex aluminum oxide abrasive blend, and strong Norton bond
- · Best MRR (metal removal rate) versus all other ceramic gear wheels; reduce grinding cycle times up to 50%, best choice for grinding from solid
- Versatile; for all low-, medium- and high-force applications on hard-to-grind Inconel, titanium, and aerospace alloys; excel on large area of contact applications with exceptional form and corner-holding; 20+% less power draw

Excellent choice for the most demanding operations

## TARGA TG, 3TG, 5TG CERAMIC ALUMINA

- . The unique elongated shape of our second generation Norton seeded gel ceramic alumina abrasive offers exceptional durability for the most demanding applications and materials
- · Consider Targa (TG) when your requirements for SG have been exceeded
- VS3G Vitrium<sup>3</sup> bond is the newest, strongest bond in the Norton portfolio: patented pore-induced construction; for all low-, medium- and high-force applications; excels on hard-to-grind aerospace alloys and large areas of contact; exceptional form and corner-holding

#### Excellent choice for high productivity, low total per-part grinding cost

## SG CERAMIC ALUMINA

- High-performance seeded gel ceramic aluminum oxide abrasive provides fast stock removal, cool, superior cutting, and 3X 5X more life than aluminum oxide wheels, and double
  rough stock removal rate versus conventional abrasives
- · Self-sharpening abrasive for less burn, less dressing; very consistent performing wheel
- 5SG durable Norton SG and aluminum oxide blend blue, for high stock removal rates, excellent productivity, long wheel life, low overall grinding cost; versatile, high-performance VS and VSP bonds provide exceptional form holding

Better choice for versatile, consistent performance

## 86A ALUMINUM OXIDE

- · Sharper aluminum oxide abrasive for cooler cutting
- VS3G Vitrium3 bond is the newest, strongest bond in the Norton portfolio: patented pore-induced construction; for all low-, medium- and high-force applications
- · Excels on hard-to-grind aerospace alloys and large areas of contact; exceptional form and corner-holding



## PRECISION GRINDING WHEELS Gear Wheel Blank Stock

	TIER:	BEST		BEST		BETTER	
	TRADENAME:	NORTON QUANTUM X: Norton quantum: Nqn, Nq, 3Nq, 5Nq VS3g = Vitrium <sup>3</sup> Bo		NORTON SEEDED GEL: 3TGP, SG, 5SG VS3G = Vitrium <sup>3</sup> Bon	D	86A, 25A, X25A VS3G = Vitrium <sup>3</sup> Bo	ND
	ABRASIVE:	Ceramic Alumina Unfinished Blank Stock		Ceramic Alumina Unfinished Blank Stock		86A, 25A, X25A – Alum Blank Stock	inum Oxide Unfinished
SIZE (D x T x H)		SPEC.	BLANK PART #	SPEC.	BLANK PART #	SPEC.	BLANK PART #
Type 01 Straight							
Worm Profile Whee							
275mm x 125mm x 16						86A100/5-I10VTX2	003104 <b>58402</b>
275mm x 160mm x 16	• • • • • • • • • • • • • • • • • • • •					86A90-J10VS3G	003104 <b>86397</b>
300mm x 125mm x 16	60mm	3NQ90-J10VH	003103 <b>94338</b>			86A100/5-J10VTX2	003104 <b>58405</b>
		3NQ90-J10VS3G	003105 <b>17379</b>			86A100/5-I10VTX2	003104 <b>58404</b>
300mm x 160mm x 16	60mm					86A120-J10VS3G	003104 <b>86983</b>
		1NQNR90-J10VS3PN	003105 <b>78192</b>				
		1NQNR120-J10VS3PN	003105 <b>78193</b>				
						86A90-J10VS3PN	003105 <b>78172</b>
						86A120-J10VS3PN	003105 <b>78191</b>
350mm x 125mm x 16	60mm					25A90-H10VS3G	003104 <b>48496</b>
Single Rib Wheels							
120mm x 30mm x 20r		5NQX100-G20VTX2	003104 <b>90920</b>	3TGP80/3-G12VS3G	003104 <b>48502</b>		
300mm x 30mm x 50.		5NQX60-G20VTX2	003104 <b>90863</b>	3TGP80/3-G12VS3G	003104 <b>48501</b>		
300mm x 60mm x 50.		5NQX60-G20VTX2	003104 <b>90864</b>	3TGP80/3-G12VS3G	003104 <b>48500</b>		
400mm x 60mm x 12		5NQX60-G20VTX2	003104 <b>90865</b>				
400mm x 75mm x 12				3TGP60-G20VSPF	003104 <b>04597</b>		
400mm x 100mm x 12		5NQX60-G20VTX2	003104 <b>90916</b>	3TGP60-G20VSPF	003104 <b>04598</b>		
400mm x 150mm x 12		5NQX60-G20VTX2	003104 <b>90917</b>				
450mm x 50mm x 12				3TGP80/3-G12VS3G	003104 <b>48499</b>		
450mm x 60mm x 12		5NQX60-G20VTX2	003104 <b>90918</b>				
450mm x 100mm x 12		5NQX60-G20VTX2	003104 <b>90921</b>	3TGP80/3-G12VS3G	003104 <b>48498</b>		
450mm x 150mm x 12	27mm	5NQX60-G20VTX2	003104 <b>90919</b>	3TGP80/3-G12VS3G	003104 <b>48497</b>		

	TIEF	BEST	
	TRADENAME	NORTON SEEDED GE	L: TG, 5TG, 5SG
	ABRASIVE	Ceramic Alumina Unfin	ished Blank Stock
SIZE (D x T x RIM)	PLATE #	SPEC.	BLANK PART #
Type 02 Plate-Mounted	Cylinder		
4.100 x 3.000 x .700	A311220	5SG80-JVS	00310485214
8.400 x 3.500 x 1.050	A311384	5SG80-JVS	003104 <b>85228</b>
		TG280-H12V-X575	003104 <b>85229</b>
8.346 x 3.500 x 1.043	A311384	5TG80-3-J8VH	003104 <b>80245</b>

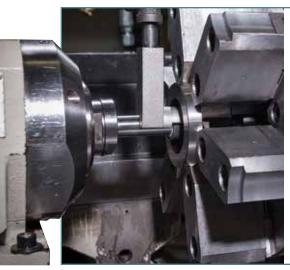
Gear blank stock alteration orders must include complete blueprint information.

Please ask your Norton representative for appropriate blueprint worksheet to fill in:

- Worm wheel blueprint worksheet: ME161508
- Single rib wheel blueprint worksheet: ME161178



## PRECISION GRINDING WHEELS ID, Race and Superfinishing Wheels and Sticks



The most extensive line of Pressed-To-Size ID and Race wheels to choose from to maximize performance and cost savings.

In addition to VFL wheels, VS3L-bonded wheels are also available. VS3L is the Vitrium3 high-strength, cool-cutting bond with improved cutting efficiency, productivity, and wheel life. VFL and VS3L wheels are the fastest way to get Make-to-Order Norton ID and Race Grinding wheels. Norton VFL and VS3L wheels are available in both ceramic abrasives and conventional aluminum oxide abrasives in diameters up to 5".

Additional dimensions and grinding faces are available as made-to-order products with 4-week lead-times.

Wheel Types: Abrasive Types: Type 01 and 05 Ceramic Alumina, Aluminum Oxide

### ID and Race Wheels

ID and Race Wheel FastTrack Availability

Type 01 Straight		For more program details, ask your
Diameter: 0.172" thru 4.532"	Maximum thickness: 3.75"	Norton sales representative to review
Type 05 Recessed One Side		the FirstLine VFL & VS3L ID and Race
Diameter: 0.407" thru 5"	Maximum thickness: 3.10"	Wheels Brochure #6981 with you.

### VFL Availability

ABRASIVE	25A, 32A, 38A, 48A, 53A, 57A, 86A	5TG*	1SG, 3SG, 5SG	32AA	NQN, 1NQN, 3NQN, 5NQN, 1NQNP, 3NQNP, 5NQNP, 1NQNM, 3NQNM, 5NQNM
GRIT	54 - 120	80/1, 120/1	54-120	54-80	54-150
GRADE	J - P	I - M	I - N	I - M	I - N
STRUCTURE	6 (Not Shown)				
BOND	VFL				
WHEEL TYPES	01, 05				
SHAPES	Special faces not available				
SPEED	8,500 SFPM***				
TREAT 22	Not Available				
* 5TG is available in /1 co	ombination, only				

\*\*Speeds up to 12,500 SFPM by request and Safety approval

#### VS3L Availability

SHAPES

SPEED

ABRASIVE	25A, 32A, 38A, 55A, 86A	5TG*	1SG, 3SG, 5SG	NQN, 1NQN, 3NQN, 5NQN, 1NQNP, 3NQNP, 5NQNP, 1NQNM, 3NQNM, 5NQNM
GRIT	54-120	80/1, 120/1	54-120	54-150
GRADE	H - P	I - K	I - N	I - N
STRUCTURE	8, 10	8	8, 10	8, 10
BOND	VS3L			
WHEEL TYPES	01, 05			

TREAT 22 Not Available

\* 5TG is available in /1 combination, only

\*\* Speeds up to 12,500 SFPM by request and Safety approval

#### **Dimensional Tolerances**

IF DIAMETER IS:	DIAMETER	THICKNESS	HOLE
0.532" and less	+/003"	+.004"000	+.001" +.006"
> 0.532" - 2.907"	+/005"	+/005"	+.001" +.006"
> 2.907" - 4.407"	+/015"	+/015"	+.001" +.006"

Special faces not available 8,500 SFPM\*\*\*





## PRECISION GRINDING WHEELS ID, Race and Superfinishing Wheels and Sticks

### Blank Stock FastTrack Made-to-Order Microabrasive Superfinishing Sticks



Superfinishing blank stock encompasses a wide range of different specifications. These blanks can be finished to your dimensional requirements within two weeks from the date that the order is received at Norton Customer Service. Small lots, for test purposes, can be express shipped.

APPLICATIONS	ABRASIVE TYPE – BOND	GRIT RANGE	TREATMENT TYPE
Superfinishing / Finishing	NLA – V NMVC – VCA	240 - 1200	Sulfur, Wax
	NSA – V		
Honing	SG – VS SGG – VS1	54 - 220	

### **Rubber Finishing Sticks**

These sticks are used for manual or mechanical honing on machines where they are mounted in holders or fixtures. Intended for use where precision dimensional limits and grade controls are required, such as die polishing.

STD. PKG./CASE	SPEC.	PART #
g Sticks		
5/20	57A120-B2RR	614636 <b>10608</b>
5/20	57A120-B2RR	614636 <b>10609</b>
	g Sticks 5/20	5/20 57A120-B2RR

## **Dressing Solutions**

## our dressing tools **MAKE THE PERFECT POINT**

The Norton Winter full line of expertly-crafted stationary and rotary dressing tools - whether stock or custom-engineered delivers your every application need. And, our expert resetting and relapping services renew used tools to reduce your "cost per dress".

NORTON



### DRESSING SOLUTIONS **Diamond Stationary Dressing Tools**

Our Norton Winter offering is the industry's most comprehensive line of stock and made-to-order products to true (restore the wheel's profile) and dress (opening - to remove stock - or closing to finish) the face of the wheel. In addition to these catalog stock stationary tools, Norton Winter manufactures a full line of custom stationary tools, rotary diamond dressers and truing/dressing devices to meet all your specific application needs.

**Applications:** Tool Types:

Truing and dressing conventional and superabrasive wheels, straight, step, radius and form dressing

Stationary: Single Point, Toolroom, Multi-Point, Blade, Form, and Cluster Tools, and Truing Devices

Rotary: Reverse Plated and Infiltrated Form Plunge Diamond Rolls, Diamond CNC Traversing Discs, and Dressing Spindles

### Determining the Best Value

Remember that diamonds are a rare commodity-the larger the stone and the better the quality, the higher the initial cost. The key to successful diamond tool productivity and use is based on the "cost per dress." Normally, higher quality diamonds and a proactive resetting program will result in the lowest "cost per dress." In those situations where a resetting program is not feasible or low initial cost is the primary purchasing consideration, Norton Winter offers a complete line of non-resettable tools.

## **Resetting Your Used Diamond Tools**

#### Resetting - Minimizing Your Cost

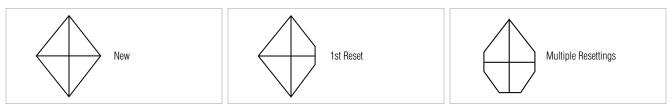
#### Buving a higher quality diamond is your best value, especially if you participate in a proactive resetting program. Although initial cost may be higher, the payback comes through several factors:

- Diamond durability, providing longer tool life
- Tighter form tolerances
- Consistent finish rates
- · Resetting the diamond lowers the overall tooling cost

#### Used properly, the overall cost of a higher quality, resettable diamond will compare favorably with that of an inexpensive, non-resettable diamond. Initially, the best diamond point is selected for use. When returned, the next best diamond point is selected for resetting, and so on.

#### To ensure you get the best value for your diamond:

- · Rotate the diamond tool ¼ turn periodically to maintain a sharp point
- Use proper flow of coolant to protect the diamond from heat which can create fracturing of the diamond
- · Excessive wear on the diamond point may impact the ability to reset the diamond. The widest point of the diamond is referred to as the girth. The diamond girth is buried in a powder metal matrix. Using a diamond into the girth zone might impact the ability to reset other diamond points



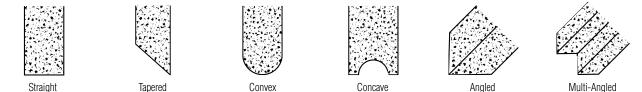
## TECH TIP

Selecting the Correct Diamond Tool

To determine the type of dressing tool to use, it is best to think about the desired shape of the wheel face. Finished wheel face shapes are generally categorized into six types, as illustrated below.

Typical Wheel Forms Dressed by Stationary Diamond Tools

Look for the applicable wheel forms beside each product type to help you choose the correct product for your application.



Convex







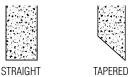
NDRTDN

SAINT-GOBAIN

### **Single Point Tools**

Our Norton Winter line of single point tools is used in straight and simple form dressing applications. It includes: resettable and non-resettable products, tools for all abrasive types (conventional and advanced ceramic grains) and the technology-leading "Indexable" tool design.

Wheel Forms Dressed by These Tools





## SPEC CHECK

#### Selection Guide

#### **Stock Tools for Ceramic Abrasive Wheels**

SG/Ceramic	Engineered for use on ceramic (SG, NQ, Targa, etc.) wheels but may also provide significant benefits when used on conventional abrasive products. These tools are furnished with top quality specially selected diamonds.
BCSG/Ceramic	Economical alternative to an "SG" tool. Best choice when a disposable tool is preferred.

#### Stock Tools for Conventional Abrasive Wheels

- NS Engineered for use on conventional abrasives. These high quality, value-priced tools can be used for a variety of dressing applications.
- BC Economical alternative to an "NS" tool. Best choice when a disposable tool is preferred.

#### **Selecting the Correct Single Point Tool:**

- Identify the wheel abrasive type: aluminum oxide, silicon carbide, or ceramic
- · Determine the wheel diameter to select the optimum carat weight
- · Determine the tool holder size to select appropriate shank diameter

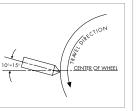
#### **Examples of Single Point Tool Selection**

Conventional Wheel Spec:	32A46-IVBE 7" x 1/2" x 1-1/4"			
	Machine has a 7/16" tool holder			
Tool Selections:	Resettable:	NS2M7 or NSUD2 (Indexable)		
	Non-Resettable:	BC2M7 or BCUD2 (Indexable)		
Ceramic Wheel Spec:	5SG60-JVS or 5NQ60-IVS 10" x 1" x 3"			
	Machine has a 3/8" tool holder			
Tool Selections:	Resettable:	SG3M6		
	Non-Resettable:	BCSG3M6		

### TECH TIP

- Rigidly mount single point tools at a 10° 15° angle to the wheel centerline with a line drawn through the center of the wheel, pointing in the direction of wheel travel
- Point of contact should be slightly below centerline of wheel as shown
- Use coolant whenever possible
- Normal infeed is .001" per pass
- Lead selections range from .002" .010" per wheel revolution
- Rotate the tool 1/4 turn periodically to maintain a sharp point

To optimize applications using ceramic abrasives and/or tools, normal dressing parameters must change. Reduce infeed by 25%. Significant reductions in the amount of infeed and frequency of dress will result in substantially lower cost per part ground.



#### Single Point Dress Traverse Rate

Select a Lead Value based on desired Surface Finish and run the formula below.

Finish	Lead Value (Per Wheel Revolutions)
For Coarse Finish (approx. 64 RMS)	.008" to .010"
For Medium Finish (approx. 32 RMS)	.005" to .009"
For Fine Finish (approx. 16 RMS)	.002" to .004"

Lead Value x Wheel Speed (RPM) = Traverse Rate in Inches/Minute

- Slower traverse rates result in a closed wheel face and lower surface finish readings on the workpiece.
- Faster traverse rates result in an open wheel face that produces greater stock removal and a rougher workpiece finish.

It is the user's responsibility to refer to and comply with ANSI B7.1



### Single Point Tools for Truing/Dressing Ceramic Abrasives



## SINGLE POINT TOOLS FOR SG/CERAMIC

- Specially selected broad-shaped, diamond withstands the increased grinding pressures of ceramic abrasives
- · Each diamond is hand selected for stone shape, quality and structural integrity for consistent tool performance
- Multi-purpose can accommodate most straight dressing and simple form dressing applications; stands up to the sharpness of ceramic abrasives (SG, Quantum, Targa, etc.) but can also be used to dress conventional abrasives

#### Resettable Single Point Tools for SG/Ceramic

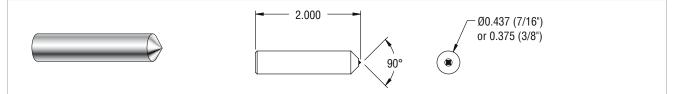
· High quality diamond and a proactive resetting program will result in the lowest dressing cost per part for ceramic abrasives

Non-Resettable Single Point Tools for BCSG/Ceramic

• The best selection for ceramic abrasives when a resetting program is not feasible or low initial cost is the primary purchasing consideration

			TIER	BEST		GOOD		Wheel Form	e Droccod b	M.
WHEEL DIAMETER	TOOL Carat Weight	TOOL Diameter	TOOL Length	PRODUCT #	3 SETTABLE PTS (2 RESETS) PART #	PRODUCT #	NON-RESETTABLE Part #	These Tools		
Stock Singl	le Point Tools for	Truing/Dress	ing Ceram	ic Abrasives						
Up to 7"	1/4 (.25)	3/8"	2"	SG2M6	662601 <b>95365</b>	BCSG2M6	662601 <b>57007</b>		3.03	
		7/16"	2"	SG2M7	662601 <b>95366</b>	BCSG2M7	662601 <b>56905</b>	-		
8" to 10"	1/3 (.33)	3/8"	2"	SG3M6		BCSG3M6	662601 <b>57008</b>		X.	
		7/16"	2"	SG3M7	662601 <b>95368</b>	BCSG3M7	662601 <b>56906</b>			
11" to 14"	1/2 (.50)	3/8"	2"	SG5M6	662601 <b>95369</b>	BCSG5M6	662601 <b>57009</b>	STRAIGHT	TAPERED	CONVEX
		7/16"	2"	SG5M7	662601 <b>95370</b>	CSG5M7	662601 <b>56907</b>			
15" to 20"	3/4 (.75)	7/16"	2"	SG7M7	662601 <b>95372</b>	BCSG7M	662601 <b>56908</b>			
21"+	1 (1.00)	7/16"	2"			BCSG10M7	662601 <b>57010</b>			

Standard Package = 1 tool



#### TECH TIP Stock Single Point Tool Marking System **Diamond Quality Diamond Size Shank Diameter** Shank Design SG/Ceramic 1 = 1/5 (.20) carat 6 = 3/8" М BCSG/Ceramic 2 = 1/4 (.25) carat J 7 = 7/16" 3 = 1/3 (.33) carat NS BC 5 = 1/2 (.50) carat 7 = 3/4 (.75) carat 10 = 1 carat Example: NS 2 M 6 SHANK J SHANK M



### Single Point Tools for Truing/Dressing Conventional Abrasives



## SINGLE POINT TOOLS FOR CONVENTIONAL ABRASIVES

- Consistent diamond structure and shape for repeatable dressing performance on conventional abrasives
- · Well defined, sharp, durable diamond point offers maximum cost effectiveness
- Steeper 60 degree angle head design allows for greater machine and part clearance to produce forms with tighter tolerances

#### Resettable NS (Norton Standard) Single Point Tools

 Selection of the correct tool and a proactive resetting program will usually result in the lowest dressing cost per part on conventional abrasives with these value priced, high quality diamonds

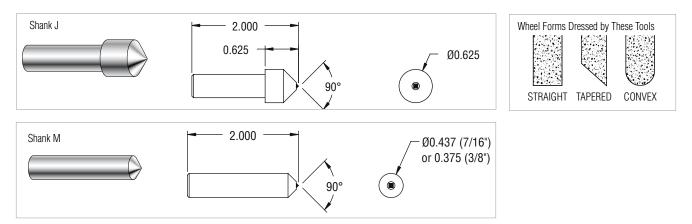
#### Non-resettable BC Single Point Tools

• The best selection for conventional abrasives when a resetting program is not feasible or low initial cost is the primary purchasing consideration

		TIER:	BETTER		GOOD	
		TRADENAME:	NS (NORTON STANDARD)		BC	
WHEEL Diameter	TOOL Carat Weight	TOOL DIAMETER	PRODUCT #	2 SETTABLE PTS (1 RESET) PART #	PRODUCT #	NON RESETTABLE PART #
		Pressing Conventional		(1 11-0-1 ) 1 1111 #		
Internal Wheel	1/5 (.20)	3/8"			BC1M6	662601 <b>95021</b>
		7/16"			BC1M7	662601 <b>95022</b>
Up to 7"	1/4 (.25)	3/8"	NS2M6	662601 <b>95116</b>	BC2M6	662601 <b>95000</b>
		7/16"	NS2M7	662601 <b>95117</b>	BC2M7	662601 <b>95001</b>
8" to 10"	1/3 (.33)	3/8"	NS3M6	662601 <b>95121</b>	BC3M6	662601 <b>95002</b>
		7/16"	NS3M7	662601 <b>95122</b>	BC3M7	662601 <b>95003</b>
11" to 14"	1/2 (.50)	3/8"	NS5M6	662601 <b>95126</b>	BC5M6	662601 <b>95004</b>
		7/16"	NS5M7	662601 <b>95127</b>	BC5M7	662601 <b>95005</b>
15" to 20"	3/4 (.75)	3/8"			BC7M6	662601 <b>95006</b>
		7/16"	NS7M7	662601 <b>95132</b>	BC7M7	662601 <b>95007</b>
		7/16"	NS7J7*	662601 <b>95130 NS</b>		
21" +	1 (1.00)	3/8"			BC10M6	662601 <b>95008</b>
		7/16"	NS10M7	662601 <b>95137</b>	BC10M7	662601 <b>95009</b>
		7/16"	NS10J7 *	662601 <b>95135</b>		

\* J-shank tools are available in 7/16" diameter with 5/8" head. Standard Package = one tool

NS Non-Stock: Please contact your Norton representative for current lead-times.





## DRESSING SOLUTIONS Single Point Tools

### Indexable Single Point Tools

Indexable tools are specifically designed to alleviate any misalignment issues and are the tools of choice for CNC grinders. They feature a two-part construction with the head and shank as separate pieces. After the initial installation, operators simply turn the indexable head with a wrench, while the tool shank remains secure (and aligned) in the tool holder.



## INDEXABLE SINGLE POINT TOOLS

- These indexable tools are easily turned without having to remove the tool from the holder, making it easier to turn than conventional tools and increasing frequency of beneficial tool turning
- U-Dex-It and Mini-Dex tools have a 60° included angle head design providing additional form versatility through better machine and part clearance
- · Offers an excellent choice for regulating wheels

#### Indexable Single Point Tools for Truing/Dressing Conventional Abrasives

Resettable NS (Norton Standard) Indexable Single Point Tools

- Selection of the correct tool and a proactive resetting program will usually result in the lowest dressing cost per part on conventional abrasives with these value priced, high quality diamonds
- Ideal for centerless grinders; using standard 5/8" wrench, the head can be turned through the hole in the side of the wheel guard without removing the guard

Resettable NS (Norton Standard) Mini-Dex Indexable Single Point Tools

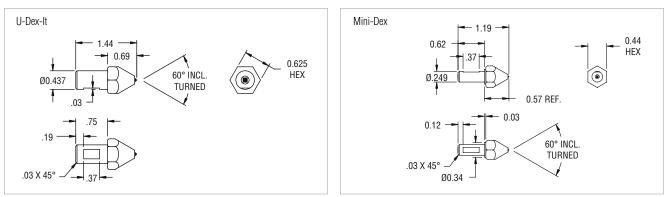
- Selection of the correct tool and a proactive resetting program will usually result in the lowest dressing cost per part on conventional abrasives with these value priced, high quality diamonds
- Use a standard 7/16" wrench to turn; designed for internal, bearing race, and twist drill flute machines

Non-Resettable Indexable Single Point Tools

- The best selection for conventional abrasives when a resetting program is not feasible or low initial cost is the primary purchasing consideration
- Ideal for centerless grinders; using standard 5/8" wrench, the head can be turned through the hole in the side of the wheel guard without removing the guard

		T	<i>IER:</i> <b>BETTER</b>		GOOD	
WHEEL DIAMETER	TOOL CARAT WEIGHT	TOOL SIZE	PRODUCT #	2 SETTABLE PTS (1 RESET) PART #	PRODUCT #	NON-RESETTABLE PART #
<b>Stock Indexable</b>	Single Point Tools for	r Truing/Dressing Convention	onal Abrasives			
Up to 7"	1/4 (.25)	7/16" x 1-7/16" with 5/8" hea	ıd		BCUD2	662601 <b>95023</b>
		1/4" x 1-3/16" with 7/16" hea	d NSMD2	662601 <b>95171</b>		
8" to 10"	1/3 (.33)	7/16" x 1-7/16" with 5/8" hea	d NSUD3	662601 <b>95162</b>		
11" to 14"	1/2 (.50)	7/16" x 1-7/16" with 5/8" hea	d NSUD5	662601 <b>95163</b>	BCUD5	662601 <b>95025</b>
15" to 20"	3/4 (.75)	7/16" x 1-7/16" with 5/8" hea	d NSUD7	662601 <b>95164</b>		
Ctandard Daakaga	ana taal					

Standard Package = one tool



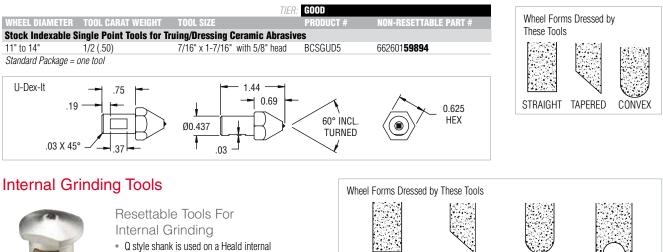


**DRESSING SOLUTIONS Single Point Tools** 

### Indexable Single Point Tools for Truing / Dressing Ceramic Abrasives

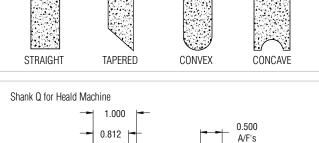
Non-Resettable Ceramic Indexable Single Point Tools

- U-Dex-It BCSG tool contain specially selected diamonds to withstand increased ceramic (SG, Quantum, Targa, etc.) grinding pressures
- Ideal for centerless grinders; using standard 5/8" wrench, the head can be turned through the hole in the side of the wheel guard without removing the guard
- . The best selection when a resetting program is not feasible or low initial cost is the primary purchasing consideration



			TIER:	BEST	
MACHINE	CARAT	SHANK	TOOL		2 SETTABLE PTS
TYPE	WEIGHT	DIAMETER	LENGTH	PRODUCT #	(1 RESET) PART #
<b>Stock Inte</b>	rnal Grindiı	ng Tools			
Heald	1/5 (.20)	7/16"	1"	NI21Q7	662601 <b>95180</b>
Standard Pa	ckage = 1 To	ol			

grinder (resettable)



### **Thread Grinding Tools**



### Thread Grinding Tools For SG / Ceramic Abrasives

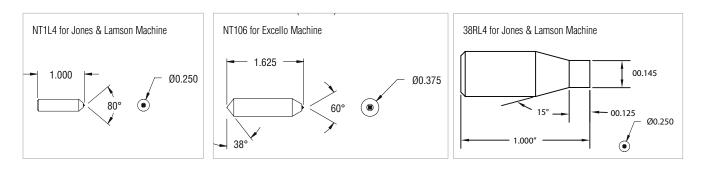
. These wheels are used on J & L and Excello thread grinding machines to accurately dress the grinding wheels that form the desired thread configuration (non-resettable)

20°

Ø0.437

				TIER.	BEST		Wheel Forme Dreed	ad by
MACHINE Type	SHANK DIAMETER	TOOL Length	INCLUDED ANGLE	MAX. RADIUS ON POINT	PRODUCT #	NON-RESETTABLE Part #	Wheel Forms Dress These Tools	2
<b>Stock Threa</b>	d Grinding Tool	s						
J&L	1/4"	1"			38RL4*	662601 <b>95100</b>		3.00
J&L	1/4"	1"	80°	.010"	NT1L4	662601 <b>95187</b>		<b>.</b>
EXCELLO	3/8"	1-5/8"	60°	.010"	NT106	662601 <b>95190</b>		~;
	nulti-point (grit) 3 skago – 1 Tool	0 - 40 mesh tool	1				STRAIGHT	TAPERED

Standard Package = 1 Tool



Ø0.625



## DRESSING SOLUTIONS TOOIroom Tools

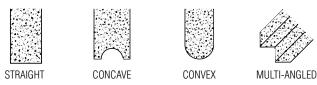


### **Toolroom Tools**

Norton Winter Toolroom Dressing Tools are primarily used on surface grinders to form the grinding wheel to an exact concave or convex radius. Although some tools are designed for use on a specific machine, many radius tools can be used on any grinder having the correct set-up.

Used generally on 8" diameter and smaller vitrified toolroom wheels, our Norton Winter offering includes phono-point, conventional radius, and full ball radius tools.

#### Wheel Forms Dressed by These Tools







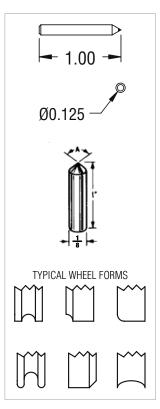
- Non-Resettable Phono-Point Tools
- · For general toolroom concave and convex dressing on small diameter grinding wheels

		TIEF	R: BETTER		GOOD	
INCLUDED ANGLE	SHANK DIAMETER	TOOL Length	PRODUCT #	NON-RESETTABLE PART #	PRODUCT #	NON-RESETTABLE Part #
<b>Stock Phon</b>	o-Point Tools					
60°	1/8"	1"	NP1M2	662601 <b>95225</b>	BCPP-60	662601 <b>95017</b>
	3/16"	1"	NP1M3	662601 <b>95226</b>		
	1/4"	1"	NP1M4	662601 <b>95227</b>		
75°	1/8"	1"	NP2M2	662601 <b>95228</b>	BCPP-75	662601 <b>95018</b>
	1/4"	1"	NP2M4	662601 <b>95230</b>		
90°	1/8"	1"	NP3M2	662601 <b>95231</b>	BCPP-90	662601 <b>95019</b>
	3/16"	1"	NP3M3	662601 <b>95232</b>		
	1/4"	1"	NP3M4	662601 <b>95233</b>		

Standard Package = one tool

Phono-	Phono-Point Tool Marking System					
Diamond Type	Included Angle On Diamond	Shank Style	Shank Diameter			
NP NP	1 = 60°	Μ	2 = 1/8"			
всрр	2 = 75°		3 = 3/16"			
Example: N	₽1M3 HTIP					
We recom	Use Toolroom Too mend dressing with coolant re seconds between passes	. However, if dressing to	otally dry, allc			

• Custom Full Ball Radius Tools should be returned for relap after minimum wear.





### **Radius Tools**

Concave Radius Tools

• This line offers a specially-shaped single point diamond, designed for forming concave radii on small diameter grinding wheels; not resettable.

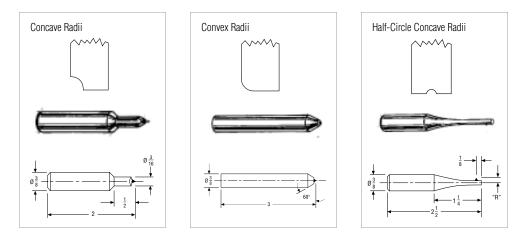
Convex Radius Tools

• This line offers a specially-shaped single point diamond, designed for forming convex radii on small diameter grinding wheels; not resettable.

- Half-Circle Concave Radius Tools (Available as Non-stock Only)
- This line offers a specially-shaped diamond set in the side of the shank for forming half-circle radii on small diameter grinding wheels.
- The tool is rotated to form the radius. Commonly called a "rat tail dresser"; not resettable.

		TIER:	BEST		GOOD	
RADIUS SIZE To be dressed	SHANK Diameter	TOOL LENGTH	PRODUCT #	NON-RESETTABLE Part #	PRODUCT #	NON-RESETTABLE Part #
<b>Stock Concave R</b>	adius Tools					
.010" to .015"	3/8"	2"	NR1P6	662601 <b>95210</b>		
.016" to .020"	3/8"	2"	NR2P6	662601 <b>95211</b>		
.021" to .032"	3/8"	2"	NR3P6	662601 <b>95212</b>		
.033" to .062"	3/8"	2"	NR4P6	662601 <b>95213</b>	BCRD	662601 <b>95016</b>
.063" to .125"	3/8"	2"	NR5P6	662601 <b>95214</b>	BCRD	662601 <b>95016</b>
.126" to .250"	3/8"	2"	NR6P6	662601 <b>95215</b>	BCRD	662601 <b>95016</b>
<b>Stock Convex Ra</b>	idius Tools					
.020" to .125"	3/8"	2"	NR2M6	662601 <b>95216</b>		
.126" to .250"	3/8"	2"	NR12M6	662601 <b>95217</b>		

Standard Package = one tool



Full-Ball Radius Tools for precision plunge form dressing of concave radii in the center of a grinding wheel are available made to your custom requirements. Ask your Norton representative for details.



## DRESSING SOLUTIONS Multi-Point (Grit) Tools



### Multi-Point (Grit) Tools

Since Norton Winter conventional and high-performance Multi-Point tools never need turning or resetting, they are the most economical way to accomplish a variety of straight, tapered, and step dressing operations on all sizes of cylindrical, centerless, surface, and toolroom grinding wheel applications.

Examples of Multi-Point Tool Selection

Conventional Wheel Spec:

Tool Selection:

Tool Selections:

Ceramic Wheel Spec:

Wheel Forms Dressed by These Tools



STRAIGHT TAPERED

## SPEC CHECK

Selection Guide

- Identify the wheel abrasive type: ceramic (SG, Quantum, Targa), aluminum oxide, or silicon carbide
- Determine the wheel diameter and grit size
- · Determine the tool's approach angle to the centerline of the wheel
- Identify the tool holder diameter
- Use 1E shape for angular wheel slide, cylindrical grinding and for shoulder or step truing

## TECH TIP

Multi-Point Tools – Straight Face Dressing and Truing

- · Most multi-point tools are used for straight face dressing
- Tool should have full face contact with the wheel
- With new tool, 3–5 passes at .005" per pass should be taken to expose diamonds
- Infeed per pass .001" .002"
- Use coolant whenever possible
- Use appropriate lead (and traverse rate)
- Contact your Norton representative for proper tool selection for Targa wheels

TOP VIEW

Multi-Point Dress Traverse Rate

Select a Lead Value based on desired Surface Finish and run the formula below.

1R6J6

SG1R6J7

FINISH	LEAD VALUE (PER WHEEL REVOLUTIONS)
For Coarse Finish (approx. 64 RMS)	.023" to .030" (.58mm – .76mm)
For Medium Finish (approx. 32 RMS)	.013" to .022" (.33mm – .57mm)
For Fine Finish (approx. 16 RMS)	.006" to .012" (.15mm – .33mm)

32A46-IVBE 7" x 1/2" x 1-1/4"

Machine has a 3/8" tool holder

Machine has a 7/16" tool holder

5SG60-JVS or 5NQ60-IVS 10" x 1" x 3"

Lead Value x Wheel Speed (RPM) = Traverse Rate in Inches/Minute

- Slower traverse rates result in a closed wheel face that produces less stock removal and improved workpiece finish.
- Faster traverse rates result in an open wheel face that produces greater stock removal and a rougher workpiece finish.

It is the user's responsibility to refer to and comply with ANSI B7.1

## TECH TIP

Optimizing SG Multi-Point Tool Performance

- To optimize applications using ceramic abrasives/tools, normal dressing parameters must change. Significant reductions in the amount of infeed and frequency of dress will
  result in significantly lower cost per part ground.
- While all SG/Ceramic tools have been designed to improve the efficiency of ceramic grinding applications, they can also offer significant benefits in many applications using conventional abrasives.
- When first using a SG/Ceramic tool, make 3 to 5 passes at .005" infeed to ensure full face contact between the dressing tool and wheel face.
- Reduce normal dressing infeed by half. Do not exceed infeed of .002" per pass.
- The lead selection should be between .006"-.030" per wheel revolution. Faster traverse with a SG/Ceramic tool generally provides an open wheel face that can maximize productivity of the ceramic abrasive.



Multi-Point Tool Marking System

**Tool Diamond** 

=

=

Size

4

6

8

12

14

Example: 1A 6 A 7

## **TECH TIP**

Diamond

Shape

1A

2A

3A

1E

2E

1R

2R

**To Dress Grinding** 

46 grit

54 - 100 grit

150+ grit

120 - 150 grit

Special Applications

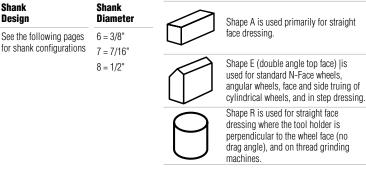
Wheels With Grit Size Of:

SHAPE	WIDTH	LENGTH	DEPTH	TOOL APPROACH Angle to wheel	FOR WHEEL DIAMETER
1A	1/4"	3/4"	5/16"	0°	Over 20"
2A	1/4"	1/2"	3/8"	0°	15" – 20"
3A	5/32"	3/8"	1/4"	0°	Over 20"
1E	5/32"	3/8"	5/16"	_	
2E	1/4"	1/2"	1/2"	-	20" x 2" and up
1R	1/4" Round		1/4"	0°	Up to 10"
2R	3/8" Round		3/8"	0°	11" - 14"

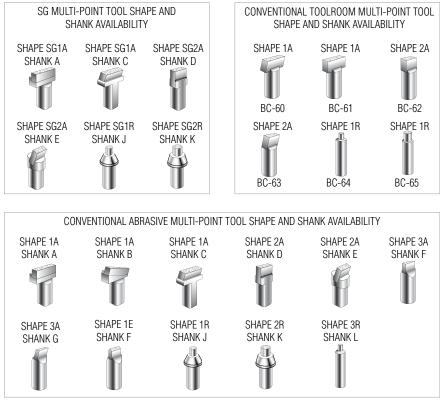


Multi-Point (Grit) Tools

**DRESSING SOLUTIONS** 



Multi-Point Tools for Straight Dressing



Shapes 3A (F and G Shanks) are used for form, shape, and step truing. Shape 1E is used for angle dressing





## **MULTI-POINT TOOLS**

- · Uniformly distributed diamonds in a tough, durable matrix for consistent performance throughout tool life
- · Fresh, multiple diamond points exposed in truing operation; no turning or resetting required for faster, more consistent straight face dressing and longer tool life than single point tools
- Overall diamond weight exceeds equivalent single point tool making this the most economical way to dress straight and tapered forms

### Multi-Point Tools for Truing and Straight Dressing

Multi-Point Tools For SG/Ceramic Abrasives

- · Designed specifically for use on ceramic (SG, Quantum, Targa, etc.) abrasives, SG tools contain a higher diamond concentration to withstand the increased grinding pressures generated by the ceramic abrasives
- These tools have improved life and dress quality; they can also offer significant benefits in many applications when used on conventional abrasives

Standard Multi-Point Tools

· The ideal selection for use on conventional abrasives in high-production applications

#### **BC Multi-Point Tools**

· General-purpose tools ideal for conventional toolroom applications with a specially selected diamond size for a broad range of dressing applications

						_			
			TIER:	BEST		BETTER		GOOD	
			TRADENAME:	SG/CERAMI	C	STANDARD		BC	
		TOOL							
WHEEL	WHEEL	APPROACH	TOOL						
DIAMETER	GRIT SIZE	ANGLE	DIAMETER	PRODUCT #	PART #	PRODUCT #	PART #	PRODUCT #	PART #
Multi-Point	Tools for Stra	aight Dressing	3						
Up to 10"	54 to 100	0°	7/16"			1R6J7	662601 <b>95088</b>	BC64	662601 <b>95014</b>
		0°	3/8"			1R6J6	662601 <b>95085</b>		
1" to 14"	54 to 100	0°	7/16"	SG2R6K7	662601 <b>95378</b>	2R6K7	662601 <b>95096</b>	BC65	662601 <b>95015</b>
15" to 20"	54 to 100	0°	7/16"	SG2A6D7	662601 <b>95375</b>	2A6D7	662601 <b>95046</b>	BC62	662601 <b>95012</b>
		15°	7/16"	SG2A6E7	662601 <b>95376</b>	2A6E7	662601 <b>95049</b>	BC63	662601 <b>95013</b>
	120 to 150	0°	7/16"			2A8D7	662601 <b>95047</b>		
		15°	7/16"			2A8E7	662601 <b>95050</b>		
21" +	46	15°	7/16"			1A4C7	662601 <b>95038</b>		
	54 to 100	0°	7/16"	SG1A6A7	662601 <b>95373</b>	1A6A7	662601 <b>95031</b>	BC61	662601 <b>95011</b>
		15°	7/16"			1A6B7	662601 <b>95035</b>		
		15°	7/16"	SG1A6C7	662601 <b>95374</b>	1A6C7	662601 <b>95039</b>	BC60	662601 <b>95010</b>
	120 to 150	15°	7/16"			1A8C7	662601 <b>95040</b>		

Standard Package = one tool

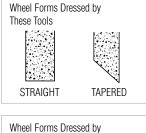
NS Non-Stock: Please contact your Norton representative for current lead-times.

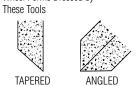
### Multi-Point Tools for Form, Shape, or Step Dressing Conventional Abrasives

			TIE	R: BETTER	
WHEEL DIAMETER	WHEEL GRIT SIZE	TOOL Approach angle	TOOL Diameter	PRODUCT #	PART #
Stock Multi-P	oint Tools for For	m, Shape, and Step Dre	ssing		
All	54 to 100	0°	7/16"	3A6F7	662601 <b>95055</b>
		15°	7/16"	3A6G7	662601 <b>95975</b>

Standard Package = one tool

			TIE	R: BETTER				
WHEEL DIAMETER	WHEEL GRIT SIZE	TOOL Approach angle	TOOL DIAMETER	PRODUCT #	PART #			
Stock Multi-Point Tools for Angular Dressing Conventional Abrasives								
All	54 to 100	0°	7/16"	1E6F7	662601 <b>95080</b>			
Standard Package	ana taal							







### **DRESSING SOLUTIONS** High Performance Grit Tools



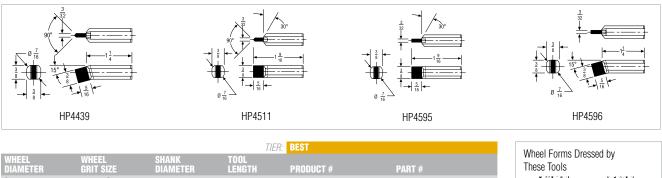
#### **High Performance Grit Tools**

Norton Winter High Performance grit tools are used in the same manner as multi-point tools, but are designed to produce a superior finish. They are used on 120 - 150 grit wheels. The traverse rates are equal to or faster than ordinary tools. Mounted on standard shanks, standard High Performance grit tools have a 3/8" wide by .100" thick diamond impregnated blade with a greater number of sharp points than in ordinary multi-point tools.

Since High Performance grit tools contain a higher concentration of diamond than found in standard multi-point tools, they are well suited for ceramic abrasive applications.

### Typical Machines and Applications

- HP4439: cylindrical machines, grinding thrust walls, bearing diameters and multi-diameter shafts with radii
- HP4511: angular machines plunge grinding multi-diameter shafts and plunge grinding on dual-wheel forms
- · HP4595: cylindrical machines grinding main bearing and lobes on camshafts
- HP4596: centerless machines step grinding and machines dual-wheel grinding transmission shafts



DIAMETER	GRIT SIZE	DIAMETER	LENGTH	PRODUCT #	PART #	These Tools
Stock High Pe	erformance Grit To	ols				
Up to 20"	120 to 150	7/16"	1-9/16"	HP4439	662601 <b>95270</b>	
Up to 20"	120 to 150	7/16"	1-9/16"	HP4511	662601 <b>95271</b>	
Up to 20"	120 to 150	7/16"	1-9/16"	HP4595	662601 <b>95272</b>	
Up to 20"	120 to 150	7/16"	1-9/16"	HP4596	662601 <b>95273</b>	
Standard Packa	ne – one tool					STRAIGHT

Standard Package = one tool

TAPERED

### DRESSING SOLUTIONS Blade Tools



### **Blade Tools**

With the choice of natural and synthetic diamond in three performance/price tiers, blade tools can meet all your angle, step, and radius dressing requirements for cylindrical, surface, and centerless grinding.

Wheel Forms Dressed by These Tools

TAPERED









### Synthetic Blade Tools - For USB and Quantum

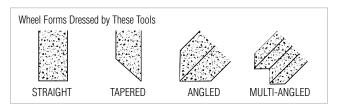
- Synthetic diamond with a controlled diamond shape provides a constant cross section of diamond to the wheel throughout the life of the tool
- · Provides consistent wheel conditioning from the first dress to last; economical, long-lasting alternative to chisel-type tools for centerless form grinding
- USB (made-to-order) for dressing aluminum oxide wheels; Quantum (made-to-order) for dressing ceramics and silicon carbide wheels

### Multi-Cut Blade Tools (Available in Stock and Made-To-Order)

- Manufactured with top quality natural or processed elongated diamond
- · Customizable diamond type depending on wheel specification and application requirements
- Durable performing tools in a medium price range

		TIER:	BEST		BETTER	
		TRADENAME:	SYNTHETIC BL	ADE TOOLS	MULTI-CUT TO	OLS
WHEEL DIAMETER (WIDTH < = 9")	TOOL Approach angle	SHANK Diameter	PRODUCT #	PART #	PRODUCT #	PART #
Blade Tools						
12" to 17"	0°	7/16"	NQ20A7	079587 <b>47944 NS</b>		
	15°	7/16"	NQ215A7	079587 <b>47945 NS</b>	MC355	662601 <b>95266</b>
18" to 29"	0°	7/16"	NQ30A7	079587 <b>47946 NS</b>		
	15°	7/16"	NQ315A7	079587 <b>47947</b> NS		
30" - 36"	0°	7/16"	NQ50A7	079587 <b>47948 NS</b>		
	15°	7/16"	NQ515A7	079587 <b>47950 NS</b>		

These stock tools are composed of 1 layer with 3 diamonds. These tools are not resettable or relappable. NS Non-Stock: Please contact your Norton representative for current lead-times. Standard Package = one tool





### DRESSING SOLUTIONS Form Tools



### Form Tools

Norton Winter Form Tools have diamond lapped to specific angles and radii required for a particular application, machine, contour dressing system, or CNC operation. Due to the high degree of accuracy necessary, the diamond is of special shape and quality.

Used tools can be relapped - the tip geometry can be restored on worn tools at a reduced cost.

Jones & Lamson

• Hoglund

Dia-Form

Moore Pantograph

Wheel Forms Dressed by These Tools









Ask your Norton representative for information on our

made-to-order form tools for the following machines:

**TECH TIP** 

- How to Use Form Dressing Tools
- Proper centerline and light infeeds are essential to minimize side pressure. Excessive pressure will cause the diamond to fracture.
- Cone point tools should be rotated approximatley 1/4 turn daily.

### Cone Point Tools

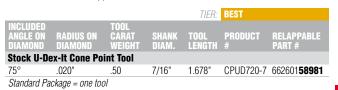


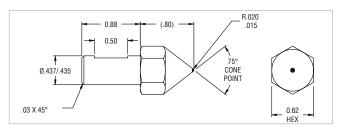
# CONE POINT TOOLS

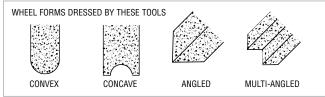
- Norton Winter vacuum braze technology used in the manufacturing surpasses all traditional diamond retention methods
- Absolute diamond retention, diamond pullout prevention during the dressing cycle, and longer tool life through multiple relaps
- Diamond is accurately coned to the specific included angle and radius making these tools ideal when the most intricate, precise forms and radii are required

#### U-Dex-It Cone Point Tool

- · Used for precision dressing of intricate forms and radii
- Specially designed with 5/8" indexable head for easy turning during use
- These tools can be relapped







# SPEC CHECK

#### Cone Point Tool Marking System

Tool Type	Included Angle On Diamond	Radius On Diamond	Carat Weight	Shank Diameter
CP	6 = 60°	05 = .005"	L = .1015	6 = 3/8"
	7 = 75°	10 = .010"	M = .2025	7 = 7/16"
	$9 = 90^{\circ}$	15 = .015"	H = .33	
		20 = .020"	X = .50	
		25 = .025"		
		30 = .030"		
Exampl	e: CP 6 10 M	-6		

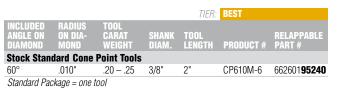


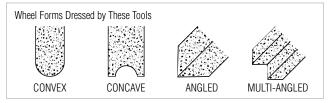
### DRESSING SOLUTIONS Form Tools

### **Cone Point Tools**

#### Standard Cone Point Tool

 These tools are used for precision dressing when the most intricate forms and radii are required; can be relapped



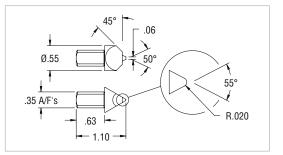




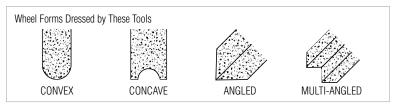
#### Chisel Point Tool for Toyoda Grinders

- · High-precision chisel point tool designed for forming intricate shapes and radii
- Specifically engineered to fit Toyoda machine series GL32 and GL4, it can also be used on various straight and angle-head grinders – for dressing conventional and ceramic abrasive wheels, sizes 12" to 24"
- This tool can be reset/relapped

				TIER:	BEST	
INCLUDED ANGLE ON DIAMOND	RADIUS ON Diamond	TOOL CARAT WEIGHT	SHANK Diam.	TOOL Length	PRODUCT #	RELAPPABLE PART #
<b>Stock Chisel Poin</b>	t Tool					
55°	.020"	.75	7/16"	1.10"	CHT520-7	662601 <b>03741</b>
Standard Package =	one tool					



2



# SPEC CHECK

#### Chisel Point Tool Marking System

Tool Type	Included Angle On Diamond	Radius On Diamond	Carat Weight	Shank Diameter
СН	6 = 60°	05 = .005"	L = .1015	6 = 3/8"
(Natural	7 = 75°	10 = .010"	M = .2025	7 = 7/16"
Diamond)	$9 = 90^{\circ}$	15 = .015"	H = .33	
		20 = .020"	X = .50	
		25 = .025"		
		30 = .030"		
Example: CH	9 5 M-6			

# **TECH TIP**

Ø <u>3</u>

8

Chisel Point Tools Chisel Point Tools should be rotated 180° when dulling or contour problems occur.





NDRTON

SAINT-GOBAIN

#### **Cluster Tools**

Norton Winter Cluster tools are designed specifically for straight face dressing of large diameter, coarse grit grinding wheels on single or double disc, centerless, or surface grinders.

Wheel Forms Dressed by These Tools



STRAIGHT TAPERED

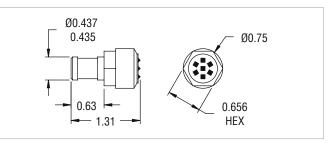
#### **Multi-Point Cluster Tools**

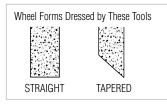
 Multi-Point Cluster tools are typically used for straight face dressing on disc and centerless operations

WINTER

- For greatest efficiency, these tools should be mounted at a 15° angle so that three diamonds are in contact with the wheel face at all times
- The tool should be rotated at frequent intervals; not resettable

		TIER:	BETTER	
DIAMONDS ON FACE	SHANK	TOOL LENGTH	PRODUCT #	NON-RESETTABLE Part #
Stock Multi-				
7	7/16"	1-5/16"	NC7K7	662601 <b>95206</b>
Standard Packa	age = 1 Tool			

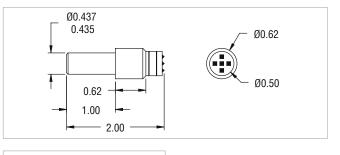




### Dia-Pak Tools

- Dia-Pak tools are primarily used in straight face disc grinding, but are extremely versatile and may also be used in centerless and surface operations
- Designed for maximum economy, three layers of diamond are carefully arranged so that a new layer is exposed before the previous layer is completely worn away; not resettable

			TIER:	BETTER	
FOR WHEEL	DIAMONDS	SHANK	TOOL	PRODUCT	NON-RESETTABLE
DIAMETERS	PER LAYER	DIAMETER	LENGTH		PART #
Stock Dia-P	ak Tools				
Up to 14"	5-4-5	7/16"	2"	DP20	662601 <b>95200</b>
Up to 20"	7-6-7	7/16"	2"	DP30	662601 <b>95201</b>
Any	7-6-7	7/16"	2"	DP35	662601 <b>95202</b>
Standard Pack	kage = 1 Tool				



Wheel Forms Dressed by These Tools

### TECH TIP

Cluster and Dia-Pak Tools - Straight face dressing of hard / coarse wheels:

- Tool should approach the wheel at a 15° angle and be rotated periodically to keep three diamonds in contact with the wheel at all times.
- Tools can also be used at a 90° to the wheel face.
- Multi-Point Cluster tools should be rotated at frequent intervals.
- Infeed per pass should not exceed .0015" (.001" with ceramic Norton SG, Quantum, Targa TG, etc. wheels).
- · Use coolant whenever possible.
- These tools permit a faster traverse rate providing a freer cutting wheel than when dressed by a single-point tool.



### DRESSING SOLUTIONS Accessories



### Tool Holder/Hand Dresser

- Designed for use when offhand truing and dressing on tool and cutter, or benchstand grinders.
- This stock hand dresser will not rust, and is 10-1/2" long, with a hollow shaft that accepts any tool shank length from 3/4" to 9". The 1-3/4" diameter plastic knob ensures a firm grip. The collet accepts a 7/16" diameter tool shank.

DESCRIPTION	PART NUMBER
Hand Dresser	662601 <b>95020</b>







#### Open or Closed Dressing... You Can Count on Fliesen Tools

Whether dressing a wheel OPEN or CLOSED you can count on Fliesen tools. Open wheels (sharp, free-cutting abrasive grains are exposed) are created by increasing the speed a Fliesen tool moves across the wheel when dressing. Generally considered the most favorable wheel conditioning, open wheels avoid workpiece burn while maximizing a wheel's ability to remove metal quickly when grinding.

Slowing a Fliesen tool as it moves across the wheel creates a closed wheel condition (abrasive grains are smoother, less sharp); a very helpful condition when trying to lower part surface finish readings.

- Harder, H-bond metal formulation tools have been specifically engineered to efficiently dress durable silicon carbide and ceramic wheels
- Furioso Fliesen tools have a unique bond system developed for optimal performance when dressing Norton Quantum (NQ) ceramic wheels
- · W-bond Fliesen tools are designed for conventional aluminum oxide wheels

### The Benefits of Fliesen Tools

#### Spend More Time Grinding

Single point, chisel, and cone point tools require operator attention to ensure proper tool rotation at regular intervals. Fliesen tools require no adjustments. Simply install the tool, dress the wheel to break it in, and the tool will do the rest. Operators spend more time grinding – rather than making non-productive dressing adjustments.

#### Longer Tool Life

Expect long life when using a Fliesen tool. Other stationary tools, made with a single diamond stone, develop flat spots ("wear flats") over time – which create chatter and burn. Fliesen tools use hand-set, fine diamond grit, eliminating the creation of wear flats.

#### Fliesen Tool Configurations: Plate and Shank

Fliesen tools are available in two basic tool configurations. The most common is a plate configuration, which is somewhat rectangular-shaped with a mounting hole. Fliesen shank tool configurations are plates mounted in shanks of varying sizes and shapes. Most grinding machines accommodate one or the other tool configuration. To find the correct tool configuration for your machine, check the existing dressing tool, or consult your grinding machine manual.

#### **Choosing The Correct Fliesen Tool**

Using the chart below, find your desired wheel form – then locate the preferred diamond position. Next, find the correct tool configuration for your machine: plate or shank tool. Follow down that column to find the Fliesen page for your plate or standard shank tool configuration. Go to the appropriate page. Locate the corresponding zone for your wheel diameter and width on the graph. Find that zone number in the part number chart. Next, moving to the right, find your wheel abrasive type and grit size. Locate the part number for your Fliesen tool.

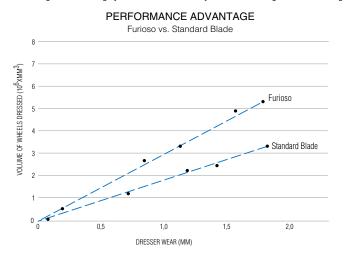
Desired Wheel Form					
Diamond Positions	Blade Only FR	Side-Mounted FRS, FAS, FBS, FCS & FDS	Center-Mounted FAS, FBS, FCS & FDS	Double-Sided FCSD & FDSD	Twin FDST, FSST & 1TFAS
TOOL CONFIGURATI	ON				
Plates	Consult Customer Service	Page 296 – 297	Consult Customer Service	Consult Customer Service	Page 296– 297
Shank Tools	Consult Customer Service	Consult Customer Service	Consult Customer Service	Consult Customer Service	Consult Customer Service



## DRESSING SOLUTIONS Diamond Stationary Fliesen Tools

### **Furioso Tools**

The new generation of highly wear-resistant stationary diamond dressing tools for dressing modern ceramic abrasives



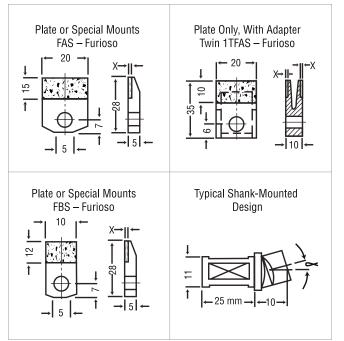




Best choice for optimum performance of Norton Quantum or other ceramic wheels

# FLIESEN FURIOSO TOOLS

- The optimized combination of diamond quality, bond and setting pattern when dressing Norton Quantum (NQ) or other ceramic grinding wheels
- · Improved wear-resistance and enhanced tool life; excellent dressing behavior with optimum consistency
- Constant surface roughness





These three pages highlight a small sample of our Fliesen tool offering. Ask your Norton representative for complete product listing and information on these tools.

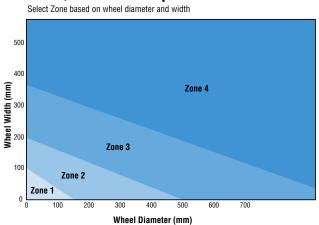
#### Standard Furioso Plate Drawings



### Furioso Plates; Side-Mounted and Twin

Use the Wheel/Tool Graph to identify your grinding wheel's Zone number, and the chart below to find the Furioso tool for your application.

#### Wheel / Furioso Tool Graph



		TIER: TO DRESS:	BEST NORTON OUA	NTUM NO CERAMI	C WHEELS	S	PEC	CHECK
Side-Mount	ZONE NO. / SERIES	WHEEL GRIT SIZE	TOOL #	PART #	DESCRIPTION		de Size	
	Zone 2 FBS Series Zone 3 FAS Series	36 - 54           54 - 80           120 - 180           36 - 54           54 - 80           80 - 120           120 - 180	DT1463 DT1462 DT1460 DT1467 DT1466 DT1465 DT1464	69014122948* 69014122947* 69014122944* 69014122952* 60157690579* 60157693885* 69014122950*	FBS 140 Furioso FBS 115 Furioso FBS 75 Furioso FAS 140 Furioso FAS 115 Furioso FAS 90 Furioso FAS 75 Furioso	1 2 3	CRIPTION FBS FAS TFAS	DIMENSION 10 mm thick, 15 mm usable length 20 mm thick, 15 mm usable length Twin blade with cooling duct
Twin		120 100	DITIOT	00011122000	1710 10 1 01030		mond Gi	
	Zone 4 1TFAS Series	36 - 54 54 - 80 80 - 120 120 - 180	DT1471 DT1470 DT1469 DT1468	690141 <b>22956</b> * 690141 <b>22955</b> * 690141 <b>22954</b> * 690141 <b>22953</b> *	1TFAS 140 Furioso 1TFAS 115 Furioso 1TFAS 90 Furioso 1TFAS 75 Furioso	DES( 140 115 90 75	CRIPTION	FEPA D1181 D1001 D711 D501

\* All Furioso Plates shown ship in 10 business days from receipt of order.

### **Furioso Shank Tools**

Made-to-order Furioso shank tools are also available. Ask your Norton representative for ordering assistance.

#### Side-Mounted Diamond Sections

Tools are available in different offset positions and angles.

Zero Offset





Offset Left, Specify angle amount

Offset Right, Specify angle amount



Diamond sections can be tipped right or left.

Diamond

Tipped Right,

Specify angle



Diamond Tipped Left, Specify angle



There are many different diamonds making up a single plate as this cut-away view shows.



### DRESSING SOLUTIONS Diamond Rotary Dressing Tools



Norton Winter diamond rotary truing and dressing tools provide a very efficient way to modify the shape and topography of your grinding wheels.

**Products:** 

- Form Rolls: Plunge Dressing

  Infiltrated diamond form rolls
- Reverse plated diamond form rolls
- Dressing Discs: CNC Traverse Dressing
- Infiltrated dressing discs
- BPR dressing discs (for dressing superabrasive wheels)
- IDW dressing discs (for dressing superabrasive wheels)
- Truing and Dressing Spindles and Devices

#### Form Roll: Plunge Dressing

- Diamond roll geometry matches geometry of part to be ground
- · Roll is fed into grinding wheel to generate the desired form and wheel surface condition
- Used where lowest cycle time and highest accuracy is required

### Dressing Disc: CNC Traverse Dressing

- Diamond dressing disc has a thin diamond section that is traversed across the face of the grinding wheel
- Profile is generated with a CNC program or template
- · Used for simple profiles or where flexibility is necessary



### How to Order Rotary Dressing Tools

Provide the following information to your local sales representative or customer service representative

Legible blueprint of roll, wheel, or part with the following geometry:

- Overall diameter
- Overall length
- Bore size and tolerances required
- Mounting pattern
- Any feature with tolerances less than 0.0002" (5 um) must be clearly defined for engineering review
- If designing from a part, a fully dimensioned part drawing is required
- Abrasive type (natural diamond, synthetic diamond, CVD stones, etc.)
- · Specification of wheel to be dressed (need at least the grit type and size)
- Dressing type (Plunge or CNC Profiling)



Request the "Rotary Truing and Dressing" brochure, form # 8535, and contact your Norton representative for more information and expert assistance with your dressing operation.



### DRESSING SOLUTIONS Truing Devices



#### Brake Controlled Truing Devices

Designed for truing diamond and cBN wheels rapidly, effectively, and with a minimum of superabrasive loss. Recommended for wheels up to 12" in diameter.

#### **Applications:**

- Truing straight, cup and cylinder wheels:
- Straight wheels, used on chip breaker, tool and cutter, surface, and cylindrical grinding machines
- · Cup wheels, used on vertical spindle surface grinders
- Internal grinding wheels
- · Cut-off wheels



Norton Abrasives: True to Form, Dress To Cut

𝒫 nortonsga.us/qnfx2

#### Non-Stock 4597 Brake Controlled Truing Device

The 4597 is engineered for heavier and more frequent truing applications. The adjustable speeds allow for varying conditions (between 1050 and 1500 SFPM). It comes complete with a reusable case, two 3" 38A60-M8VBE\* vitrified wheels, Truing Device Tips book and a dressing stick. It can be rebuilt using the 4597RK Rebuild Kit.

Worn #4597 Brake Controlled Truing Devices (UPC 662601**95350**) in need of reconditioning (beyond new shoes and springs) may be returned to be rebuilt. Contact Customer Service for return instructions and quote.

#### Stock 3597 Pacesetter Brake Controlled Truing Device

The Pacesetter model is ideal for light-duty use. The pre-set brake speed requires no adjusting. This model includes one 3" 38A60-M8VBE\* vitrified wheel and can be rebuilt using the 3597RK Rebuild Kit.

#### Stock 4597RK and 3597RK Rebuild Kits

The truing devices can be rebuilt with these kits, consisting of 3 brake shoes, 3 springs, and 3 screws.

TIED	BETTER		0000			
TIER:			GOOD		SPEC CHE	-CK
ITEM	PRODUCT NO.	PART #	PRODUCT NO.	PART #		
Truing Devices					Truing Diamond a	nd
4597 Brake Controlled Truing Device	4597	662601 <b>95350 NS</b>			Ŭ	
3597 Pacesetter Brake-Controlled	3597	662601 <b>35578</b>			cBN Wheels	
Truing Device						TRUING WHE
Truing Device Rebuild Kits					SUPERABRASIVE WHEEL	SPECIFICATI
4597 Rebuild Kit	4597RK	662601 <b>95351</b>			<b>Resin and Vitrified Bond</b>	
3597 Pacesetter Rebuild Kit	3597RK	662601 <b>35595</b>			80, 100, and 120 grits	38A60-MVBE
Replacement Wheels					-	37C60-MVK
3 x 1 x 1/2			38A60-MVBE	662435 <b>29145</b>	150, 180, and 220 grits	38A80-MVBE
			38A80-MVBE	662435 <b>29146</b>		37C80-MVK
			37C60-MVK	662435 <b>29166</b>	320 and finer grits	37C100-HVK
			37C80-HVK	662435 <b>29170</b>	Metal Bond	
			37C80-MVK	662435 <b>29171</b>	80, 100, and 120 grits	38A60-MVBE
			37C100-HVK	662435 <b>29172</b>	150, 180, and 220 grits	38A80-MVBE
			37C100-MVK	662435 <b>29070</b>	240 and finer grits	37C80-HVK

NS Non-Stock: Please contact your Norton representative for current lead-times.

### TECH TIP

- Prior to truing the wheel, run a wax crayon over the wheel face. Important: do NOT use any liquid-based ink on superabrasive wheels.
- Any crayon left on the wheel face after truing will reveal untrued areas.
- Indicate the superabrasive wheel runout before starting... usually within .001" to .002", to minimize wheel loss.
- Mount the device spindle parallel to the wheel spindle to ensure proper straight face truing.
- For cup-shaped wheels, the device spindle will be mounted perpendicular to the wheel spindle.
- · Always use the brake-controlled truing device dry.
- Bring the diamond/cBN wheel and the truing wheel together until they almost touch.

- Start the diamond/cBN wheel to normal speed; spin the truing wheel in the same direction at point of contact.
- Bring the two wheels together until they touch.
- · Make sure the truing wheel is spinning at time of contact.
- Traverse the wheel back and forth at 30 to 60 inches/minute.
- Downfeed .0005" to .001" at the end of each traverse.
- At the end of truing, the diamond/cBN wheel should be smooth and in truth.
- · Apply a dressing stick to sharpen the wheel.



It is the user's responsibility to refer to and comply with ANSI B7.1





Regular use of properly selected dressing sticks will help you achieve maximum performance from your grinding wheels.

Applications: Grit Range: Abrasive Grain: Shape: Machine Used: Truing, cleaning, and dressing diamond, cBN, and conventional abrasive grinding wheels 16 – 1200 Aluminum Oxide, Boron Nitride, Silicon Carbide Square, rectangular, and round

**DRESSING SOLUTIONS** 

**Dressing Sticks** 

Grinding Wheel-to-Product Recommendation Guide

Selecting the appropriate dressing stick for each application depends on the wheel size, type, speed, specification, and grit size, as well as the workpiece material. Initial starting specifications are listed below. We recommend testing several sticks to find the best one for your application.



	Product	Specification					
Superabrasive Wheels - Resin and Vitrified Bond							
- 80, 100, and 120 grits	Dressing Stick	38A150-HVBE					
- 150, 180, and 220 grits	Dressing Stick	38A220-HVBE					
- 320 and finer grits	Superfine Stick	NMVC400-J5VCA					
Superabrasive Wheels - Metal Bond							
- 80, 100, and 120 grits	Dressing Stick	37C80-NV					
- 150, 180, and 220 grits	Dressing Stick	37C150-KV					
- 240 and finer grits	Dressing Stick	37C220-KV					
Conventional Vitrified Wheels - Vitrified Bond							
- 46 grit and finer and M grade and softer	High Performance Dressing Stick	Norbide					
	Conventional Dressing Stick	37C24-SVK					

### TECH TIP

Dressing Diamond and cBN Wheels

- Resin and Vitrified Bond Diamond, and cBN Wheels: choose a dressing stick one or two grit sizes finer than the abrasive in the wheel in a soft grade (H or I)
- Metal Bond Diamond, and cBN Wheels: choose a stick the same grit size or one grit size coarser than the abrasive in the wheel in a medium grade (K-M)

It is the user's responsibility to refer to and comply with ANSI B7.1

### Offhand Grinding Wheel Dressing Stick and Holder

This convenient metal holder is widely used by mechanics and foundry-men for truing, dressing and changing the face of the wheel. The JT246 dressing stick – an extra coarse grit silicon carbide for dressing conventional vitrified wheels – is firmly held and adjusted by the knurled control.



		TIER.	BETTER	
SIZE (D x L)	SPEC.	STD. PKG.	PRODUCT #	PART #
<b>Offhand Grindi</b>	ng Wheel Dressing Stick and Holder			
1/2 x 6 Round	Silicon Carbide Extra Coarse Grit Round Dressing Stick	5	JT246	614636 <b>87900</b>
10 Overall	Dressing Stick Holder	5	H6	614636 <b>87895</b>

### Norbide High-Performance Sticks

For offhand truing and dressing of medium grit, soft- and medium-grade conventional vitrified grinding wheels. Norton Norbide sticks are the hardest sticks you can buy. Made from boron carbide, they are well suited for dressing tool and cutter wheels 10" and smaller, especially cup and saucer shapes.

	TIE	R: BETTER	
SIZE (T x W x L*)	STD. PKG.	SPEC.	PART #
<b>High Performance L</b>	ong Life Stick		
1/4 x 1/2 x 3	5	Norbide	614636 <b>10148</b>
* Thickness x Width x	Length		



### Vitrified Dressing Sticks

#### Aluminum Oxide (White)

For dressing and cleaning diamond and cBN superabrasive wheels.

#### Silicon Carbide (Black)

Coarse grit (16 - 46) and hard-grade (R and harder) sticks are used for dressing conventional vitrified wheels. Finer grit and softer grades are used for dressing diamond wheels.

	TIER	BETTER			TIER:	BETTER	
SIZE (T x W x L)	STD. PKG.	SPEC.	PART #	SIZE (T x W x L)	STD. PKG.	SPEC.	PART #
Vitrified Dressing	Sticks – Alumi	num Oxide		Vitrified Dressing S	Sticks – Silicon	Carbide	
3/8 x 3/4 x 4	5	38A150-IVBE	614636 <b>39635</b>	1/2 x 1/2 x 6	5	37C24-SVK	614636 <b>10285</b>
1/2 x 1/2 x 4	5	38A220-HVBE	614636 <b>10555</b>		5	37C100-LV	614636 <b>10201</b>
1/2 x 1/2 x 6	5	38A150-IVBE	614636 <b>10303</b>		5	37C150-KV	614636 <b>10205</b>
	5	38A220-HVBE	614636 <b>10103</b>		5	37C150-MV	614636 <b>10207</b>
1/2 x 3/4 x 4	5	38A60-LVBE	614636 <b>10415</b>		5	37C220-KV	614636 <b>10214</b>
1/2 x 1 x 4	5	38A180-IVBE	614636 <b>99705</b>	3/4 x 3/4 x 6	5	37C150-LV	614636 <b>10375</b>
3/4 x 3/4 x 4	5	38A60-LVBE	614636 <b>10440</b>	1x1x6	5	37C20-SVK	614636 <b>10459</b>
	5	38A80-MVBE	614636 <b>10362</b>		5	37C24-SVK	614636 <b>10462</b>
	5	38A90-LV	614636 <b>39632</b>		5	37C24-TVK	614636 <b>10354</b>
	5	38A150-HVBE	614636 <b>10291</b>		5	37C46-RVK	614636 <b>10466</b>
	5	38A150-IVBE	614636 <b>10368</b>		5	37C80-NV	614636 <b>10393</b>
	5	38A220-HVBE	614636 <b>10290</b>		5	37C150-KV	614636 <b>10438</b>
3/4 x 3/4 x 8	5	38A220-HVBE	614636 <b>10280</b>		5	37C220-KV	614636 <b>10398</b>
1x1x6	5	38A150-HVBE	614636 <b>10405</b>	1 x 1 x 8	5	37C24-SVK	614636 <b>10471</b>
	5	38A150-IVBE	614636 <b>10453</b>	1 x 2 x 8	5	37C16-TVK	614636 <b>10482</b>
	5	38A220-HVBE	614636 <b>10406</b>		5	37C24-TVK	614636 <b>10485</b>
1 x 1 x 8	5	38A120-IVBE	614636 <b>10390</b>	2 x 2 x 8	5	37C24-SVK	614636 <b>10490</b>
	5	38A150-IVBE	614636 <b>10455</b>	Vitrified Round Dre	essing Sticks –	Silicon Carbide	
				1/2 x 6	5	37C24-SVK	614636 <b>10371</b>
				1 x 6	5	S/C Ex-C (JT276)	614636 <b>87905</b>

### Vitrified Superfine Sticks

For dressing diamond and cBN superabrasive wheels.

	TIER.	BETTER	
SIZE (T x W x L)	STD. PKG.	SPEC.	PART #
<b>Vitrified Superfine</b>	e Sticks – Alumi	num Oxide	
1 x 1 x 6	5	PCD Coarse - 400 grit	614636 <b>47865</b>
	5	PCD Fine - 800 grit	614636 <b>47867</b>
1x1x8	5	NSA320-H8V	614636 <b>10597</b>
<b>Vitrified Superfine</b>	e Sticks – Silico	n Carbide	
1/2 x 1/2 x 6	5	NMVC320-J5VCA	614636 <b>10599</b>
	5	NMVC400-J5VCA	614636 <b>50324</b>
1 x 1 x 6	5	NMVC320-J5VCA	614636 <b>10605</b>
	5	NMVC400-J5VCA	614636 <b>50450</b>

### Organic Silicon Carbide Micro Dressing Wheel

Type 01 straight dressing wheels with sharp high-purity green silicon carbide abrasive. For micro-dressing fine grit polyimide superabrasive diamond wheels.

			I IE	R: BEST
			ABRASIV	E: Silicon Carbide
SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.	SPEC.	PART #
Type 01 Straight				
200mm x 10mm x 31.75mm	2,870	5	320 Silicon Carbide Organic Micro Dressing Wheels	662532 <b>96349</b> *
* For fine grit diamond Polymide wi	neels			







### Diamond and cBN Wheel Mounting, Truing and Dressing Guide

To achieve the best results using Norton Winter diamond and cBN products, the following steps for mounting, truing and dressing should be practiced:

#### **MOUNTING - Putting Wheel on Machine Spindle**

- Examine wheel flanges and spindle carefully.
- Be sure flanges' surfaces are clean and free of damage.
- Ensure that the mounting flanges are flat and of equal diameter, especially on wheels with rigid centers, such as vitrified bond wheels.
- Paper or plastic blotters should only be used when mounting superabrasive wheels with vitrified cores. Using paper or plastic blotters on any other core material might result in the wheel loosening during grinding.
- Inspect machine spindle for excessive runout.
  - » TIR (Total Indicated Runout) should be no greater than 0.0002".
- Mount wheel between hand-tightened flanges.
- Using a dial indicator, tap the wheel lightly with a rubber or wooden block to minimize runout to less than .0010".

#### TRUING - Making Wheel Round and Concentric with the Spindle Axis

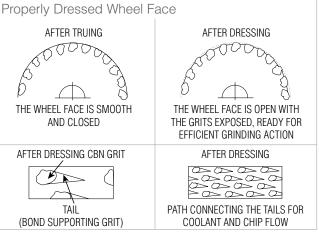
- Prior to truing the wheel, run a wax crayon over the wheel face. Important: do not use any liquid-based ink on superabrasive wheels.
- Any crayon left on the wheel face after truing will reveal untrued areas.
- Indicate the superabrasive wheel runout before starting... usually within .001" to .002", to minimize wheel loss.
- Brake controlled truing devices are most commonly used to true Diamond and cBN straight, cup and cylinder wheels.
- » Mount the device spindle parallel to the wheel spindle to ensure proper straight face truing.
- » For cup wheels, the device spindle will be mounted perpendicular to the wheel spindle.
- » Always use brake controlled truing device dry.

#### **DRESSING - Opening the Face of a Trued Wheel**

- Dressing the abrasive a cleaning/sharpening process to expose sharp, free-cutting grit:
- » For resinoid and vitrified bond wheels, the dressing stick should be one or two grit sizes finer than the abrasive in the diamond/cBN wheel – in a soft grade such as H or I.
- » For metal bond wheels, choose a stick with the same grit or one grit coarser than the wheel abrasive in a medium grade (K N).
- » See the "Dressing Stick" section for recommendations.



- · Tighten flange securely and recheck with indicator.
- Allow a newly mounted wheel to operate for one full minute before grinding.
- The use of one permanent mounting for the life of the wheel is recommended whenever possible:
- » If the grinding machine has a tapered spindle, mount each straight, flaring cup or dish wheel on a separate collet or adapter.
- » When changing wheels the entire unit is removed, keeping the wheel in running truth.
- » When needed again, the entire unit can be placed directly on the spindle or arbor, thereby eliminating the time and abrasive lost in retruing.
- » Bring the diamond/cBN wheel and the truing wheel together until they almost touch.
- $\,\,{}^{\,\,}$  Start the diamond/cBN wheel to normal speed; start the truing wheel in the same direction.
- » Bring the two wheels together until they touch.
- » Make sure the truing wheel is spinning at time of contact.
- » Traverse the wheel back and forth at 30 to 60 inches per minute.
- » Downfeed .0005" to .001" at the end of each traverse.
- » At the end of truing, the diamond/cBN wheel should be smooth and in truth.
- » Apply a dressing stick to sharpen the truing wheel.
- Dressing the core The core material (the part of the wheel that holds and supports the abrasive-bearing section) should never contact the work piece during grinding; rubbing will generate excessive heat. As the abrasive section of a cup wheel wears, the core material might become exposed, necessitating dressing.
- » Use a single-point carbide or steel tool to dress an exposed resaloy core.
- » Clamp the tool in a vise.
- » Direct the cutting edge accurately to leave a 1/16" of abrasive section exposed.



# Diamond & cBN Abrasives

# setting a new industry standard **FOR PRODUCTIVITY**

From the most comprehensive stock offering to the industry's largest custom-manufactured availability, our Norton Winter superabrasive product portfolio gives you the most options with uncompromising performance.

- Diamond / cBN Stock Wheels
- B99 Express Made-to-Order Resin Wheels
- CNC Wheels
- Electroplated Products
- Lapping Compound



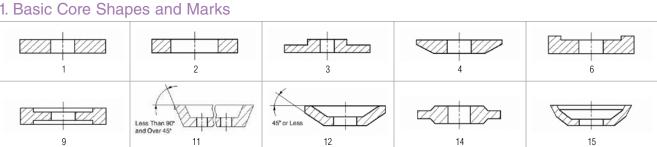
#### The American Standard Code employs a series of numbers and letters to designate the shape of a diamond wheel. Its use involves four simple steps shown at right.

In this example, the complete wheel shape number would read:

### 6A2C

COURTESY OF ANSI

### 1. Basic Core Shapes and Marks



2

CHOSE SHAPE OF ABRASIVE CROSS SECTION

Α

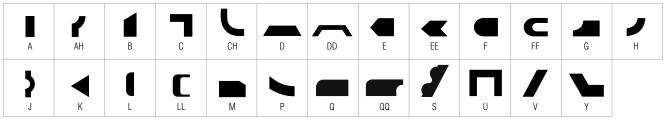
1

CHOOSE BASIC

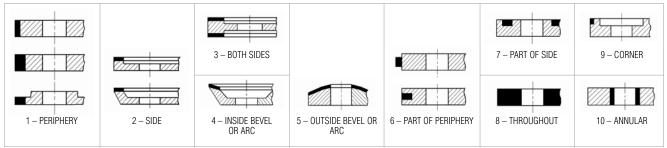
CORE SHAPE

6

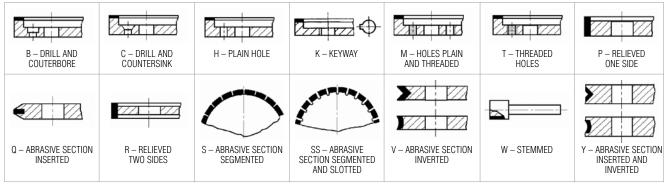
### 2. Abrasive Cross Sections and Marks



### 3. Location of Abrasive Section and Marks



### 4. Popular Modifications and Marks



**DIAMOND & cBN ABRASIVES** 

4

SELECT MODIFICATION

С

Diamond / cBN Basics

3

SELECT LOCATION OF ABRASIVE SECTION

2





### Norton Winter Diamond Product Identification System / Usage Information

		-		-
ASD	120 –	R 75	B99	1/8
	~ /	- 1	~	

Abrasive Type	Grit Size	Grade	Concentration	Bond	Abrasive Depth
ASD • Used with B99 and B105 bonds • Armored • Durable • Versatile • Use wet or dry • Carbide/steel operations CD • Used with B99 bond • Used with B99 bond • Used with B99 bond • M3D • Used with M99 bond M4D • Used with M99 bond M4D • Used with M99 bond M4D • Used with M99 bond SD • Used with V99 bond SD • Used with B99 and V99 bonds	Grit Size • 100S – Roughing • 120 – Roughing/cutting-off • 150 – Combined roughing and finishing • 180 – Improving finish • 220, 320 & 400 – Finishing only • 10/20 mic • 6/12 mic	Grade Resin Bond R – Norton standard N – Free cutting Metal Bond N – Norton standard Vitrified Bond P – Norton standard R – Most durable	Concentration 50 • Most economical • For broad area of contact 75 • Norton standard • Freer cutting than 100 • Dry grinding with ASD 100 • Very durable • For flood coolants • Use with 220 grit or finer • Use for cutting-off 115 • For CNC grinding machines 125 • Form holding • For high volume, high pressure coolant, precision applications on high-speed tool steels	<ul> <li>B99</li> <li>Resin bond</li> <li>Use wet or dry</li> <li>Tool making; resharpening</li> <li>B105</li> <li>Premium resin bond</li> <li>Advanced heat-reducing bond</li> <li>Use dry; reconditioning</li> <li>B610 and B80</li> <li>For CNC grinding machines</li> <li>M99</li> <li>Metal bond</li> <li>1A1R cut-off</li> <li>Glass and ceramics</li> <li>MSL</li> <li>Metal single layer</li> <li>Type 6A2C only</li> <li>Use dry</li> <li>Offhand reconditioning/ finishing carbide</li> <li>V99</li> <li>Vitrified bond</li> <li>Offhand finishing of carbide tools</li> </ul>	Abrasive Depth 1/16" 1/8" 1/4" 9/32" 3/8" 1/2" 3/4" Solid
<ul> <li>Durable; for non-metallics</li> <li>RMD</li> <li>Used with V99 bond</li> <li>SD</li> <li>Used with B99 and V99</li> </ul>			applications on high-speed	<ul> <li>Use dry</li> <li>Offhand reconditioning/ finishing carbide</li> <li>V99</li> <li>Vitrified bond</li> <li>Offhand finishing of</li> </ul>	

Abrasive Type	Grit Size	Grade	Bond	Abrasive Depth
CB – cubic Boron Nitride	• 100 - Roughing	Q	B99	1/16"
Used with B99 bond	<ul> <li>120 — Roughing/cutting-off</li> </ul>	<ul> <li>Approx. 50 concentration</li> </ul>	<ul> <li>Resin bond</li> </ul>	1/8"
Armored	<ul> <li>150 — Combined roughing and</li> </ul>	<ul> <li>Type 6A2</li> </ul>	<ul> <li>Use wet or dry</li> </ul>	1/4"
Use wet or dry	finishing	<ul> <li>Broad area of contact</li> </ul>	Aztec III	1/2"
	<ul> <li>180 — Improving finish</li> </ul>	Т	<ul> <li>Premium resin bond</li> </ul>	Solid
	<ul> <li>220, 320, 400 – For finishing only</li> </ul>	<ul> <li>Approx. 75 concentration</li> </ul>	<ul> <li>Use dry</li> </ul>	
	Ully	<ul> <li>Norton standard</li> </ul>	<ul> <li>Tool resharpening</li> </ul>	
		<ul> <li>First choice</li> </ul>	Aztec .007	
		<ul> <li>Lower horsepower</li> </ul>	<ul> <li>Premium resin bond</li> </ul>	
		<ul> <li>Broad area of contact</li> </ul>	<ul> <li>Use dry</li> </ul>	
		<ul> <li>Dry grinding</li> </ul>	<ul> <li>Increased feed rates</li> </ul>	
		<ul> <li>Resharpening applications</li> </ul>	<ul> <li>Heavy stock removal</li> </ul>	
		W	<ul> <li>Heavier cuts</li> </ul>	
		<ul> <li>Approx. 100 concentration</li> </ul>		
		<ul> <li>Most durable</li> </ul>		
		<ul> <li>High volume coolant</li> </ul>		
		<ul> <li>Flute polishing</li> </ul>		
		<ul> <li>Curtoss grinding</li> </ul>		

- Surface grinding
- Cylindrical grinding



### DIAMOND & CBN ABRASIVES Diamond / CBN Basics

### Application-to-Product Recommendation Guide – Diamond Wheels

APPLICATION OR COMMON MACHINE TYPE			APPLICATION VARIABLES		RECOMMENDED SPECIFICATION
	ng – Toolroom Productio				
Blanchard Grinding Vertical Spindle Surface Grinding		10", 11", 16" & 18" diameters Type 2A2T	Wet – solid carbide	1" or larger pieces – roughing	SD100-R75B99E*
				Small pieces	ASD100-R75B99E*
			Carbide & steel (combin	ation)	ASD100-R75B99E*
Hand Burr Grinding		6" x 3/32" x 1-1/4" Type 1V1P V – 20° ME89562	Dry		ASDC320B-R125B99
Centerless (wet)	Throughfeed Grinding	12", 14", 16", 18" & 20" diameters Type 1A1	Roughing		ASD100-R75B99E*
	Unison Dedtru Grinder	7" x 1" x 1-1/4" Type 1A1			ASD150-R75B99E*
Cutting Off (wet	t)	6" x .035" x 1-1/4"	Most durable		ASD100S-R100B99
		Type 1A1R ME43572	Free cutting		SD100-R75B99
		10" x .050" x 1-1/4" Type 1A1R ME43565			SD120-R100B99
Cylindrical Grin	ding (wet)	10", 12", 14", 16" & 20" diameters	Wet, rough grinding of cemented		ASD180-R100B99
		Type 1A1	carbides, hard (55 Rc+) plasma and		ASD180-R75B99E*
			ceramic spray coatings		ASD150-R75B99
					ASD120-R75B99
			Wet, finish grinding of all carbides, plasma and ceramic spray coatings		SD220-R100B99E*
Tool Sharpener	Bench Grinder (wet)	5" x 1" x 1-1/4" Type 6A2H ME27084 Rim Width (W) = 1-1/16	Tool sharpening SD320-R50		SD320-R50B99
Hand Honing (d	dry)	Various sizes			ASD100-R100B99
		Type HH1 or HH2			SD320-100V99
Lamination Dies	s (wet)	Various sizes Type 1A1	Surface grinding of carbide		ASD120-R75B99
Surface Grindin		Various sizes	Roughing	Durable	ASD100S-R100B99E*
Straight Wheels	6	Type 1A1		Free cutting	SD100S-R100B99
			Finishing only		SD220-R100B99
			General purpose	ASD150-R75B99	
Tool & Cutter G	rinding	Various sizes Type 11V9, 12V9 or 15V9	Wet or dry		ASD120-R7599
<b>Carbide Grindi</b>	ng – Offhand				
Single-Point Ca	rbide Tools	6" x 3/4" x 1-1/4"	Wet roughing	Durable	RMD150-P50V99*
		Type 6A2C ME27853		Free cutting	SD150-P50V99
			Wet finishing	Durable	RMD220-P50V99*
			-	Free cutting	SD220-P50V99
			Wet or dry grinding	Roughing	ASD120-R75B99
			where free-cutting and self-dressing wheels	Finishing	SD220-R50B99E*
			are required		

Note: Diamond depths are not indicated in above listings. When ordering, be sure to include Diamond depth (1/16, 1/8, etc.). \*Express Made-To-Order; Refer to the B99E Express Made-to-Order Wheel section.

### Application-to-Product Recommendation Guide - cBN Wheels

APPLICATION OR COMMON MACHINE TYPE	COMMON WHEEL SIZE, TYPE & BLUEPRINT	APPLICATION VARIABLES	RECOMMENDED SPECIFICATION
Toolroom Grinding			
Cutter Sharpening	3-3/4" x 1-1/2" x 1-1/4"	Dry	Aztec III 120T
Milling Cutters, Broaches,	Type 11V9 ME92192	Wet	CB120-TB99
Reamers, etc.	6" x 1" x 1-1/4" Type 12A2 ME27758	Wet or dry	CB120-TB99
	6" x 3/4" x 1-1/4" Type 12V9 ME48666	Wet or dry	CB120-TB99
	6" x 3/4" x 1-1/4" Type 15V9 ME40633	Wet or dry	CB100-WB99E*
Surface Grinding	10" x 1/2" x 3" Type 1A1	Wet or dry	CB100-TB99E*
Cylindrical Grinding	12" x 1/2" x 3" Type 1A1	Wet or dry	CB150-WB99E*
Internal Grinding Tools	Thinner than 1/2" Type DW	Wet or dry	CB100-WB99
	1/2" or thicker Type 1A1	Wet or dry	CB120-TB99E*
Slotting	7" x .040" x 1-1/4" Type 1A1R	Water-base coolant	CB120-WB99E*

Note: cBN depths are not indicated in above listings. When ordering, be sure to include cBN depth (1/16, 1/8, etc.) \*Express Made-To-Order; Refer to the B99E Express Made-to-Order Wheel section.



### DIAMOND & CBN ABRASIVES Diamond / CBN Basics

### Troubleshooting Guide – Dry Grinding

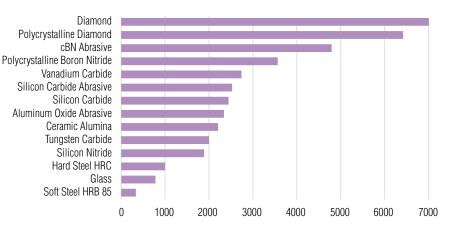
Problem	Possible Causes	Suggested Correction
Burning (excessive heat)	Wheel loaded or glazed	Dress wheel with a dressing stick
	Excessive feed rate	Reduce infeed of wheel or workpiece
	Wheel too durable	Use freer cutting specification or slow down wheel speed
Poor finish	Grit size too coarse	Select a finer grit size
	Excessive feed rate	Reduce infeed of wheel or workpiece
Chatter	Wheel out of truth	True wheel; ensure it is not slipping on mount (See "Mounting, Truing and Dressing Guide")

### Troubleshooting Guide - Wet Grinding

Problem	Possible Causes	Suggested Correction
Burning (excessive heat)	Wheel glazed or loaded	Re-dress wheel
	Poor coolant placement	Apply coolant directly to wheel/workpiece interface
	Excessive material removal rate	Reduce downfeed and/or crossfeed
Poor finish	Excessive dressing	Use lighter dressing pressure
		Stop dressing as soon as wheel starts to consume stick rapidly
	Grit size too coarse	Select a finer grit size
	Poor coolant flow or location	Apply heavy flood so it reaches wheel/work interface
Chatter	Wheel out of truth	True wheel; ensure it is not slipping on mount
Wheel will not cut	Glazed by truing	Dress lightly until wheel opens up
	Wheel loaded	Dress lightly until wheel opens up
		Increase coolant flow to keep wheel surface clean
		Never run wheel with coolant turned off
Slow cutting	Low feeds and speeds	Increase feed rate; increase wheel speed (Do not exceed wheel MOS)
Short wheel life	Incorrect coolant flow	Apply coolant to flood wheel/work surface
	Low wheel speed	Increase wheel speed (observe maximum operating speed)
	Excessive dressing	Use lighter dressing pressure
	Wheel too soft or too hard	Change grit or grade; use higher concentration

#### Material Hardness Scale

Superabrasives is a term used to describe those abrasives of extreme hardness which produce outstanding results when properly used on specific applications. This graph provides a hardness comparison (Knoop Hardness Scale) between diamond and cBN superabrasives, aluminum oxide and silicon carbide standard abrasives, and some common materials these abrasives are used to grind.



### TECH TIP

Avoid Grinding Steel

- Avoid steel when grinding with diamond wheels. Keep the amount of steel ground to an absolute minimum.
- On brazed tools, use aluminum oxide wheel to back off the steel shank.
- A high lubricity grinding fluid should be used.
- For some steels, an armored (AMD) diamond wheel might prove most economical.

#### Use Rigid Work Support

- All workpieces should be supported firmly during the grinding process. Any amount of vibration will cause wheel wear and produce chatter or wave marks on the ground surface.
- On work ground between centers, centerholds should be properly prepared.
- Minimize work overhang.
- If the ground work is supported by a work finger, ensure the finger is strong enough to provide vibrationfree support.

#### Coolant - Grind Wet

- Diamond wheels should be used with a full flood coolant properly directed toward the grinding zone. Water with a rust inhibitor is recommended.
- Vitrified diamond wheels should be used only with a coolant.
- When flood application can't be used, try mist or spray application.
- » Use compressed air to "atomize" water or soluble oil.
- » Direct the spray at the grinding zone to help dissipate heat and prevent heat damage to the work.

#### Avoid Excessive Feeds

- Excessive feeds will result in premature wheel wear. Excessive feed rates are characterized by:
  - » A hard grinding sound
  - » Chatter
  - » Burn
  - » High wheel wear rate
  - » Vibration





### Decimal and Metric Equivalents of Common Fractions

		ridotiono	
FRACTIO	NS ICH	DECIMALS Of an Inch	MILLIMETERS
UF AN IN	1/64	.0156	0.397
1/20	1/04		
1/32	2/64	.0313	0.794
4.40	3/64	.0469	1.191
1/16	5 10 1	.0625	1.588
	5/64	.0781	1.985
3/32		.0938	2.381
	7/64	.1094	2.778
1/8		.1250	3.175
	9/64	.1406	3.572
5/32		.1563	3.969
	11/64	.1719	4.366
3/16		.1875	4.762
	13/64	.2031	5.159
7/32		.2188	5.556
	15/64	.2344	5.953
1/4	.0,01	.2500	6.350
., .	17/64	.2656	6.747
9/32	17/04	.2813	7.144
3/ 32	10/64		
E/10	19/64	.2969	7.541
5/16	01/04	.3135	7.937
	21/64	.3281	8.334
11/32		.3438	8.731
	23/64	.3594	9.128
3/8		.3750	9.525
	25/64	.3906	9.922
13/32		.4063	10.319
	27/64	.4219	10.716
7/16		.4375	11.112
	29/64	.4531	11.509
15/32		.4688	11.906
	31/64	.4844	12.303
1/2	01/01	.5000	12.700
1/2	33/64	.5156	13.097
17/00	33/04	.5313	13.494
17/32	0E /C 4		
0/10	35/64	.5469	13.891
9/16	07/04	.5625	14.287
	37/64	.5781	14.684
19/32		.5938	15.081
	39/64	.6094	15.478
5/8		.6250	15.875
	41/64	.6406	16.272
21/32		.6563	16.688
	43/64	.6719	17.085
11/16		.6875	17.462
	45/64	.7031	17.859
23/32		.7188	18.256
-,	47/64	.7344	18.653
3/4		.7500	19.050
0, 1	49/64	.7645	19.447
25/32	тJ/04	.7045	19.843
20/02	51/64		
10/10	J1/04	.7969	20.240
13/16	F0/04	.8125	20.637
07/00	53/64	.8281	21.034
27/32		.8438	21.430
	55/64	.8594	21.827
7/8		.8750	22.224
	57/64	.8906	22.621
29/32		.9063	23.018
	59/64	.9219	23.415
15/16		.9375	23.812
	61/64	.9531	24.209
31/32		.9688	24.606
5., JL	63/64	.9844	25.003
1	00,01	1.0000	25.400
		1.0000	20.700

### Expected Surface Finish by Grit Size

Use these charts as guides only. Surface finish is affected by several variables: machine type and condition, type of material ground, coolant, wheel speed, bond system, etc.

#### DIAMOND

Grit Size	Expected Finish Micro Inch AA	Maximum Depth of Cut per Pass for Grit Size
100	24 to 32	0.001" to 0.002"
120	16 to 18	0.001" to 0.002"
150	14 to 16	0.001" to 0.002"
180	12 to 14	0.0007" to 0.001"
220	10 to 12	0.0007" to 0.001"
320	8	0.0004" to 0.0006"
400	7 to 8	0.0003" to 0.0005"

#### cBN

CDIN		
Grit Size	Expected Finish With Oscillation	Expected Finish Plunge
100	35 - 40	40 – 45
120	30 – 35	35 - 40
150	25 – 30	30 - 35
180	20 – 25	25 - 30
220	15 – 20	20 – 25
320 400	10 – 15	15 – 20
400	4 – 8	5 – 10

### Recommended Wheel Speeds for Diamond and cBN Wheels

WET GRINDING	Cup Wheels 11V9, 12V9, 15V9, etc.	Peripheral Wheels 1A1, 1V1, 1A1R, etc.
Diamond Grinding Wheels		
Resin Bond Wheels	4921 to 7874 SFPM	4921 to 7874 SFPM
	25 to 40 m/s	25 to 40 m/s
Metal Bond Wheels		3937 to 5906 SFPM
		20 to 30 m/s
Vitrified Bond Wheels	2953 to 5906 SFPM	2953 to 5906 SFPM
	15 to 30 m/s	15 to 30 m/s
cBN Grinding Wheels		
Resin Bond Wheels	5906 to 9843 SFPM	5906 to 9843 SFPM
	30 to 50 m/s	30 to 50 m/s
DRY GRINDING	Cup Wheels 11V9, 12V9, 15V9, etc.	Peripheral Wheels 1A1, 1V1, 1A1R, etc.
Diamond Grinding Wheels		
Resin Bond Wheels	2756 to 3543 SFPM	2756 to 3543 SFPM
	14 to 18 m/s	14 to 18 m/s
cBN Grinding Wheels	14 to 18 m/s	14 to 18 m/s
cBN Grinding Wheels Resin Bond Wheels	14 to 18 m/s 2953 to 5906 SFPM	14 to 18 m/s 2953 to 5906 SFPM
0		

Note: These are not the maximum operating speeds (MOS). Consult ANSI B7.1 or contact your Norton representative for MOS.

### Wheel Speed Calculation

To convert M/S to S	SFPM:	Multiply M/S x 196.85 = SFPM
To convert SFPM to	o M/S:	Divide SFPM by 196.85 = M/S
To convert RPM to	SFPM:	Multiply wheel diameter in inches x RPM x 0.262
M/S = meters/second	RPM = Revolutions	Per Minute SFPM = Surface Feet Per Minute



### **DIAMOND & cBN ABRASIVES** Diamond / cBN Wheels

Norton Winter offers an extensive line of stock Diamond and cBN (cubic Boron Nitride) grinding products, including resin, vitrified, metal and MSL (metal single layer) bond offerings, under the "99" quality line. Premium, high-performance stock resin bond options are also available. **B99 Diamond Wheels** 

#### Applications:

- · Sharpening cemented carbide cutting tools
- · Cutting off carbide rod
- · Grinding or cutting off non-ferrous materials such as ceramics or glass
- Surface grinding dies
- 0.D. grinding spray coatings
- B99 cBN Wheels
- Sharpening high-speed (M2, D2, T15, etc.) steel cutting tools
- · Surface and ID grinding hardened steel die components
- Precision grinding steel parts Rc 50 or harder

**Stock Shapes:** 

Abrasive Grain: **Abrasive Bonds:**  DW Mounted Points, HH1 and HH2 Hand Hones, and 1A1, 1A1R, 1V1P, 4A2P, 6A2C, 6A2H, 11V9, 12A2, 12V9, and 15V9 Wheels

Diamond and cBN (cubic Boron Nitride)

Resin, Metal, Metal Single Layer, and Vitrified



#### Superior performance for grinding non-ferrous materials

# **DIAMOND WHEELS**

- · High quality synthetic diamond
- · High material removal rates with longer wheel life vs. conventional green silicon carbide wheels
- · Wide variety of stock wheel shapes and bond options available

### **Diamond Bond Types**

BONDS	DESCRIPTION
Diamond Wheel Bonds	
Pre-engineered resin bond – B99	Free cutting; superior form holding; efficient wet or dry
Premium, heavy-duty resin bond – B105	Ideal for dry toolroom reconditioning applications
Metal bond – M99	Ideal for 1A1R cut-off applications and grinding glass or ceramic materials
MSL (metal single layer) diamond tools; no wheel dressing required	Fast stock removal, cool cutting; excellent for dry offhand finishing of carbide
Vitrified bond – V99	Most durable under high grinding forces; excellent for wet, offhand finishing of carbide tools



Superior performance for grinding ferrous materials

## **cBN WHEELS**

- · cBN (cubic Boron Nitride) abrasive material is second in hardness to diamond
- · Easily cuts difficult-to-grind steel parts Rc 50 or harder
- · Highly wear resistant and thermally stable

### **cBN Bond Types**

BONDS	DESCRIPTION
cBN Wheel Bonds	
Pre-engineered resin bond – B99	Free cutting, superior form holding
Premium Aztec III resin bond	Most efficient for dry tool resharpening
Premium Aztec .007 resin bond	Most efficient for dry tool resharpening where heavy stock removal is desired



## DIAMOND & CBN ABRASIVES Diamond / CBN Wheels

### How to Select Diamond Wheels

SELECT:

SELECT:			
WHEEL SHAPE	Select desired wheel shape		
WHEEL DIMENSIONS	· · · · · · · · · · · · · · · · · · ·	DxTxH	Select Diameter x Thickness x Hole from the availability tables. Use blueprint numbers where available.
ABRASIVE	Select the abrasive based	Resin Bon	
	on horsepower, grinding wet or dry, and contact	ASD	Armored diamond, durable. Versatile: can be used wet or dry. Also should be used when carbide and steel are ground in the same operation.
	with steel.	D	Micron-sized diamond. Used for finishing and polishing operations.
		SD	Free cutting standard. Used wet or dry; should be used on low horsepower (3/4 hp or less) machines.
		Metal Bond	d Wheels:
		M4D	Armored, durable standard. A strong, blocky crystal designed for high performance on glas ceramics, refractories and other non-metallics.
		Vitrified Bo	ond Wheels:
		RMD	Medium strength. Specifically designed for use with vitrified bonds.
		SD	Free cutting standard.
GRIT SIZE	Select the abrasive grit	100	Roughing. The most common grit size for roughing operations.
	size based on finish	120	For roughing where 100 is too coarse. Also for cut-off applications.
	and material removal	150	Medium stock removal plus good finish. For combined roughing and finishing applications.
	rate required.	180	Medium stock removal plus good finish. To improve finish.
		220	Finishing
		320	Finishing
		400	Fine Finishing
		10/20 Mic	Super Fine Finishing
		6/12Mic	Super Fine Finishing
GRADE	The hardness of	Resin Bon	d Wheels:
	the wheel	R	Norton standard
		Ν	Free cutting
		Metal Bond	d Wheels:
		Ν	Norton standard
		Vitrified Bo	ond Wheels:
		Р	Norton standard
		R	Most durable
CONCENTRATION	Select the abrasive	50	Most economical. For broad area of contact grinding.
	concentration based on grinding wet or dry,	75	Norton standard. Freer cutting than 100 and the most economical for dry grinding with ASD diamond.
	material removal rates and form-holding	100	Very durable. Recommended under flood coolant conditions; for use with 220 grit or finer, when durability is required, and for cut-off applications.
	requirements.	125	Form holding. Used in high volume, high pressure coolant, precision applications on high-speed tool steels.
BOND	Select the bond	Resin Bon	
	based on the material being ground and grinding application.	B99	Norton standard. Versatile enough to be used wet or dry on most tool making or resharpening applications.
		B105	Premium, heat-reducing bond. For dry toolroom reconditioning applications.
		Metal Bond	
		M99	Best suited for 1A1R cut-off applications as well as grinding glass or ceramic materials.
		MSL	Metal Single Layer. Available in shape 6A2C for dry, offhand reconditioning of carbide tools
		Vitrified Bo	
		V99	Best for wet offhand finishing of carbide tools as well as plunge grinding of carbide tools.
ABRASIVE DEPTH	Usable abrasive	1/16	
		1/8	
		1/4	
		9/32	
		Solid	



### How to Select Stock cBN Wheels

SELECT:			
WHEEL SHAPE	Select desired wheel shape		
WHEEL DIMENSIONS		DxTxH	Select Diameter x Thickness x Hole from the availability tables. Use blueprint numbers where available.
ABRASIVE	Select cBN abrasive	Resin Bond	1 Wheels:
	to grind hard tool steels such as A2, D2, T15, etc., and tough alloy steels.	CB	Norton standard coated cBN (cubic Boron Nitride). Optimized for high performance in resin bond systems.
GRIT SIZE	Select the grit size	100	Roughing. The most common grit size for roughing operations.
	based on finish and	120	For roughing where 100 is too coarse. Also for cut-off applications.
	material removal rate required.	150	Medium stock removal plus good finish. For combined roughing and finishing applications.
GRADE	The hardness of	Q	Approximately 50 concentration. Used on wide area of contact applications.
	the wheel	Т	Norton standard. Approximately 75 concentration. T is the first choice for lower horsepower equipment or large area of contact between the wheel and the work piece. Ideal for resharpening applications with 11V9, 12A2, 4A2P, and 15V9 wheel shapes when dry grinding.
		W	Most durable. Approximately 100 concentration, W is recommended for high volume coolant operations: flute grinding from solid, flute polishing, surface, and cylindrical grinding.
BOND	Select the bond depending on the type	B99	Norton standard. Pre-engineered for optimal performance with cBN abrasive. Available in all shapes.
	of grinding application.	Aztec III	The advanced heat-reducing, lubricating resin bond. Used for dry grinding tool steels.
		Aztec .007	The premium resin bond for increased feed rates, high stock removal and heavier cuts – when dry grinding tool steels.
ABRASIVE DEPTH	Usable abrasive	1/16	
		1/8	
		1/4	
		Solid	

### Competitive Cross Reference Guides

Abrasives				Bonds						
Resin Diamond	Resin Diamond	Metal Diamond	Resin/ Vitrified cBN	Resin Diamond	Resin Diamond	Metal Diamond	Vitrified Diamond	Resin cBN	Resin cBN	Resin cB
ASD	SD	M4D	СВ	B99/ B99E	B105	M99	V99	B99/ B99E	B99EF	AZTEC
CGD, ND	GD, D, MD		CB	PS			V		BC	
SN	S		cBN	В		Μ		В		
NCD	D, MD		BN	В		Μ				
5SD, 6SD	SD	MD	CB	B43, B52		Μ		B26	C3	
NMD	D, MD		cBN, CB							
			CBC		BX4			BD/B38		BX4
NCD, WD, 1WD, MDC	D, MD	MD4C	B, CB, BZ	B7Z, BB, B5, B56,BN		M, MF	V	BZ, BN		
			B, BB	BJ						
MDN	D, MD		В					B82	B5	
SDM, XDL, XDN, D, 7D, CMD	SD, D, 6D, MD	1D	5B,1BN, BN, BM	BD, BC, BX33, B52, B6	Amigo	MI, MSS, MB		B72, B56, BG, B7	BXU8	Amigo
SDK			B, BXW					RN	RR	
		=		BONDS		RN				
			1				F			
D		CB	•	BP		BPP	-			
	Resin Diamond ASD CGD, ND SN NCD 5SD, 6SD NMD NCD, WD, 1WD, MDC MDN SDM, XDL, XDN, D, 7D, CMD SDK ABRASIV UNIVEL DIAMOR	Resin Diamond       Resin Diamond         ASD       SD         CGD, ND       GD, D, MD         SN       S         NCD       D, MD         5SD, 6SD       SD         NMD       D, MD         NCD, WD, MDC       D, MD         MDN       D, MD         SDM, XDL, CD, CMD       SD, D, XDL, SDK         ABRASIVES       UNIVEL/G-FORCE         DIAMOND AD       D	Resin Diamond       Resin Diamond       Metal Diamond         ASD       SD       M4D         CGD, ND       GD, D, MD       MD         SN       S       NCD         SN       S       MD         SSD, 6SD       SD       MD         NMD       D, MD       MD         NMD       D, MD       MD4C         NMD       D, MD       MD4C         NCD, WD, D, MD       MD4C         MDN       D, MD         SDM, SD, D, XDL, 6D, MD       1D         SDK       SDK	Resin DiamondResin DiamondMetal DiamondResin/ Vitrified cBNASDSDM4DCBCGD, NDGD, D, MDCBCBSNSCBNNCDD, MDBN5SD, 6SDSDMDCBNMDD, MDCBN, CBNMDD, MDCBN, CBNMDD, MDCBCNMDD, MDBN5SD, 6SDSDMDMDCB, CB, BZNCD, WD, D, MDMD4CB, BBBDM, SDM, SD, D, TDL, SDK1DSDKSD, MDSB, BNABRASIVESB, BNWABRASIVESJAMOND ADCBN ADCBN BX	Resin DiamondResin DiamondMetal DiamondResin/Vitrified CBNResin DiamondASDSDM4DCBB99/ B99ECGD, NDGD, D, MDCBBSNSCBNBNCDD, MDBNB5SD, 6SDSDMDCBMDD, MDBNB5SD, 6SDSDMDCBNMDD, MDCBN, CBCBCCBCNCD, WD, 1WD, XDL, 6D, MDMD4CB, CB, BS, BS, BS6,BNMDND, MDBSDM, XDL, 6D, MD1D5B, 1BN, BN, BMSDKB, BXWABRASIVESBONDSUNIVEL/G-FORCEDIAMONDDIAMOND ADcBN BX	Resin DiamondResin DiamondMetal DiamondResin/Vitrified CBNResin DiamondResin DiamondASDSDM4DCBB99/ B99EB105CGD, NDGD, D, MDCBPSB105SNSCBNBNCDD, MDBNB5SD, 6SDSDMDCBMDDD, MDCBN, CBB43, B52NMDD, MDCBN, CBBX4NCD, WD, D, MDMD4CB, CB, B7Z, B5, B56, BNMDCBBB56, BNMDCBBSDM, SD, D, NDNDBSDM, SD, D, TD, CMDBBD, BC, AmigoSDKB, BXWBX33, B52, B6ABRASIVESBONDSUNIVEL/G-FORCEDIAMOND AND cEDIAMOND ADcBN BX	Resin DiamondResin DiamondMetal DiamondResin/Vitrified CBNResin DiamondResin DiamondMetal DiamondASDSDM4DCBB99/ B99EB105M99CGD, NDGD, D, MDCBCBPSM10SNSCBNBMNCDD, MDBNBMSSD, 6SDSDMDCBB43, B52MNMDD, MDCBN, CBBX4MSCD, WD, D, MDMD4CB, CB, BZB7Z, B56,BNBX4NCD, WD, D, MDMD4CB, CB, BSB56,BNMI, MFMDCBBBMMDND, MDBBBJMDND, MDBBBJMDND, MDBBBJMDND, MDBBBJMDND, MDBBD, BC, BN, BMAmigoSDKB, BXWB, BXWBONDSABRASIVESBONDSDIAMOND AND cBNUNIVEL/G-FORCEDIAMOND AND cBNDIAMOND ADcBN BXUNIVELG-FORCDIAMOND AND cBN	Resin DiamondResin DiamondMetal DiamondResin Vitrified cBNResin DiamondResin DiamondMetal DiamondVitrified DiamondASDSDM4DCBB99/ B99EB105M99V99CGD, NDGD, D, MDCBPSVSNSCBNBMNCDD, MDBNBMSSD, 6SDSDMDCBB43, B52MNMDD, MDCBN, CBBZBZB56, BNMDCCBCBZB7Z, B56, BNM, MFVNCD, WD, D, MDMD4CB, CB, 	Resin DiamondResin DiamondMetal DiamondResin/ Vitrified cBNResin DiamondResin DiamondMetal DiamondVitrified DiamondResin DiamondASDSDM4DCBB99/ B99EB105M99V99B99/ B99ECGD, NDGD, D, MDCBCBPSVVSNScBNBMBNCDD, MDBNBMESSD, 6SDSDMDCBB43, B52MB26NMDD, MDcBN, CBB7Z, B5, B56, BNM, MFVB2, BNNCD, WD, D, MDMD4CB, CB, BZB7Z, BB, B5, B56, BNM, MFVBZ, BNMDND, MDBBB3BB42, B52MDND, MDB, CB, BZB7Z, BB, B5, B56, BNM, MFVBZ, BNMDND, MDB, CB, BZB7Z, B56, B3, B3, B3, B52, B56, BNB72, B56, B3, B3, B52, B6B72, B56, B3, B3, B3, B52, B6MDND, MDBBB3B1B1, BN, BM, B3, B52, B6B1, B3, B3, B52, B6B1, B3, B52, B6SDKB, BXWB, BXWB, BXWRNRNABRASIVESB, BXWB, BXWRNRNABRASIVELB, BXWBNDSB1AMOND AND cBNRN	Resin DiamondResin DiamondMetal DiamondResin Vitrified cBNResin DiamondMetal DiamondVitrified DiamondResin cBNResin cBNASDSDM4DCBB99/< B99EB105M99V99B99/< B99EB99EB99ECGD, NDGD, D, MDCBCBPSVBCSNSCBNBMBBNCDD, MDBNBMBSSD, 6SDSDMDCBB43, B52MB266SCD, WD, NMDD, MDCBN, CBB7Z, B5, SB, SB, SB, SB, SB, SB, SB, SB, SB, SB

Diamond / Diamond Productions, Inc	-				
Citco	SD	CB	Р	C5	



### TECH TIP

- Truing makes the wheel concentric with the spindle
- Dressing opens the wheel's cutting face
- · Always true and dress diamond and cBN wheels prior to use
- Diamond and cBN wheels with grit sizes 100 180 can be trued with a Brake Controlled Truing Device
- · Refer to the "Mounting, Truing and Dressing Guide" for more information

It is the user's responsibility to refer to and comply with ANSI B7.1

# TECH TIP

#### Diamond Grinds: In general, diamond is used to grind

non-ferrous materials, because of an adverse reaction between diamond and iron.

- Cemented carbide
- Glass
- Ceramics
- Fiberglass
- Plastics
- Stone
- Abrasives
- · Electronic components and materials

It is the user's responsibility to refer to and comply with ANSI B7.1

cBN Grinds:

- cBN is used to grind ferrous materials.
- · High-speed tool steels
- Die steels
- · Hardened carbon steels
- Alloy steels
- Aerospace alloys
- · Hardened stainless steel
- · Abrasion-resistant ferrous materials

DIAMOND & CBN ABRASIVES Diamond / CBN Wheels



### **B99 Express Service**

The B99 Express service is designed to offer you up to 65,000 made-to-order choices of resin bond Diamond and cBN wheels. Almost all popular sizes are offered.

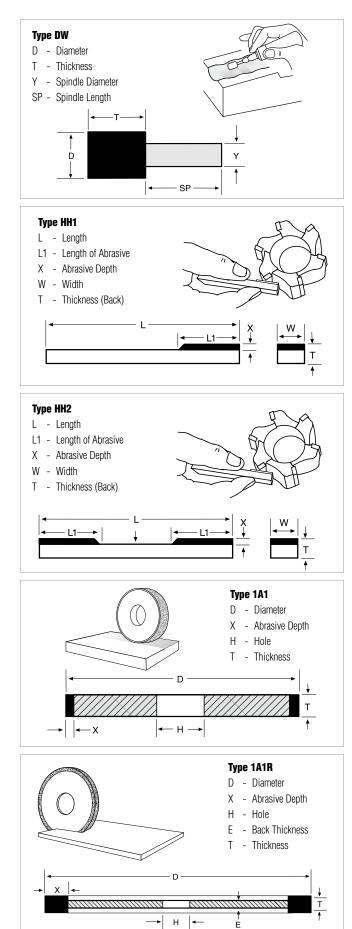
12" and less diameter B99 Express wheels will ship in two weeks or less from the date the order is received. 14" and larger wheels are available at standard lead-times.

# Our Norton Winter line offers a comprehensive stock product selection to service most of your needs – with the fastest delivery and lowest total costs.

Review this stock section first. If you can not find the specification you need:

- Then refer to the brief descriptions of our B99 Express and CNC lines (following this section)
- · For more in-depth B99 Express product availability contact your Norton representative for a complete listing of made-to-order superabrasive products.





## DIAMOND & CBN ABRASIVES Diamond / CBN Wheels

SIZE (D x T)	SPECIFICATION	PART #
Type DW Mounted Points – I	Diamond	
3/16 x 1/4 Steel Spindle 1/8 x 1-1/2	SD100-R100B99-SOLID	690141 <b>92238</b>
1/2 x 1/2	SD220-R100B99-SOLID	690141 <b>92249</b>
Steel Spindle 1/4 x 1-1/2 3/4 x 3/8	SD150-R100B99-SOLID	690141 <b>92251</b>
Steel Spindle 1/4 x 1-1/2 1 x 1/2	SD100-R100B99-SOLID	690141 <b>92428</b>
Steel Spindle 1/4 x 1-1/2		
Type DW Mounted Points – o 3/16 x 1/4	CB150-WB99-SOLID	690141 <b>92258</b>
Carbide Spindle .125 x 1-3/4		
SIZE (T x W x L)	SPECIFICATION	PART #
<b>Type HH1 Hand Hones – Dian</b> 1/4 x 1/4 x 6	nond ASD220-R100B99-1/16	690141 <b>92139</b>
One 1/16 deep 1" long insert in one 1/4 surface	ASD220-n100033-1/10	090141 <b>92139</b>
1/4 x 3/8 x 4	ASD100-R100B99-1/16	690141 <b>92141</b>
One 1/16 deep 1" long insert in	ASD180-R100B99-1/16	690141 <b>92142</b>
one 3/8 surface	ASD220-R100B99-1/16	690141 <b>91670</b>
	ASD320-R100B99-1/16 ASD400-R100B99-1/16	690141 <b>91672</b> 690141 <b>92143</b>
	D10/20MIC-R100B99-1/16	690141 <b>92143</b>
	SD320-100V99-1/16	690141 <b>92140</b>
Type HH2 Hand Hones – Dian		
1/4 x 3/8 x 4	ASD120/220-R100B99-1/16	690141 <b>92150</b>
Two 1/16 deep 1" long inserts in		690141 <b>92178</b>
one 3/8 surface	ASD220/400-R100B99-1/16	690141 <b>92179</b>
	ASD320/400-R100B99-1/16	690141 <b>92180</b>
SIZE (D x T x H)	SPECIFICATION	PART #
<b>Type 1A1 Straight – Diamone</b> 1-1/2 x 1/2 x 1/2	D6/12MIC-N100B99-1/8	690141 <b>92176</b>
2 x 1/8 x 1/4	SD100-R100B99-1/8	690141 <b>92184</b>
3 x 1/4 x 3/4	SD180-N100B99-1/8	690141 <b>92187</b>
4 x .020 x 1-1/4	SD320-R100B99-1/8	690141 <b>92188</b>
4 x 1/32 x 1-1/4	SD100S-R100B99-1/4	690141 <b>92192</b>
4 x 1/16 x 1-1/4	SD100S-R100B99-1/4	662602 <b>73583</b>
	SD150-R100B99-1/4 SD220-R100B99-1/4	662602 <b>73584</b> 662602 <b>73586</b>
4 x 1/8 x 3/4	SD150-R100B99-1/4	690141 <b>92024</b>
4 x 1/8 x 1-1/4	SD150-R100B99-1/4	690141 <b>91677</b>
4 x 1/4 x 1/2	SD150-R100B99-1/4	662602 <b>73590</b>
4 x 1/4 x 3/4	SD150-R100B99-1/4	662602 <b>73592</b>
4 x 1/4 x 1-1/4	SD100S-R100B99-1/4	662602 <b>73587</b>
	SD120-R100B99-1/4 SD150-R100B99-1/4	662602 <b>73588</b> 662602 <b>73589</b>
4 x 1/2 x 1-1/4	SD150-R100B99-1/4	662602 <b>73594</b>
6 x 1/32 x 1-1/4	SD220-R100B99-1/8	690141 <b>92197</b>
6 x 1/16 x 1-1/4	SD100-R100B99-1/4	662602 <b>73596</b>
	SD150-R100B99-1/4	662602 <b>73597</b>
	SD180-R100B99-1/4 SD220-R100B99-1/4	662602 <b>73598</b> 662602 <b>73599</b>
6 x 1/8 x 1-1/4	ASD150-R75B99-1/4	662602 <b>73617</b>
	SD100-R100B99-1/4	662602 <b>73611</b>
	SD150-R100B99-1/4	662602 <b>73613</b>
	SD180-R100B99-1/4	662602 <b>73614</b>
C 4 / A 4 . 4 / A	SD220-R100B99-1/4	662602 <b>73615</b>
6 x 1/4 x 1-1/4	ASD100S-R75B99-1/4 ASD120-R75B99-1/4	690141 <b>92205</b> 690141 <b>92769</b>
	ASD120-R75B99-1/4 ASD150-R75B99-1/4	662602 <b>73609</b>
	ASD180-R75B99-1/4	690141 <b>92770</b>
	ASD220-R75B99-1/4	690141 <b>92771</b>
	ASD320-R75B99-1/4	690141 <b>92772</b>
	RMD180-P100V99-1/8	690141 <b>92203</b>
	SD120-R100B99-1/4	<u>690141<b>91691</b></u>
	SD150-R100B99-1/4 SD180-R100B99-1/4	690141 <b>91692</b> 690141 <b>91693</b>
	SD180-R100B99-1/4 SD220-R100B99-1/4	690141 <b>91693</b>
Standard Package = 1 mounted p		

Continued



### **DIAMOND & cBN ABRASIVES** Diamond / cBN Wheels

SIZE (D x T x H)	SPECIFICATION	PART #
Type 1A1 Straight - Diamo	nd <i>continued</i>	
6 x 3/8 x 1-1/4	ASD120-R75B99-1/4	690141 <b>92773</b>
	ASD150-R75B99-1/4	690141 <b>91695</b>
	SD150-R100B99-1/4	690141 <b>91696</b>
6 x 1/2 x 1-1/4	ASD120-R75B99-1/4	690141 <b>92777</b>
	ASD150-R75B99-1/4	690141 <b>91698</b>
	ASD220-R75B99-1/4	690141 <b>92779</b>
	ASD320-R75B99-1/4	690141 <b>92780</b>
	SD120-R100B99-1/4	662602 <b>73557</b>
	SD150-R100B99-1/4	662602 <b>73561</b>
	SD180-R100B99-1/4	690141 <b>91700</b>
7 x 1/4 x 1-1/4	ASD150-R75B99-1/4	690141 <b>91701</b>
	SD120-R100B99-1/4	662602 <b>73566</b>
	SD150-R100B99-1/4	690141 <b>91703</b>
	SD180-R100B99-1/4	690141 <b>91704</b>
	SD220-R100B99-1/4	690141 <b>91705</b>
7 x 3/8 x 1-1/4	SD120-R100B99-1/4	690141 <b>91849</b>
	SD220-R100B99-1/4	690141 <b>91852</b>
7 x 1/2 x 1-1/4	ASD100-R75B99-1/4	690141 <b>92211</b>
	ASD150-R75B99-1/4	690141 <b>91853</b>
	ASD180-R75B99-1/4	690141 <b>92212</b>
	SD120-R100B99-1/4	690141 <b>91854</b>
	SD180-R100B99-1/4	690141 <b>91856</b>
	SD220-R100B99-1/4	690141 <b>91857</b>
8 x 1/2 x 1-1/4	SD150-R100B99-1/4	662602 <b>73574</b>
10 x 1/2 x 3	ASD120-R75B99-1/4	690141 <b>92305</b>
12 x 1 x 5	ASD120-R75B99-1/4	690141 <b>92313</b>
14 x 1/2 x 5	ASD150-R75B99-1/4	690141 <b>92314</b>
14 x 1 x 5	ASD120-R75B99-1/4	690141 <b>92316</b>
20 x 1 x 12	ASD120-R75B99-1/4	690141 <b>92325</b>
Standard Package = 1 wheel		

Standard Package = 1 wheel

CB120-TB99-1/4 CB120-TB99-1/4 CB120-TB99-1/4 CB120-TB99-1/4	662602 <b>73601</b> 662602 <b>73605</b>
CB120-TB99-1/4 CB120-TB99-1/4	662602 <b>73605</b>
CB120-TB99-1/4	
OD100 TD00 1/4	662602 <b>73607</b>
CB120-TB99-1/4	690141 <b>92021</b>
CB120-TB99-1/4	662602 <b>73567</b>
CB150-TB99-1/4	662602 <b>73560</b>
nd	
M4D150-N50M99-1/8	690141 <b>92060</b>
M/D100 N75M00 1/0	690141 <b>92063</b>
	690141 <b>92064</b>
	690141 <b>92067</b>
M4D220-N100M99-1/8	090141 <b>92007</b>
M4D150-N75M99-1/8	690141 <b>92068</b>
SD100S-R100B99-1/4	690141 <b>92151</b>
SD120-R100B99-1/4	690141 <b>91706</b>
SD100S-R100B99-1/4	690141 <b>92152</b>
M4D220-N100M99-1/8	690141 <b>92070</b>
M4D150-N100M99-1/8	690141 <b>92082</b>
M4D220-N100M99-1/8	690141 <b>92083</b>
M4D150-N100M99-1/8	690141 <b>92086</b>
M4D100-N75M99-1/8	690141 <b>92088</b>
SD100-R75B99-1/4	690141 <b>92155</b>
ASD100S-R100B99-1/4	690141 <b>92158</b>
ASD120-R100B99-1/4	690141 <b>92159</b>
SD100-R100B99-1/4	690141 <b>91858</b>
SD100S-R100B99-1/4	690141 <b>92156</b>
SD220-R100B99-1/4	690141 <b>92157</b>
	nd           M4D150-N50M99-1/8           M4D180-N75M99-1/8           M4D220-N75M99-1/8           M4D220-N75M99-1/8           M4D150-N75M99-1/8           M4D150-N75M99-1/8           SD100S-R100B99-1/4           SD100S-R100B99-1/4           SD100S-R100B99-1/4           M4D220-N100M99-1/8           M4D220-N100M99-1/8           M4D150-N100M99-1/8           M4D150-N100M99-1/8           M4D150-N100M99-1/8           M4D150-N100M99-1/8           M4D100-N75M99-1/8           SD100-R75B99-1/4           ASD100S-R100B99-1/4           SD100-R75099-1/4           SD100-R700B99-1/4           SD100-R700B99-1/4           SD100-R700B99-1/4           SD100-R100B99-1/4           SD100S-R100B99-1/4           SD100-R100B99-1/4           SD100-R100B99-1/4           SD100-R100B99-1/4           SD100-R100B99-1/4           SD100-R100B99-1/4

# FCH TIP

#### Cylindrical Grinding Applications – 1A1 wheels:

- · Includes all outside grinding of round parts, even though the finished product is not always a true cylinder
- Infeed at both ends of the traverse to keep wheel face flat
- Use work supports to prevent deflection
- · Rough grinding traverse speed should be 1/2 to 2/3 of the thickness of the wheel per work revolution
- Finishing grinding traverse speed should be 1/2" or less per work revolution

It is the user's responsibility to refer to and comply with ANSI B7.1

### ТЕСН Т

#### **Diamond Grinds:**

- · Cemented carbide
- Glass
- · Ceramics
- Fiberglass
- Plastics
- Stone
- Abrasives
- Electronic components and materials

#### cBN Grinds:

- · High-speed tool steels
- Die steels
- Hardened carbon steels

- · Alloy steels

- · Abrasion-resistant ferrous materials

- Aerospace alloys
- · Hard stainless steel

#### -CH TIP Cut-off Applications - 1A1R wheels: · Use the largest diameter

- flanges possible
- · Use flanges of equal diameter
- · Use the thickest wheel possible for increased stiffness and straightness of cut

cBN wheels are used on hardened steels. Diamond wheels are used to cut or slot

carbide, glass or ceramic parts.

It is the user's responsibility to refer to and comply with ANSI B7.1

#### Can't Find Your Specification Here?

Review this stock section first. If you can not find the specification you need:

- Then refer to the brief descriptions of our B99 Express and CNC lines (following this section)
- See the more in-depth B99 Express product availability in our "Diamond and cBN Superabrasives Standard Catalog" #8068 on .nortonabrasives.com or contact your Norton representative for a complete listing of made-to-order superabrasive products.

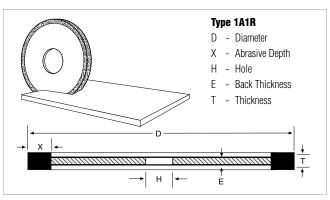
Industrial Market - Full-Line

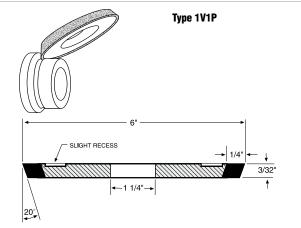


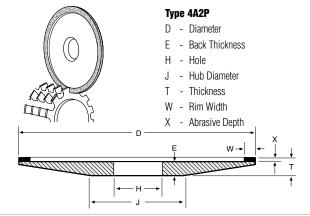


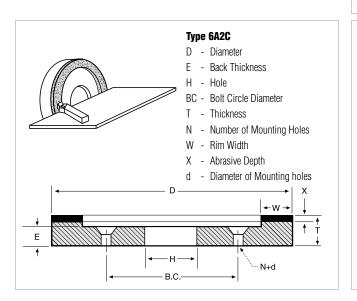
SIZE (D x T x H)	SPECIFICATION	PART #
Type 1A1R Cut-Off - Diamo	ond	
6 x .035 x 1-1/4	ASD100S-R100B99-9/32	690141 <b>92164</b>
(ME73316)	ASD120-R100B99-9/32	690141 <b>92165</b>
	SD100-R100B99-9/32	690141 <b>92161</b>
	SD120-R100B99-9/32	690141 <b>92162</b>
	SD150-R100B99-9/32	690141 <b>92163</b>
6 x .045 x 1-1/4 (ME83991)	SD100-R50B99-1/8	690141 <b>92166</b>
6 x .055 x 1-1/4 (ME104177)	M4D100-N75M99-1/8	690141 <b>92099</b>
7 x .035 x 1-1/4 (ME82347)	ASD100-R100B99-1/4	662602 <b>38686</b>
7 x .055 x 1-1/4 (ME104177)	M4D120-N100M99-1/8	690141 <b>92108</b>
8 x .030 x 1-1/4 (ME104180)	M4D180-N75M99-1/8	690141 <b>92110</b>
8 x .045 x 5/8 (ME43569)	SD120-R100B99-1/4	690141 <b>92167</b>
8 x .045 x 1-1/4 (ME43569)	SD120-R100B99-1/4	690141 <b>92169</b>
8 x .050 x 1-1/4 (ME104180)	M4D180-N75M99-1/8	690141 <b>92114</b>
10 x .050 x 1-1/4	CD100-R100B99-1/4	690141 <b>92815</b>
(ME 43565)	SD120-R100B99-1/4	690141 <b>92170</b>
12 x .070 x 3/4 (ME 43567)	SD150-R100B99-1/4	690141 <b>92173</b>
Type 1A1R Cut-off – cBN		
6 x .035 x 1-1/4 (ME43572)	CB100-WB99-1/4	690141 <b>92160</b>
Type 1V1P Fluting - Diamo	ond	
6 x 3/32 x 1-1/4	ASDC320C-R100B99-1/4	690141 <b>92761</b>
Face Bevel 1 Side 20 Deg Copper Core (ME89562)	ASD320B-R125B99-1/4	690141 <b>92302</b>
Standard Package = 1 wheel		

### DIAMOND & CBN ABRASIVES Diamond / CBN Wheels



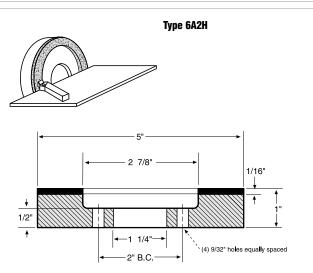






Refer to "Brake Controlled Truing Devices" and "Dressing Sticks" in the Dressing Solutions section for

truing and dressing products.





## **DIAMOND & cBN ABRASIVES** Diamond / cBN Wheels

SIZE (D x T x H)	SPECIFICATION	PART #
Type 6A2C Straight cup -	Diamond	
6 x 7/16 x 1-1/4 Rim Width 1" (0640185M)	D120/140-H-MSL	662602 <b>69172</b>
6 x 3/4 x 1-1/4	SD220-R50B99-1/16	690141 <b>91665</b>
Rim Width 3/4"	ASD120-R75B99-1/16	690141 <b>91860</b>
(ME27853)	ASD120-R75B99-1/8	690141 <b>92786</b>
	SD150-P50V99-1/16	690141 <b>92217</b>
	SD220-P50V99-1/8	690141 <b>91623</b>

SIZE (D x T x H)	SPECIFICATION	PART #
Type 6A2H Straight Cup – Di	amond	
5 x 1 x 1-1/4 Rim Width 1-1/16" (ME27084)	SD320-R50B99-1/16	690141 <b>92221</b>
Standard Package = 1 wheel		

Standard Package = 1 wheel

Best choice for dry grinding carbide tools

# ASD DIAMOND / B105 RESIN BOND WHEELS

- · Premium quality diamond produces keen cutting tools that hold their shape, are easier to sharpen, and require fewer reconditionings
- Advanced, self lubricating bond minimizes heat generation and thermal damage to tool for increases tool life and productivity; lasts more than 2X as long as standard diamond wheels for lowest total wheel costs and highest productivity
- · Unique self-dressing core eliminates wheel core damage and downtime to dress core

		ER: BEST				BETTER
	BOI				BOND:	
SIZE (D x T x H)	SPECIFICATION	PART #	SIZE (D x T x H)	SPECIFICATION		PART #
Type 11V9 Flaring Cup – D			Type 11V9 Flaring Cup -			
3-3/4 x 1-1/2 x 1-1/4	ASD120-R75B105-1/16	690141 <b>91905</b>	3 x 1-1/4 x 3/4	ASD120-R75B99-1/16		690141 <b>92291</b>
Insert Length 3/8"	ASD150-R75B105-1/16	690141 <b>91906</b>	Insert Length 3/8"	ASD150-R75B99-1/16		690141 <b>92292</b>
(ME92192)	ASD100S-R75B105-1/8	690141 <b>91908</b>	(ME93912)	SD150-R100B99-1/16		690141 <b>92293</b>
	ASD120-R75B105-1/8	690141 <b>91909</b>	3-3/4 x 1-1/2 x 1-1/4	ASD120-R75B99-1/16		690141 <b>91660</b>
	ASD150-R75B105-1/8	690141 <b>91910</b>	Insert Length 3/8"	ASD150-R75B99-1/16		690141 <b>91725</b>
5 x 1-3/4 x 1-1/4	ASD120-R75B105-1/16	690141 <b>91913</b>	(ME92192)	ASD100S-R75B99-1/8		690141 <b>91653</b>
Insert Length 7/16"	ASD150-R75B105-1/16	690141 <b>91914</b>		ASD120-R75B99-1/8		690141 <b>91652</b>
(ME98298)	ASD100S-R75B105-1/8	690141 <b>91916</b>		ASD150-R75B99-1/8		690141 <b>91651</b>
	ASD150-R75B105-1/8	690141 <b>91918</b>		ASD180-R75B99-1/8		690141 <b>91650</b>
				SD120-R100B99-1/16		690141 <b>91657</b>
				SD150-R100B99-1/16		690141 <b>91656</b>
	Type 11V9			SD220-R100B99-1/16		690141 <b>91654</b>
	D - Diameter			SD320-R100B99-1/16		690141 <b>92814</b>
				SD100S-R100B99-1/8		690141 <b>92427</b>
	K - Inside Di	lameter of Flat		SD120-R100B99-1/8		690141 <b>91649</b>
	H - Hole			SD150-R100B99-1/8		690141 <b>91648</b>
	E – Back Thi	ckness		SD180-R100B99-1/8		690141 <b>91647</b>
	2 54011 111			SD220-R100B99-1/8		690141 <b>91646</b>
	1 11101100		5 x 1-3/4 x 1-1/4	ASD120-R75B99-1/16		690141 <b>91644</b>
	J - Hub Diar	meter	Insert Length 7/16"	ASD150-R75B99-1/16		690141 <b>91643</b>
	U - Insert Le	nath	(ME98298)	ASD100S-R75B99-1/8		690141 <b>91637</b>
	X - Abrasive	Denth		ASD120-R75B99-1/8		690141 <b>91636</b>
Q		1		ASD150-R75B99-1/8		690141 <b>91635</b>
	S - Face Ang	jie		ASD180-R75B99-1/8		690141 <b>91634</b>
	D	<b>→</b>   ,		SD150-R100B99-1/16		690141 <b>91640</b>
<b>←</b>	——— К ———•I	x→   ←		SD220-R100B99-1/16		690141 <b>91638</b>
				SD150-R100B99-1/8		690141 <b>91632 N</b>
, S'			NS Non-stock. Contact you Standard Package = 1 Whee	r Norton representative for order al	quantity	v and lead time.



Best choice for dry tool resharpening

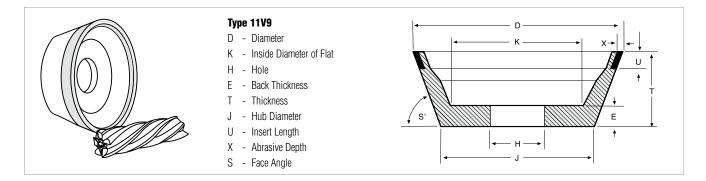
# AZTEC cBN WHEELS

- Consistent, high quality cBN (cubic Boron Nitride) abrasive which offers 85% longer life than standard cBN wheels
- Advanced heat-reducing bond conducts heat away from the workpiece for freer cutting action and extended wheel life; helps maintains cutting tool steel integrity and extends tool life
- · AZTEC III lubricating bond eliminates steel braze and loading; AZTEC .007 allows increased infeed (start at .007) for high stock removal

		TIER: BEST
	BC	OND: AZTEC
SIZE (D x T x H)	SPECIFICATION	PART #
Type 11V9 Flaring Cup -	cBN	
3-3/4 x 1-1/2 x 1-1/4	AZTEC .007-100-1/16	690141 <b>95683</b>
Insert Length 3/8"	AZTEC .007-150-1/16	690141 <b>95679</b>
(ME92192)	AZTEC III 100T-1/16	690141 <b>91832</b>
	AZTEC III 120T-1/16	690141 <b>91833</b>
	AZTEC III 150T-1/16	690141 <b>91834</b>
	AZTEC III 100T-1/8	690141 <b>91838</b>
	AZTEC III 120T-1/8	690141 <b>91839</b>
	AZTEC III 150T-1/8	690141 <b>91840</b>
5 x 1-3/4 x 1-1/4	AZTEC .007-100-1/16	690141 <b>95685</b>
Insert Length 7/16"	AZTEC III 100T-1/16	690141 <b>91841</b>
(ME98298)	AZTEC III 120T-1/16	690141 <b>91842</b>
	AZTEC III 150T-1/16	690141 <b>91843</b>
	AZTEC .007-100-1/8	690141 <b>95686</b>
	AZTEC .007-150-1/8	690141 <b>95682</b>
	AZTEC III 100T-1/8	690141 <b>91844</b>

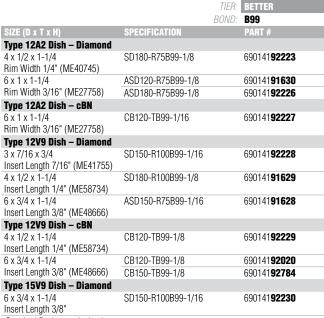
		TIER: BETTER
	B	ond: <b>B99</b>
SIZE (D x T x H)	SPECIFICATION	PART #
Type 11V9 Flaring Cup	– cBN	
3-3/4 x 1-1/2 x 1-1/4	CB100-TB99-1/16	690141 <b>91719</b>
Insert Length 3/8"	CB120-TB99-1/8	690141 <b>91723</b>
(ME92192)	CB150-TB99-1/8	690141 <b>91724</b>
	CB120-WB99-1/16	690141 <b>91720</b>
5 x 1-3/4 x 1-1/4	CB120-TB99-1/8	690141 <b>91715</b>
Insert Length 7/16" (ME98298)	CB150-TB99-1/8	690141 <b>91716</b>
Standard Package – 1 Whe	el	

Standard Package = 1 Wheel



Refer to "Brake Controlled Truing Devices" and "Dressing Sticks" in the Dressing Solutions section for truing and dressing products.





Standard Package = 1 wheel

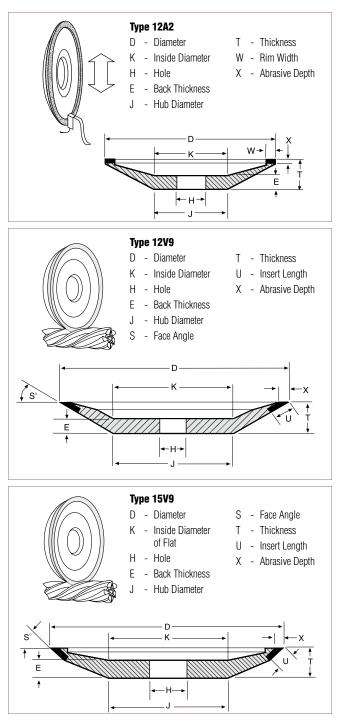
#### Can't Find Your Specification Here?

We offer a comprehensive stock product selection to service most of your needs

with the fastest delivery and lowest total cost.
 Review this stock section first. If you can not find the specification you need:

- Then refer to the brief descriptions of our B99 Express and CNC lines (following this section)
- For more in-depth B99 Express product availability contact your Norton representative for a complete listing of made-to-order superabrasive products.

### DIAMOND & CBN ABRASIVES Diamond / cBN Wheels





### DIAMOND & CBN ABRASIVES B99 Express Resin Bond Wheels



65,000+ made-to-order resin products; 25 wheel shapes, with one- and two-week lead-times for 12" and less diameter wheels. 14" and larger wheels and 80 grit and coarser wheels are available with standard made-to-order lead-times. If you do not find the resin specification and/or shape you need in our stock offering, you will most likely find it in our B99 Express made-to-order offering.

#### Applications:

- B99E Diamond Wheels
  Sharpening cemented carbide cutting tools
  - Cutting-off carbide rod
  - · Grinding or cutting-off non-metallic materials such as ceramics or glass
  - Surface grinding dies
  - 0.D. grinding spray coatings
  - B99E cBN Wheels
  - Sharpening high-speed (M2, D2, T15, etc.) steel cutting tools
  - Surface and ID grinding hardened steel die components
  - · Precision grinding steel parts Rc 50 or harder

Superior performing diamond and cBN wheels custom made to your requirements

# B99 EXPRESS MADE-TO-ORDER DIAMOND AND cBN RESIN BOND WHEELS

- · Superior diamond or cBN abrasives with durable resin bond systems
- · With thousands of abrasive, grit, grade, concentration, and bond combinations there is a B99 Express wheel for almost every resin bond application
- Offering exceptional quality and performance, these wheels are made in our state-of the art, USA, ISO-certified facilities; excellent performance/price ratio with convenient two-week (or less) lead-times

### How to Select B99 Express Made-to-Order Diamond Wheels

SELECT:			
WHEEL SHAPE	Select desired wheel shape		
WHEEL DIMENSIONS	· · · · · · · · · · · · · · · · · · ·	DxTxH	Select Diameter x Thickness x Hole from the availability tables in Catalog #8068. Use blueprint numbers where available.
ABRASIVE	Select the abrasive based on horsepower, grinding wet or	ASD	Armored diamond; most durable. Versatile: can be used wet or dry. ASD should be used when carbide and steel are ground in the same operation.
	dry, and contact with steel.	SD	Free cutting standard. Can be used wet or dry; should be used on low horsepower (3/4 hp or less) machines.
GRIT SIZE	Select the grit size based on	80	Roughing
	finish and material removal	100	Roughing. The most common grit size for roughing operations.
	rate required.	120	For roughing where 100 is too coarse. Also for cut-off applications.
	Note: Standard made-to-order lead-times apply to 80 grit and coarser wheels.	150	Medium stock removal plus good finish. For combined roughing and finishing applications.
		180	Medium stock removal plus good finish. To improve finish.
		220	Finishing
		320	Finishing
		400	Fine finishing
GRADE	The hardness of the wheel	R	Resin bond standard
CONCENTRATION	Select the concentration	50	Shape 2A2T only. For broad area of contact grinding.
	based on grinding wet or dry, material removal rates, and form holding requirements.	75	Norton standard. Freer cutting than 100 grit and the most economical for dry grinding with ASD diamond.
		100	Very durable. Recommended under flood coolant conditions. For use with 220 grit or finer, when durability is required. Also for cut-off applications.
		125	Improved form holding. Used with B99EF bond only for form holding in high-volume, high-pressure coolant applications. Used with ASD abrasive.
BOND	Select the bond based on the material being ground and grinding application.	B99E	Norton standard pre-engineered resin bond. Versatile enough to be used wet or dry on most tool making or resharpening applications as well as for grinding non-metallic materials such as ceramics or glass. Available in all shapes.
		B99EF	Improved form holding. More durable than B99E. Improved heat dissipation in wet or dry applications. Available in wheel shapes 1V1, 1B1, 1E1, 1EE1, 1F1 and 1FF1.
<b>ABRASIVE DEPTH</b>	Usable abrasive	1/16	
		1/8	
		1/4	
		1/2	





### How to Select B99 Express Made-to-Order cBN Wheels

SELECT:			
WHEEL SHAPE	Select desired wheel shape		
WHEEL DIMENSIONS	Note: Standard made-to-order lead-times apply to 14" and larger wheels.	DxTxH	Select Diameter x Thickness x Hole from the availability tables. Use blueprint numbers where available.
ABRASIVE	Select cBN abrasive to grind hard tool steels such as A2, D2, T15, etc., and tough alloy steels.	CB	Norton standard coated cBN (cubic Boron Nitride). Optimized for high performance in resin bond systems.
GRIT SIZE	Select the grit size based on	100	Roughing. The most common grit size for roughing operations.
	finish and material removal	120	For roughing where 100 is too coarse. Also for cut-off applications.
	rate required.	150	Medium stock removal plus good finish. For combined roughing and
	Note: Standard made-to-order		finishing applications.
	lead-times apply to 80 grit and	180	Medium stock removal plus good finish. To improve finish.
	coarser wheels.	220	Finishing
		320	Finishing
		400	Fine finishing
GRADE	The hardness of the wheel	Т	Norton standard. Approximately 75 concentration, T is the first choice for lower horsepower equipment or wide area of contact between the wheel and the workpiece. Ideal for resharpening applications with 11V9, 12A2, 4A2P, and 15V9 wheel shapes when dry grinding.
		W	Very durable. Approximately 100 concentration, W is recommended for high volume coolant operations: flute grinding from solid, flute polishing, surface, and cylindrical grinding.
		Z	Form holding. Approximately 125 concentration, Z grade is extremely durable and is recommended where long life or form holding is required in high-volume, high-pressure coolant applications. Used with B99EF bond only.
BOND	Select the bond depending on the type of grinding application.	B99E	Norton standard resin bond. Pre-engineered for optimal performance with cBN abrasive. Available in all shapes.
		B99EF	Improved form holding. More durable than B99E. Improved heat dissipation in wet or dry applications. Available in wheel shapes 1V1, 1B1, 1E1, 1EE1, 1F1 and 1FF1.
ABRASIVE DEPTH	Usable abrasive	1/16	
		1/8	
		1/4	
		1/2	

Contact your Norton representative for a complete listing of made-to-order superabrasive products.

### TECH TIP

#### **Diamond Grinds:**

In general, diamond is used to grind non-ferrous materials, because of an adverse reaction between diamond and iron.

- Cemented carbide
- Glass
- Ceramics
- Fiberglass
- Plastics
- Stone
- Abrasives

Electronic components and materials

It is the user's responsibility to refer to and comply with ANSI B7.1

#### cBN Grinds:

- cBN is used to grind ferrous materials.
- · High-speed tool steels
- Die steels
- Hardened carbon steels
- Alloy steels
- Aerospace alloys
- · Hardened stainless steel
- Abrasion-resistant ferrous materials

Industrial Market - Full-Line



### DIAMOND & CBN ABRASIVES Diamond / CBN CNC Wheels



These superior, pre-engineered wheels have been specifically developed to meet the demanding needs of precision cutting tool manufactures as well as re-sharpeners. The use of the highest quality diamond and cBN abrasives matched to superior high temperature bond systems, guarantees high performing wheels. These wheels are manufactured under the strictest quality control protocols ensuring the same, consistent, high-performing product. Cutting tool manufactures who use these wheels report much improved dimensional accuracy and superior cutting edges.

This product offering provides wheel sizes for most CNC machines and wheels shapes to produce the required cutting tool geometries. If you do not find a wheel in this offering to suit your specific needs, a custom-made wheel can be provided.

Applications: CNC cutting tool manufacturing and resharpening: fluting, end fluting, gashing, and OD relief

### **Diamond CNC Wheels**



#### Best choice for CNC tungsten carbide round tool manufacturing

# PARADIGM DIAMOND WHEELS

- Truable online and offline for maximum productivity
- Wear and load resistance deliver superior grinding performance on tough-to-grind carbides with 6-12% cobalt content
- High grain retention and uniform structure generate high G-ratio; up to 2.5 times longer life and 30% higher MRR than existing superabrasive wheels



Better choice for CNC tungsten carbide round tool manufacturing

# G-FORCE AND UNIVEL POLYIMIDE DIAMOND WHEELS

- Polyimide bond systems provide superior form-holding and lower-power requirements compared to premium
  competitive wheels, reducing frequency of dresses, and decreasing chances of burn and heat damage to the part
- Unique bond technology excels on round, carbide and steel tools; excellent depth of cut, traverse rates, and form holding; reduces total grinding costs by 30% or more
- · Self-dressing; maintains a consistently sharp grinding edge which allows for lights-out manufacturing



Better choice for CNC grinding of round tools

# V-PRIME DIAMOND WHEELS

- Remarkable edge stability with reduced grinding forces and excellent performance, offering higher feed rates and lowering process times and costs
- · New innovative bond system combines extreme wear resistance with the dressing ability of a standard resin bond
- Optimized grinding wheel preparation: off-line dressing is simpler and faster, saving time and money



#### Good choice for short runs and frequent geometry changes

# DIAMOND CNC WHEELS

- A price competitive alternative to premium wheels; ideal for short-run manufacturing jobs where frequent wheel profile changes are required
- Consistent wheel-to-wheel performance for reduced cycle times, less dressing = longer wheel life
- Ideal for resharpening and short-run manufacturing operations; competitively-priced while providing good performance

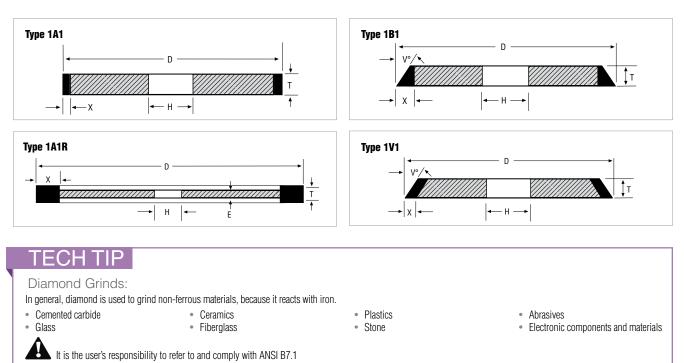


### **DIAMOND & cBN ABRASIVES** Diamond / cBN CNC Wheels

### **Diamond CNC Wheels**

	TIER:	BEST			BETTER			GOOD	_	
TRA		PARADIGM			G-FORCE/UNIVEL			NORTON WINTER		
SIZE	DENAME.		ABR.			ABR.		NOTITON WINTER	ABR.	
(D x T x H)			DEPTH			DEPTH			DEPTH	
Û, W	ANGLE V	SPECIFICATION	X	PART #	SPECIFICATION	X	PART #	SPECIFICATION	X	PART #
TYPE 1A1 – Di	iamond F									
4 x 1/2 x 1-1/4		SD320-D168-P100C	3/8		AD320-UP061 G-Force	1/4	601576 <b>63909</b>			
5 x 3/8 x 1-1/4		SD320-D168-P100C	1/2	079587 <b>83058 NS</b>	AD320-UP061 G-Force	1/2	601576 <b>68409</b>	A4D220-R115B610	1/2	690141 <b>18255</b>
5 x 1/2 x 1-1/4		SD320-C176-P100C	1/2	079587 <b>83061</b>	AD320-UP061 G-Force	1/2	601576 <b>62240</b>	A4D180-R115B610	1/2	690141 <b>18202</b>
5 x 5/8 x 1-1/4		SD320-C176-P100C	1/2	079587 <b>83063 NS</b>	AD320-UP061 G-Force	1/2		A4D180-R115B610	1/2	690141 <b>18203</b> NS
6 x 1/2 x 1-1/4		SD320-C176-P100C	1/2	079587 <b>83064</b>	AD320-UP061 G-Force	1/4	601576 <b>82133 NS</b>	A4D180-R115B610	1/4	690141 <b>18216</b> NS
TYPE 1A1 – Di	iamond P	olish								
5 x 1/2 x 1-1/4					80D1000-100UP731	1/2	079587 <b>84316 NS</b>			
					Univel					
TYPE 1A1 – Di	iamond R	elief								
6 x 1/2 x 1-1/4		SD320-E168-P100C	1/2	079587 <b>83073 NS</b>	AD320-UP892 G-Force	1/2	690141 <b>17684</b> NS	A4D180-R115B610	1/2	690141 <b>18217</b> NS
TYPE 1A1RN -	Diamon	d Flute								
5 x 3/8 x 1-1/4		SD320-D168-P100C	1/2	079587 <b>83067 NS</b>	AD320-UP061 G-Force	1/2	601576 <b>63501</b>			
5 x 1/2 x 1-1/4		00020 0100 11000	./=		AD220-UP061 G-Force	1/2	662603 <b>22280</b>			
5 x 5/8 x 1-1/4					AD220-UP061 G-Force	1/2	601576 <b>64141</b>			
<b>TYPE 1B1 – Di</b>	iamond F	lute				.,_				
4 x 3/8 x 1-1/4		SD320-D168-P100C	3/8	079587 <b>83054</b>						
<b>TYPE 1B1 – Di</b>			0,0	01000100001						
5 x 3/8 x 1-1/4		SD320-E168-P100C	1/2	079587 <b>83065</b>						
<b>TYPE 1B1 – Di</b>			1/2	01330100003						
5 x 1/2 x 1-1/4		SD320-E168-P100C	1/4	079587 <b>83062 NS</b>						
5 x 1/2 x 1-1/4		SD320-E168-P100C	1/4	079587 <b>83060</b> NS						
5 x 1/2 x 1-1/4		SD320-E168-P100C	3/4	079587 <b>83070</b> NS				A4D320-R115B610	3/4	690141 <b>18207</b>
J X 1/2 X 1-1/4	v=30	3D320-L100-r 1000	3/4	01930103010 113				D220-C100-K+925	6mm	601576 <b>13112</b>
5 x 1/2 x 1-1/4	V AEO	SD320-E168-P100C	3/4	070507020C0 NC	AD320-UP531 G-Force	3/4	662603 <b>29603</b>	D220-0100-N+920	011111	0013/013112
J X 1/2 X 1-1/4	v=40	3D320-E100-F1000	3/4	0/900/03000 NS	AD320-0F331 G-FUICE	3/4	00200329003	D220-C100-K+925	6mm	601576 <b>23673</b>
		lut-						D220-0100-K+920	OITIITI	0015/0230/3
<b>TYPE 1V1 – Di</b>		iule				1/4	660600 <b>16E01</b>		1/4	60014110060
4 x 3/8 x 1-1/4		00000 0470 04000	1/0	07050700074 10	AD320-UP061 G-Force	1/4	66260316591	A4D180-R115B610	1/4	690141 <b>18263</b>
5 x 1/2 x 1-1/4		SD320-C176-P100C	1/2		AD320-UP061 G-Force	1/2	662601 <b>16723</b>			
5 x 1/2 x 1-1/4	V=20°	SD320-C176-P100C	1/2	079587 <b>83074</b>	AD320-UP061 G-Force	1/2	601576 <b>93843</b>	D000 0400 K 005	0	00457000050
<u> </u>	14 000	00000 0470 04000	1 10	07050700005		1/0	00457000045	D220-C100-K+925	6mm	601576 <b>23953</b>
5 x 1/2 x 1-1/4		SD320-C176-P100C	1/2	0/9587 <b>83085</b> NS	AD320-UP671 G-Force	1/2	601576 <b>93841</b>			
TYPE 1V1 – Di		lute/Gash								
5 x 3/8 x 1-1/4					AD320-UP531 G-Force	1/2	601576 <b>96562</b>	A4D320-R115B610	1/2	690141 <b>18257</b>
TVDE 4V4 D	annand O	ach								
TYPE 1V1 – Di		4311								
5 x 1/2 x 1-1/4 5 x 1/2 x 1-1/4	V= 45°	4311			AD320-UP531 G-Force AD320-UR331 Univel	1/4 1/4	662603 <b>29604</b> 662603 <b>29469</b>	A4D320-R115B610	1/4	690141 <b>18209</b>

NS Non-stock, contact your Norton representative for current lead-times. All holes (bores) are machined to (H7) class fit.



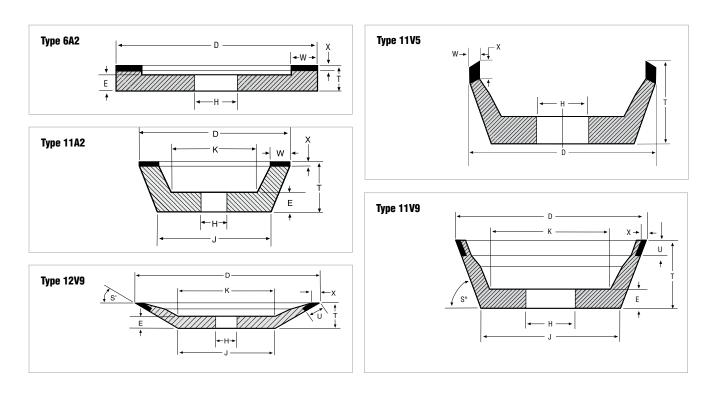


## DIAMOND & cBN ABRASIVES Diamond / cBN CNC Wheels

### **Diamond CNC Wheels**

	TIER:	BEST			BETTER			GOOD		
TRADI		PARADIGM			G-FORCE/UNIVEL			NORTON WINTER		
SIZE (D x T x H) II. W	ANGLE V	SPECIFICATION	ABR. Depth X	PART #	SPECIFICATION	ABR. DEPTH X	PART #	SPECIFICATION	ABR. Depth X	PART #
TYPE 6A2 - Diam	nond Po		~			~			~	
4 x 1-1/4 x 1-1/4 W=1/4		SD320-E168-P100C	1/4	079587 <b>83057</b> NS	AD320-UP251 G-Force	1/4	690141 <b>18644</b> NS	ASD320C-R100B56	1/4	690141 <b>18219</b> NS
TYPE 11A2 – Dia	mond R	elief								
3 x 1-1/4 x 1-1/4 W=1/4					10D320-NB100U Univel	1/4	601576 <b>92199</b>			
4 x 1-1/4 x 1-1/4 W=1/4		SD320-E168-P100C	1/4	079587 <b>83059</b> NS	AD320-UP701 G-Force	1/4	601576 <b>96315</b>	ASDC320-R100B80	1/4	690141 <b>18213</b>
4 x 1-1/4 x 1-1/4 W=1/4					AD320-UP561 G-Force	1/4	690141 <b>18479</b> NS	ASDC320-R100B80	1/4	690141 <b>18265</b> NS
TYPE 11V5 - Dia	mond R	elief								
4 x 1-1/4 x 1-1/4 W=1/4	V=30°				AD320-UP561 G-Force	1/4	690141 <b>17838</b>	ASDC320-R100B80	1/4	690141 <b>18211</b>
4 x 1-1/4 x 1-1/4 W=3/8	V=10°				AD320-UP561 G-Force	1/4	690141 <b>17812</b>	ASDC320-R100B80	1/4	690141 <b>18212</b>
TYPE 11V9 - Dia	mond R	elief								
3-3/4 x 1-1/2 x 1-1 U=3/8	/4				10D240-PB125-U Univel	1/8	662603 <b>22134</b>	ASDC320-R100B80	1/8	690141 <b>18259</b>
5 x 1-3/4 x 1-1/4 U=5/8					10D240-PB125-U Univel	1/8	662601 <b>18300</b>	ASDC320-R100B80	1/8	690141 <b>18215</b>
TYPE 12V9 - Dia	mond R	elief								
4 x 3/4 x 1-1/4 U=3/8					AD320-UP531 G-Force	1/8	662601 <b>27950</b> NS	ASDC320-R100B80	1/8	690141 <b>18221</b> NS
5 x 3/4 x 1-1/4 U=1/2		Mada			AD320-UP531 G-Force	1/8	662601 <b>27911</b> NS	ASDC320-R100B80	1/8	690141 <b>18222</b> NS

NS Non-stock, contact your Norton representative for current lead-times. All holes (bores) are machined to (H7) class fit.



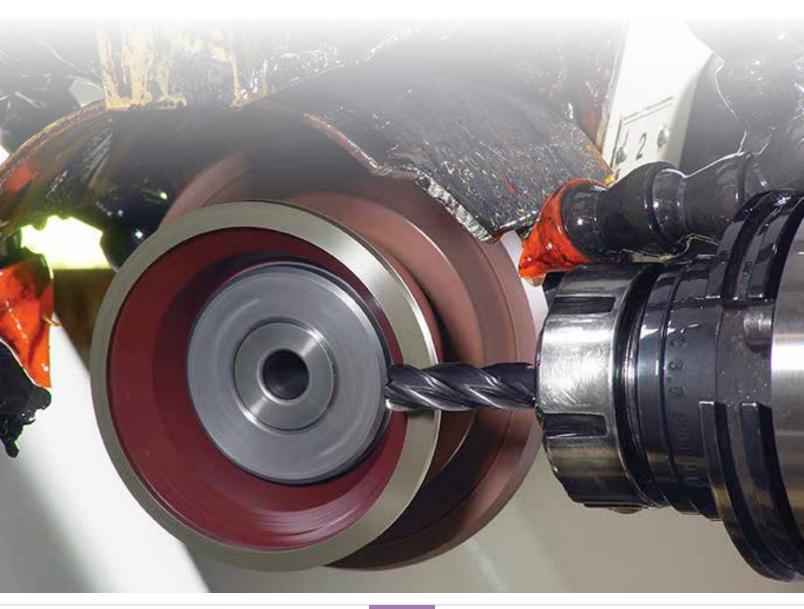


### DIAMOND & CBN ABRASIVES Diamond / CBN CNC Wheels

### Diamond CNC Wheels - V-Prime

		TIE	R: BETTER			
		TRADENAN	IE: V-PRIME			
SIZE (D x T x H)	U, W	ANGLE V	SPECIFICATION	GRIT	ABR. DEPTH X	PART #
TYPE 1V1 – Diamond Flute/Gash						
100mm x 10mm x 1-1/4"		V=45°	D54V-Prime 5406 A	320	6 mm	662602 <b>07878</b>
125mm x 10mm x 1-1/4"		V=45°	D54V-Prime 5406 A	320	12mm	662602 <b>07786</b>
TYPE 11V5 – Diamond Relief						
100mm x 1-1/4" x 1-1/4"	W=6mm	V=30°	D46V-Prime 5406 A	400	10mm	662602 <b>04642</b>
TYPE 11V9 – Diamond Relief						
3-3/4" x 35mm x 1-1/4"	U=9.3mm	V=70°	D64V-Prime 5406 H	240	1/8	662602 <b>13487</b>
3-3/4" x 35mm x 1-1/4"	U=9.3mm	V=70°	D54V-Prime 5406 H	320	1/8	662602 <b>12321</b>
3-3/4" x 35mm x 1-1/4"	U=9.3mm	V=70°	D46V-Prime 5406 H	400	1/8	662602 <b>13282</b>
100mm x 35mm x 1-1/4"	U=10mm	V=70°	D64V-Prime 5406 H	240	3mm	662602 <b>12804</b>
5" x 40mm x 1-1/4"	U=9.3mm	V=70°	D64V-Prime 5406 H	240	1/8	662602 <b>13286</b>
5" x 40mm x 1-1/4"	U=9.3mm	V=70°	D54V-Prime 5406 H	320	1/8	662602 <b>13284</b>
5" x 40mm x 2"	U=9.3mm	V=70°	D54V-Prime 5406 H	320	1/8	662602 <b>13287</b>
TYPE 12V9 – Diamond Relief						
100mm x 20mm x 1-1/4"	U=10mm	V=45°	D46V-Prime 5406 H	400	3mm	662601 <b>98315</b>
125mm x 25mm x 1-1/4"	U=10mm	V=45°	D46V-Prime 5406 H	400	3mm	662601 <b>98316</b>
150mm x 25mm x 1-1/4"	U=10mm	V=45°	D64V-Prime 5406 H	240	3mm	662601 <b>98317</b>

V-Prime wheels are available in cBN upon request. Please contact your Norton representative for more details.





### DIAMOND & CBN ABRASIVES Diamond / CBN CNC Wheels

#### cBN CNC Wheels



#### Best choice for CNC HSS round tool manufacturing

### G-FORCE / UNIVEL cBN WHEELS

**cBN CNC WHEELS** 

- · Truable online and offline for lights-out manufacturing and maximum productivity
- Wear and load resistance deliver superior grinding performance on tough-to-grind carbides with 6-12% cobalt content
- · Low specific cutting energy for faster grinding with lower power draw and less burn

#### Good choice for short runs and frequent geometry changes



#### A price competitive alternative to premium wheels; ideal for short-run manufacturing jobs where frequent wheel profile changes are required

- · Consistent wheel-to-wheel performance for reduced cycle times, less dressing = longer wheel life
- Ideal for resharpening and short-run manufacturing operations; competitively-priced while providing good performance

	TIFR:	BEST			GOOD		
TR	ADENAME:				NORTON WINTER		
SIZE	ADLINAIVIL.		ABR.			ABR.	
(D x T x H)	ANGLE		DEPTH			DEPTH	
Ù, W	V	SPECIFICATION	X	PART #	SPECIFICATION	Х	PART #
TYPE 1A1 - 0	cBN Flute						
4 x 1/2 x 1-1/4	ļ	BX220-UP241 G-Force	1/4	601576 <b>69935</b> NS	BAM180-WBXD3037	1/4	690141 <b>18223 NS</b>
					B220-V240-KSS920	6mm	601576 <b>23498</b>
5 x 3/8 x 1-1/4	ł	BX220-UP241 G-Force	1/2	690141 <b>18436</b> NS	BAM320C-WBXD3037	1/2	690141 <b>18256 NS</b>
5 x 1/2 x 1-1/4	ļ	BX220-UP241 G-Force	1/2	601576 <b>70869</b> NS	BAM180-WBXD3037	1/2	690141 <b>18224</b> NS
					B220-V240-KSS920	6mm	601576 <b>02944</b>
5 x 5/8 x 1-1/4		BX220-UP241 G-Force	1/2	662603 <b>29385 NS</b>	BAM180-WBXD3037	1/2	690141 <b>18225 NS</b>
6 x 1/4 x 1-1/4	ł	BX240-UP241 G-Force	1/4	690141 <b>18435 NS</b>	BAM180-WBXD3037	1/4	690141 <b>18240</b> NS
<b>TYPE 1A1 - 0</b>	<b>cBN Relie</b>	f					
6 x 1/2 x 1-1/4	ł	BX320-UP892 G-Force	1/2	690141 <b>17679 NS</b>	BAM180-WBXD3037	1/2	690141 <b>18237</b> NS
<b>TYPE 1A1RN</b>	– cBN Flu	ite					
5 x 1/4 x 1-1/4	ļ	BX150-UP241 G-Force	1/2	079587 <b>73216 NS</b>			
5 x 3/8 x 1-1/4	ł	BX150-UP241 G-Force	1/2	079587 <b>73217 NS</b>			
5 x 1/2 x 1-1/4	ļ	BX150-UP241 G-Force	1/2	690141 <b>41373 NS</b>			
<b>TYPE 1B1 – 0</b>	cBN Gash						
5 x 1/2 x 1-1/4	V=30°	BX320-UP701 G-Force	3/4	662603 <b>29388 NS</b>	BAM320C-WBXD3037	3/4	690141 <b>18229 NS</b>
5 x 1/2 x 1-1/4	V=45°	BX320-UP531 G-Force	3/4	662603 <b>29391 NS</b>	BAM320C-WBXD3037	3/4	690141 <b>18230</b> NS
					B220-V240-KSS920	6mm	601576 <b>23542</b>
<b>TYPE 1V1 – </b> 0	<b>cBN</b> Flute						
4 x 3/8 x 1-1/4	V=20°	BX220-UP241 G-Force	1/4	690141 <b>18342 NS</b>	BAM180C-WBXD3037	1/4	690141 <b>18264</b> NS
5 x 1/2 x 1-1/4	V=20°	BX220-UP241 G-Force	1/2	601576 <b>80042</b> NS	BAM180-WBXD3037	1/2	690141 <b>18227 NS</b>
					B220-V240-KSS920	6mm	601576 <b>23944 NS</b>
5 x 1/2 x 1-1/4	V=30°	BX220-UP241 G-Force	1/2	601576 <b>91380 NS</b>	BAM180-WBXD3037	1/2	690141 <b>18228 NS</b>
5 x 1/2 x 1-1/4	V=10°	BX220-UP241 G-Force	1/2	662601 <b>19876 NS</b>	BAM180-WBXD3037	1/2	690141 <b>18226 NS</b>
<b>TYPE 1V1 – </b> 0	<b>cBN</b> Flute	/Gash					
5 x 3/8 x 1-1/4	V=45°	BX220-UP531 G-Force	1/2	601576 <b>97699 NS</b>	BAM320C-WBXD3037	1/4	690141 <b>18262 NS</b>
					B220-V240-KSS920	6mm	601576 <b>23524</b>
<b>TYPE 1V1 – </b> 0	cBN Gash						
5 x 1/2 x 1-1/4	V=60°	BX320-UR331 Univel	1/4	662603 <b>29461 NS</b>	BAM320C-WBXD3037	1/4	690141 <b>18232 NS</b>
5 x 1/2 x 1-1/4	V=45°	BX320-UP531 G-Force	1/4	662603 <b>29275 NS</b>	BAM320C-WBXD3037	1/4	690141 <b>18231</b> NS
					D000 1/040 1/00000	0	00457000770

#### ΓΕϹΗ ΤΙΡ

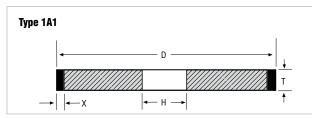
cBN Grinds: cBN is used to grind ferrous materials.

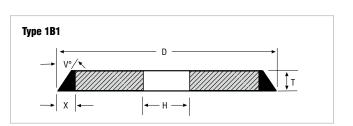
- High-speed tool steels
- Die steels
- Hardened carbon steels
- Alloy steels
- · Aerospace alloys
- · Hardened stainless steel
- Abrasion-resistant ferrous materials

It is the user's responsibility to refer to and comply with ANSI B7.1

### NS Non-stock, contact your Norton representative for current lead-times.

All holes (bores) are machined to (H7) class fit.





B220-V240-KSS920

6mm

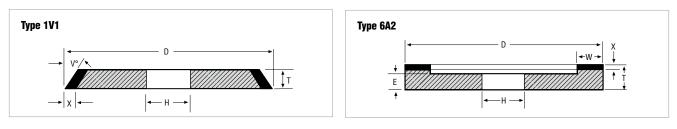
601576**23776** 

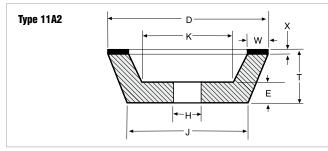


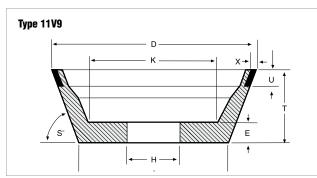
#### **cBN CNC Wheels**

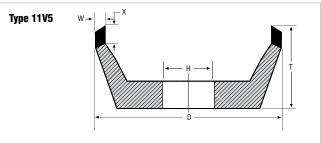
TIER:	BEST			GOOD		
TRADENAME:	G-FORCE/UNIVEL			NORTON WINTER		
SIZE (D x T x H)		ABR. Depth			ABR. Depth	
Ù, W Ó ANGLE V	SPECIFICATION	X	PART #	SPECIFICATION	X	PART #
TYPE 6A2 – cBN Point						
4 x 1-1/4 x 1-1/4 W=1/4	BX320-UP241 G-Force	1/4	690141 <b>18543</b> NS	CB320C-WBB	1/4	690141 <b>18239</b> NS
5 x 1-1/4 x 1-1/4 W=1/2	BX320-UP241 G-Force	1/4	690141 <b>18447</b> NS	CB320C-WBB	1/4	690141 <b>18238</b> NS
TYPE 11A2 - cBN Relief						
5 x 1-1/2 x 2 W=1/4	BX320-UP531 G-Force	1/4	690141 <b>18406</b> NS	BAM220-WBE	1/4	690141 <b>18254</b> NS
TYPE 11A2 – cBN Relief						
4 x 1-1/4 x 1-1/4 W=1/4	BX320-UP531 G-Force	1/4	690141 <b>18445</b> NS	BAM220-WBE	1/4	690141 <b>18266 NS</b>
TYPE 11V5 - cBN Relief						
4 x 1-1/4 x 1-1/4 V=30°	BX320-UP701 G-Force	1/4	690141 <b>17833 NS</b>	BAM220-WBE	1/4	690141 <b>18233 NS</b>
W=1/4				B220-J240-KSS63Y	6mm	601576 <b>23563</b>
4 x 1-1/4 x 1-1/4 V=10° W=3/8	BX320-UP701 G-Force	1/4	690141 <b>17820</b> NS	BAM220-WBE	1/4	690141 <b>18234</b> NS
TYPE 11V9 - cBN Relief						
3-3/4 x 1-1/2 x 1-1/4 U=3/8	90B240-PB125-U Univel	1/8	690141 <b>18345</b> NS	BAM220-WBE	1/8	690141 <b>18260</b> NS
TYPE 11V9 - cBN Relief						
3-3/4 x 1-1/2 x 1-1/4 U=3/8	90B240-PB125-U Univel	1/8	690141 <b>18029</b> NS	BAM220-WBE	1/8	690141 <b>18235</b> NS
5 x 1-3/4 x 2 U=3/8	90B240-PB125-U Univel	1/8	690141 <b>18043</b> NS	BAM220-WBE	1/8	690141 <b>18248 NS</b>
TYPE 12V9 - cBN Relief						
4 x 3/4 x 1-1/4 U=3/8	BX320-UP531 G-Force	1/8	690141 <b>18470 NS</b>	BAM220-WBE	1/8	690141 <b>18241 NS</b>
5 x 3/4 x 1-1/4 U=1/2	BX320-UP531 G-Force	1/8	690141 <b>18441</b> NS	BAM220-WBE	1/8	690141 <b>18242</b> NS

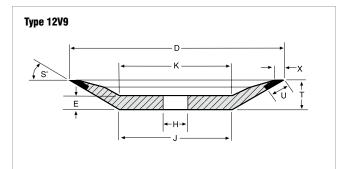
NS Non-stock, contact your Norton representative for current lead-times. All holes (bores) are machined to (H7) class fit.













### **DIAMOND & cBN ABRASIVES Electroplated Products**

Our extensive offering of stock diamond and cBN electroplated products has been engineered to meet the diverse demands of traditional and emerging tool and die, ceramic, and composite applications.

**Applications:** 

Small hole/ID grinding, deburring, cleaning, honing, precision drilling, forming dies and molds, routing, reaming, blending radii, notching and cutting-off with saw blades in ceramic, tool and die, and composite applications · Mounted points

**Product Types:** 

- Mandrels
- Drills
- Routers
- Contour tools
- Wheels
- Files
- Saw blades
- Abrasive Grain: Diamond or cBN (cubic Boron Nitride)

Maintain tight tolerances and provide superior form holding; can be used wet or dry

### ELECTROPLATED PRODUCTS

- · Nickel alloy matrix creates a tough, durable bond
- · Single layer of abrasive offers an economical choice
- · Exposed particles for aggressive cutting action

### **Identifying Target Markets**

An industry is provided beside each product. This key identifies markets that typically use the product.

TARGET MARKET SYMBOLS ▲ = Tool & Die = Ceramics

= Composites

### TECH TIP

#### Abrasive Applications

Although diamond and cBN (cubic Boron Nitride) are both superabrasives, the use of diamond and cBN varies, depending upon the materials to be ground.

#### **Diamond Grinds:**

- · Cemented carbide · Composites
  - Cast Iron
- Ceramics Abrasives

Stone

· Electronic components nd materials

- Fiberglass
- Plastics

Glass

**cBN** Grinds:

Alloy steels

- · High-speed tool steels
- Die steel
- · Hardened carbon steels
- · Hardened stainless steels
- ferrous materials

In general, cBN is used to grind ferrous materials. Diamond is used to grind non-ferrous materials, because of an adverse reaction between diamond and iron.

 Aerospace alloys Abrasion-resistant



### DIAMOND & CBN ABRASIVES Electroplated Products

#### Made-to-Order Electroplated Product Guide

The stock electroplated products offered on the following pages have been engineered to meet the diversity of demands typical in today's manufacturing environment. When special forms, shapes, and configurations are required, Norton Winter electroplated diamond and cBN products can be fabricated in almost any geometry.

### Customer-Supplied Preforms and Blanks

Customers may prefer to manufacture their own preforms/blanks for custom products and in many cases this can reduce cost and lead-times. The instructions below detail the necessary allowances for each grit size. Please refer to these whenever manufacturing blanks.



#### Area to be plated (female radius)

Female radius must be larger than the finished size required. Example – If a .500 female radius is required with 60/80 grit, then the blank should be manufactured .011 larger = .511



#### Area to be plated (male radius)

A male radius must be smaller than the finished size required.

Example - If a .500 male radius is required with 60/80 grit, then the blank should be manufactured .011 smaller = .489

### Grit Size Allowance for Plated Products

ALLOWANCE/GRIT SIZE	PARTICLE SIZE
20/30	.035
30/40	.025
40/50	.018
60/80	.011
80/100	.008
100/120	.007
120/140	.006
140/170	.005
170/200	.004
200/230	.0035
270/325	.003
4.5 Micron – 400	.0025
30 Micron – 600	.0016
15 Micron – 1200	.001
This should be used as a guide when	manufacturing blanks to be plated with diamond or cBN

### Surface Finish

Use this chart only as a guide. Surface finish is affected by a number of variables: machine type and condition, type of material, coolant, wheel speed, bond system, etc.

#### Expected RMS Finish

GRIT SIZE	ELECTROPLATED
80	90-125
100	64-90
120	48-64
150	32-48
180	24-32
220	20-24
240	16-20
320	16-20
400	14-20
500	12-13
600	12

### Strip and Replate Services

Ask Customer Service for information and quotations on our complete strip and replate services on many electroplated products.

### TECH TIF

#### Coolants

Although coolants may not be necessary, using a coolant produces superior surface finishes, a longer tool life, higher performance, and reduces tool loading.

#### Feeds

Suggested feeds for jig or internal grinding are from .0002" – .0004" per pass.

#### Speeds

#### Maximum Operating Speeds (MOS)

Never exceed the maximum operating speed marked on the superabrasive product being used.

Electroplated Products: 25,000 SFPM0 SFPM

Maximum speeds of mounted points are a function of the length of overhang and size of the product. Refer to "Safe Operating Speeds" in form #2872, provided with your product.

#### **Recommended Operating Speeds**

The preceding speed is the maximum safe speed and not necessarily the most efficient. Superabrasive products operate most effectively at speeds lower than the maximum. The following are general recommendations. cBN products, in many cases, are used effectively at higher speeds.

- Electroplated Diamond Products: 5,000 to 10,000 SFPM
- Electroplated cBN Products: 8,000 to 10,000 SFPM
- Calculating Operating Speed

The following formula may be used to quickly calculate wheel speed:

- RPM = Revolutions Per Minute
- SFPM = Surface Feet Per Minute

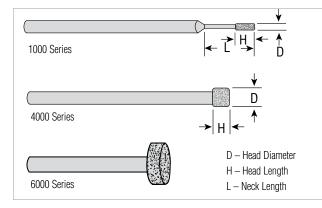
To convert SFPM to RPM: (Multiply SFPM x 3.82) divided by wheel diameter in inches



#### **Electroplated Mounted Points**

Diamond and cBN Mounted Points • A

- · Use diamond mounted points for precise, small hole, jig and internal grinding of carbide, ceramics, sapphire, glass, and a variety of tough, super alloys
- · For grinding tough, high carbon, high chrome steel, use cBN mounted points
- Mandrels are made of high-speed tool steel to withstand operating pressure



PART #	PRODUCT #	HEAD DIAMETER	HEAD Length	NECK Length	GRIT SIZE
1000 Series – Di		INGRES	LENGTH	LENGTH	312E
1/8" Shank x 2-1/		th			
662603 <b>92429</b>	1016FD	.016	.079	1/8	200
662603 <b>92432</b>	1020MD	.020	.079	1/8	150
662603 <b>92431</b>	1020FD	.020	.079	1/8	200
662603 <b>92436</b>	1020FD 1025MD	.025	.079	1/8	150
662603 <b>92435</b>	1025FD	.025	.079	1/8	200
662603 <b>92440</b>	10231 D 1030MD	.020	.079	1/0	150
662603 <b>92439</b>	1030FD	.030	.079	1/4	200
662603 <b>92439</b>	1030FD 1035CD	.035	.118	1/4	100
662603 <b>92445</b>	10350D 1035MD	.035	.118	1/4	150
662603 <b>92443</b>	1035IVID 1035FD	.035	.118	1/4	200
662603 <b>92451</b> 662603 <b>92450</b>	1040CD 1040MD	.040	.118	1/4 1/4	100 150
662603 <b>92450</b>	1040IVID 1040FD	.040	.118 .118	1/4	200
		.040	.118	1/4	
662603 <b>92457</b>	1045CD				100
662603 <b>92456</b>	1045MD	.045 .045	.118	1/4	150
662603 <b>92455</b>	1045FD		.118	1/4	200
662603 <b>92463</b>	1050CD	.050	.118	1/2	100
662603 <b>92462</b>	1050MD	.050	.118	1/2	150
662603 <b>92461</b>	1050FD	.050	.118	1/2	200
662603 <b>92469</b>	1050LCD	.050	.118	1	100
662603 <b>92468</b>	1050LMD	.050	.118	1	150
662603 <b>92467</b>	1050LFD	.050	.118	1	200
662603 <b>92475</b>	1055CD	.055	.118	1/2	100
662603 <b>92474</b>	1055MD	.055	.118	1/2	150
662603 <b>92473</b>	1055FD	.055	.118	1/2	200
662603 <b>92481</b>	1060CD	.060	.157	1/2	100
662603 <b>92480</b>	1060MD	.060	.157	1/2	150
662603 <b>92479</b>	1060FD	.060	.157	1/2	200
662603 <b>92487</b>	1060LCD	.060	.157	1	100
662603 <b>92492</b>	1065MD	.065	.157	1/2	150
662603 <b>92491</b>	1065FD	.065	.157	1/2	200
662603 <b>92499</b>	1070CD	.070	.157	1/2	100
662603 <b>92498</b>	1070MD	.070	.157	1/2	150
662603 <b>92497</b>	1070FD	.070	.157	1/2	200
662603 <b>92505</b> NS	1070LCD	.070	.157	1	100
662603 <b>92511</b>	1075CD	.075	.157	1/2	100
662603 <b>92510</b>	1075MD	.075	.157	1/2	150
662603 <b>92509</b>	1075FD	.075	.157	1/2	200
Continued					

PART #	PRODUCT #	HEAD DIAMETER Inches	HEAD Length	NECK Length	GRIT Size
1000 Series – Dia					
1/8" Shank x 2-1/					
662603 <b>92517</b>	1080CD	.080	.157	1/2	100
662603 <b>92516</b>	1080MD	.080	.157	1/2	150
662603 <b>92515</b>	1080FD	.080	.157	1/2	200
66260392523	1080LCD	.080	.157	1	100
662603 <b>92521</b>	1080LFD	.080	.157	1	200
662603 <b>92529</b>	1085CD	.085	.157	1/2	100
662603 <b>92528</b>	1085MD	.085	.157	1/2	150
662603 <b>92535</b>	1090CD	.090	.157	1/2	100
662603 <b>92534</b>	1090MD	.090	.157	1/2	150
662603 <b>92533</b>	1090FD	.090	.157	1/2	200
662603 <b>92541</b>	1090LCD	.090	.157	1	100
662603 <b>92540</b> NS	1090LMD	.090	.157	1	150
662603 <b>92547</b>	1095CD	.095	.157	1/2	100
662603 <b>92546</b>	1095MD	.095	.157	1/2	150
662603 <b>92553</b>	1100CD	.100	.157	1/2	100
662603 <b>92552</b>	1100MD	.100	.157	1/2	150
662603 <b>92551</b>	1100FD	.100	.157	1/2	200
662603 <b>92565</b>	1105CD	.105	.157	1/2	100
662603 <b>92577</b>	1110CD	.110	.157	1/2	100
662603 <b>92576</b>	1110MD	.110	.157	1/2	150
662603 <b>92589</b>	1115CD	.115	.157	1/2	100
662603 <b>92595</b>	1120CD	.120	.157	1/2	100
662603 <b>92594</b>	11200D	.120	.157	1/2	150
662603 <b>92593</b>	1120FD	.120	.157	1/2	200
662603 <b>92601</b>	1125CD	.125	.157	1/2	100
662603 <b>92600</b>	1125MD	.125	.157	1/2	150
662603 <b>92599</b>	1125FD	.125	.157	1/2	200
662603 <b>92607</b>	1130CD	.130	.197	1	100
662603 <b>92606</b>	1130MD	.130	.197	1	150
662603 <b>92613</b>	1135CD	.135	.236	N/A	100
662603 <b>92612</b>	1135MD	.135	.236	N/A	150
662603 <b>92611</b>	1135FD	.135	.236	N/A	200
662603 <b>92619</b>	1140CD	.140	.236	N/A	100
662603 <b>92625</b>	1156CD	.156	.236	N/A	100
662603 <b>92624</b>	1156MD	.156	.236	N/A	150
662603 <b>92623</b>	1156FD	.156	.236	N/A	200
662603 <b>92730</b>	1171MD	.171	.236	N/A	150
662603 <b>92737</b>	1187CD	.187	.312	N/A	100
662603 <b>92735</b>	1187FD	.187	.312	N/A	200
662603 <b>92742</b>	1203MD	.203	.312	N/A	150
662603 <b>92741</b>	1203FD	.203	.312	N/A	200
662603 <b>92748</b>	1218MD	.218	.312	N/A	150
662603 <b>92747</b>	1218FD	.218	.312	N/A	200
662603 <b>92755</b>	1250CD	.250	.312	N/A	100
662603 <b>92754</b>	1250MD	.250	.312	N/A	150
662603 <b>92753</b>	1250FD	.250	.312	N/A	200

Additional sizes are available made-to-order. Contact your Norton representative for availability and quotation.

Continued

= Ceramics

🔺 = Tool & Die

= Composites





### DIAMOND & CBN ABRASIVES Electroplated Products

HEAD DIAMETER HEAD

PRÓDUCT

### **Electroplated Mounted Points**

Diamond and cBN Mounted Points • A

PART #	PRODUCT #	HEAD DIAMETER	HEAD Length	NECK Length	GRIT Size	P
1000 Series – cB						40
1/8" Shank x 2-1/		nth				1/
662603 <b>92434</b>	1020MC	.020	.079	1/8	150	66
662603 <b>92442</b>	1020MC	.030	.079	1/4	150	66
662603 <b>92453</b>	1040MC	.040	.118	1/4	150	66
662603 <b>92460</b>	1045CC	.045	.118	1/4	100	66
662603 <b>92466</b>	1050CC	.050	.118	1/2	100	66
662603 <b>92465</b>	1050MC	.050	.118	1/2	150	66
662603 <b>92464</b>	1050FC	.050	.118	1/2	200	66
662603 <b>92484</b>	1060CC	.060	.157	1/2	100	66
662603 <b>92483</b>	1060MC	.060	.157	1/2	150	66
66260392482	1060FC	.060	.157	1/2	200	66
662603 <b>92496</b>	1065CC	.065	.157	1/2	100	66
662603 <b>92502</b>	1070CC	.070	.157	1/2	100	66
662603 <b>92501</b>	1070MC	.070	.157	1/2	150	66
662603 <b>92500</b>	1070FC	.070	.157	1/2	200	66
66260392514	1075CC	.075	.157	1/2	100	66
66260392520	1080CC	.080	.157	1/2	100	66
662603 <b>92532</b>	1085CC	.085	.157	1/2	100	66
662603 <b>92538</b>	1090CC	.090	.157	1/2	100	66
662603 <b>92537 NS</b>	1090MC	.090	.157	1/2	150	66
66260392536	1090FC	.090	.157	1/2	200	66
662603 <b>92543</b>	1090LMC	.090	.157	1	150	66
662603 <b>92556</b>	1100CC	.100	.157	1/2	100	66
662603 <b>92554</b>	1100FC	.100	.157	1/2	200	66
662603 <b>92561</b>	1100LMC	.100	.157	1	150	66
662603 <b>92568</b>	1105CC	.105	.157	1/2	100	66
662603 <b>92567</b>	1105MC	.105	.157	1/2	150	40
662603 <b>92580</b>	1110CC	.110	.157	1/2	100	1/4
662603 <b>92578</b>	1110FC	.110	.157	1/2	200	66
662603 <b>92598</b>	1120CC	.120	.157	1/2	100	66
662603 <b>92604</b>	1125CC	.125	.157	1/2	100	66
662603 <b>92603</b>	1125MC	.125	.157	1/2	150	66
662603 <b>92602</b>	1125FC	.125	.157	1/2	200	66
662603 <b>92610</b>	1130CC	.130	.197	1	100	66
662603 <b>92608</b>	1130FC	.130	.197	1	200	66
662603 <b>92616</b>	1135CC	.135	.236	N/A	100	66
662603 <b>92615</b>	1135MC	.135	.236	N/A	150	66
662603 <b>92622</b>	1140CC	.140	.236	N/A	100	66
662603 <b>92628</b>	1156CC	.156	.236	N/A	100	66
662603 <b>92627</b>	1156MC	.156	.236	N/A	150	66
662603 <b>92626</b>	1156FC	.156	.236	N/A	200	66
662603 <b>92734</b>	1171CC	.171	.236	N/A	100	66
662603 <b>92733</b>	1171MC	.171	.236	N/A	150	66
662603 <b>92740</b>	1187CC	.187	.312	N/A	100	66
662603 <b>92739</b>	1187MC	.187	.312	N/A	150	66
662603 <b>92738</b>	1187FC	.187	.312	N/A	200	66
662603 <b>92745</b>	1203MC	.203	.312	N/A	150	66
662603 <b>92751</b>	1218MC	.218	.312	N/A	150	66
662603 <b>92758</b>	1250CC	.250	.312	N/A	100	66
662603 <b>92757</b>	1250MC	.250	.312	N/A	150	66

FANI#	FRUDUCI#	INGRES	LENGIN	LENUIN	SIZE
4000 Series - D	iamond				
1/4" Shank x 3"	<b>Overall Length</b>				
662603 <b>92630</b>	4156CD	.156	.250	1	100
662603 <b>92629</b>	4156FD	.156	.250	1	200
662603 <b>92634</b>	4187CD	.187	.250	1	100
662603 <b>92633</b>	4187FD	.187	.250	1	200
662603 <b>92638</b>	4203CD	.203	.250	1	100
662603 <b>92642</b>	4218CD	.218	.250	1	100
662603 <b>92641</b>	4218FD	.218	.250	1	200
662603 <b>92646</b>	4236CD	.236	.250	1	100
662603 <b>92645</b>	4236FD	.236	.250	1	200
662603 <b>92650</b>	4250CD	.250	.250	1	100
662603 <b>92649</b>	4250FD	.250	.250	1	200
662603 <b>92654</b>	4282CD	.282	.250	N/A	100
662603 <b>92653</b>	4282FD	.282	.250	N/A	200
662603 <b>92658</b>	4312CD	.312	.375	N/A	100
662603 <b>92657</b>	4312FD	.312	.375	N/A	200
662603 <b>92662</b>	4375CD	.375	.375	N/A	100
662603 <b>92661</b>	4375FD	.375	.375	N/A	200
662603 <b>92666</b>	4390CD	.390	.375	N/A	100
662603 <b>92670</b>	4406CD	.406	.375	N/A	100
662603 <b>92674</b>	4437CD	.437	.375	N/A	100
662603 <b>92678</b>	4500CD	.500	.375	N/A	100
662603 <b>92677</b>	4500FD	.500	.375	N/A	200
662603 <b>92682</b>	4730CD	.730	.375	N/A	100
662603 <b>92690</b>	41000CD	1.000	.375	N/A	100
662603 <b>92689</b>	41000FD	1.000	.375	N/A	200
4000 Series - c					
1/4" Shank x 3"		150	050	4	100
662603 <b>92632</b> 662603 <b>92631</b>	4156CC 4156FC	.156 .156	.250	1	100
662603 <b>92636</b>	4130FC 4187CC	.130	.250	1	100
662603 <b>92635</b>	418700 4187FC	.187	.250	1	200
662603 <b>92640</b>	4187FC 4203CC	.187	.250	1	100
662603 <b>92639</b>	420300 4203FC	.203	.250	1	200
662603 <b>92644</b>	4203FC 4218CC	.203	.230	1	
662603 <b>92643</b>			250	1	100
662603 <b>92648</b>			.250	1	200
	4218FC	.218	.250	1	200
	4218FC 4236CC	.218 .236	.250 .250	1	200 100
662603 <b>92647</b>	4218FC 4236CC 4236FC	.218 .236 .236	.250 .250 .250	1 1 1	200 100 200
662603 <b>92647</b> 662603 <b>92652</b>	4218FC 4236CC 4236FC 4250CC	.218 .236 .236 .250	.250 .250 .250 .250	1 1 1 1	200 100 200 100
662603 <b>92647</b> 662603 <b>92652</b> 662603 <b>92651</b>	4218FC 4236CC 4236FC 4250CC 4250FC	.218 .236 .236 .250 .250	.250 .250 .250 .250 .250 .250	1 1 1 1 1	200 100 200 100 200
662603 <b>92647</b> 662603 <b>92652</b> 662603 <b>92651</b> 662603 <b>92656</b>	4218FC 4236CC 4236FC 4250CC 4250FC 4250FC 4282CC	.218 .236 .236 .250 .250 .250 .282	.250 .250 .250 .250 .250 .250 .250	1 1 1 1 1 N/A	200 100 200 100 200 100
66260392647         66260392652         66260392651         66260392656         66260392655	4218FC 4236CC 4236FC 4250CC 4250FC 4250FC 4282CC 4282FC	.218 .236 .250 .250 .250 .282 .282	.250 .250 .250 .250 .250 .250 .250 .250	1 1 1 1 1 N/A N/A	200 100 200 100 200 100 200
66260392647           66260392652           66260392651           66260392655           66260392655           66260392655           66260392655	4218FC 4236CC 4236FC 4250CC 4250FC 4282CC 4282FC 4312CC	.218 .236 .236 .250 .250 .250 .282 .282 .282 .312	.250 .250 .250 .250 .250 .250 .250 .250	1 1 1 1 N/A N/A N/A	200 100 200 100 200 100 200 100
66260392647           66260392652           66260392651           66260392655           66260392655           66260392655           66260392660           66260392659	4218FC 4236CC 4236FC 4250CC 4250FC 4282CC 4282FC 4312CC 4312FC	.218 .236 .236 .250 .250 .282 .282 .282 .312 .312	.250 .250 .250 .250 .250 .250 .250 .250	1 1 1 1 N/A N/A N/A N/A	200 100 200 100 200 100 200 100 200
662603 <b>92647</b> 662603 <b>92652</b> 662603 <b>92651</b> 662603 <b>92655</b> 662603 <b>92655</b> 662603 <b>92660</b> 662603 <b>92659</b> 662603 <b>92664</b>	4218FC 4236CC 4236FC 4250FC 4250FC 4282CC 4282FC 4312CC 4312FC 4375CC	.218 .236 .236 .250 .250 .282 .282 .312 .312 .375	.250 .250 .250 .250 .250 .250 .250 .250	1 1 1 1 N/A N/A N/A N/A N/A	200 100 200 100 200 100 200 100 200 100
662603 <b>92647</b> 662603 <b>92652</b> 662603 <b>92651</b> 662603 <b>92655</b> 662603 <b>92655</b> 662603 <b>92660</b> 662603 <b>92659</b> 662603 <b>92664</b> 662603 <b>92663</b>	4218FC 4236CC 4236FC 4250CC 4250FC 4250FC 4282CC 4282FC 4312CC 4312FC 4312FC 4375FC	.218 .236 .236 .250 .250 .282 .282 .312 .312 .312 .375 .375	.250 .250 .250 .250 .250 .250 .250 .250	1 1 1 1 N/A N/A N/A N/A N/A N/A	200 100 200 100 200 100 200 100 200 100 200
662603 <b>92647</b> 662603 <b>92652</b> 662603 <b>92651</b> 662603 <b>92655</b> 662603 <b>92655</b> 662603 <b>92660</b> 662603 <b>92659</b> 662603 <b>92664</b>	4218FC 4236CC 4236FC 4250FC 4250FC 4282CC 4282FC 4312CC 4312FC 4375CC	.218 .236 .236 .250 .250 .282 .282 .312 .312 .375	.250 .250 .250 .250 .250 .250 .250 .375 .375 .375 .375 .375 .375 .375	1 1 1 1 N/A N/A N/A N/A N/A	200 100 200 100 200 100 200 100 200 100
66260392647 66260392652 66260392651 66260392656 66260392656 66260392660 66260392659 66260392664 66260392663 66260392668	4218FC 4236CC 4236FC 4250CC 4250FC 4282CC 4282FC 4312CC 4312FC 4375CC 4375FC 4390CC	.218 .236 .236 .250 .250 .282 .282 .312 .312 .375 .375 .390	.250 .250 .250 .250 .250 .250 .250 .250	1 1 1 1 N/A N/A N/A N/A N/A N/A N/A	200 100 200 100 200 100 200 100 200 100 200 100 200 100
66260392647 66260392652 66260392656 66260392655 66260392655 66260392659 66260392659 66260392664 66260392663 66260392668 66260392668	4218FC 4236CC 4236FC 4250CC 4250FC 4282CC 4282FC 4312FC 4312FC 4375FC 4375FC 4390CC 4406CC	.218 .236 .236 .250 .250 .282 .282 .312 .312 .375 .375 .390 .406	.250 .250 .250 .250 .250 .250 .250 .375 .375 .375 .375 .375 .375 .375 .375	1 1 1 1 N/A N/A N/A N/A N/A N/A N/A N/A	200 100 200 100 200 100 200 100 200 100 200 100 1
66260392647 66260392652 66260392656 66260392655 66260392650 66260392660 66260392664 66260392663 66260392663 66260392668 66260392672 66260392676	4218FC 4236CC 4236FC 4250CC 4250FC 4282CC 4282FC 4312CC 4312FC 4375CC 4375FC 4390CC 4406CC 4437CC	.218 .236 .236 .250 .250 .282 .312 .312 .375 .375 .375 .390 .406 .437	.250 .250 .250 .250 .250 .250 .250 .375 .375 .375 .375 .375 .375 .375 .375	1 1 1 1 N/A N/A N/A N/A N/A N/A N/A N/A N/A	200 100 200 100 200 100 200 100 200 100 200 100 1
66260392647 66260392652 66260392655 66260392655 66260392660 66260392660 66260392664 66260392663 66260392668 66260392672 66260392675	4218FC 4236CC 4236FC 4250FC 4250FC 4282CC 4282FC 4312CC 4312FC 4375FC 4375FC 4375FC 4390CC 4406CC 4437FC	.218 .236 .236 .250 .250 .282 .312 .312 .375 .375 .375 .390 .406 .437 .437	.250 .250 .250 .250 .250 .250 .250 .375 .375 .375 .375 .375 .375 .375 .375	1 1 1 1 N/A N/A N/A N/A N/A N/A N/A N/A N/A	200 100 200 100 200 100 200 100 200 100 200 100 1
66260392647 66260392652 66260392655 66260392655 66260392660 66260392660 66260392664 66260392664 66260392668 66260392672 66260392675 66260392675 66260392680	4218FC 4236CC 4236FC 4250FC 4250FC 4282CC 4282FC 4312CC 4312FC 4375FC 4375FC 4390CC 4406CC 4437FC 437FC	.218 .236 .236 .250 .250 .282 .312 .312 .375 .375 .390 .406 .437 .437 .500	.250 .250 .250 .250 .250 .250 .250 .375 .375 .375 .375 .375 .375 .375 .375	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	200 100 200 100 200 100 200 100 200 100 1

Additional sizes are available made-to-order. Contact your Norton representative for availability and quotation.

🔺 = Tool & Die

= Ceramics

= Composites





UVERAL LENGTH

3

3

3-1/2

3-1/2

3-1/2

60

60

60

60

60

150

150

OVERA Length

#### Electroplated Mounted Points, Mandrels, Tapered Hones and Micro Drills

Diamond and cBN Mounted Points • A

PART #	PRODUCT #	HEAD DIAMETER	HEAD Length	GRIT SIZE
6000 Series – D		INGILS	LENGTH	unit Size
3/8" Shank x 3-		nath		
662603 <b>92694</b>	6406CD	.406	.375	80
662603 <b>92693</b>	6406MD	.406	.375	150
662603 <b>92698</b>	6437CD	.437	.375	80
662603 <b>92697</b>	6437MD	.437	.375	150
662603 <b>92702</b>	6500CD	.500	.375	80
662603 <b>92701</b>	6500MD	.500	.375	150
662603 <b>92706</b>	6562CD	.562	.375	80
662603 <b>92710</b>	6625CD	.625	.375	80
662603 <b>92709</b>	6625MD	.625	.375	150
662603 <b>92718</b>	6750CD	.750	.375	80
662603 <b>92717</b>	6750MD	.750	.375	150
662603 <b>92721</b>	6875MD	.875	.400	150
662603 <b>92726</b>	61000CD	1.000	.500	80

		HEAD DIAMETER	HEAD	
PART #	PRODUCT #	INCHES	LENGTH	GRIT SIZE
6000 Series - (	cBN			
3/8" Shank x 3-	-3/4" Overall Len	gth		
662603 <b>92696</b>	6406CC	.406	.375	80
662603 <b>92695</b>	6406MC	.406	.375	150
662603 <b>92700</b>	6437CC	.437	.375	80
662603 <b>92699</b>	6437MC	.437	.375	150
662603 <b>92704</b>	6500CC	.500	.375	80
662603 <b>92703</b>	6500MC	.500	.375	150
662603 <b>92708</b>	6562CC	.562	.375	80
662603 <b>92712</b>	6625CC	.625	.375	80
662603 <b>92716</b>	6687CC	.687	.375	80
662603 <b>92715</b>	6687MC	.687	.375	150
662603 <b>92720</b>	6750CC	.750	.375	80
662603 <b>92719</b>	6750MC	.750	.375	150
662603 <b>92724</b>	6875CC	.875	.400	80
662603 <b>92728</b>	61000CC	1.000	.500	80
662603 <b>92727</b>	61000MC	1.000	.500	150

PRODUCT

HSR-1/4

HSR-3/8

HSR-1/2

HSR-3/4

TH25-14MD

TH25-16MD

**M-Series Micro Drills – Diamond** 

HSR-1

PART #

HSR Series - cBN

662603**95426** 

662603**95428** 

662603**95429** 

662603**95431** 

662603**95432** 

66260395544

662603**95545** 

DIAMETER

1/4

3/8

1/2

3/4

1

LENGTH

1/4

3/8

3/8

3/8

3/8

3/8

3/8

3/8

3/8

3/8

1/4

1/4

HEAD Length

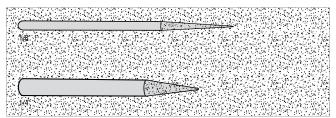
#### cBN Heavy Stock Removal Mandrels

 For heavy stock removal on jig, internal, and offhand operations on tool steels and hardened aerospace alloys. Made with super coarse abrasive grit for long tool life



#### Diamond Tapered Hones for Drawing Dies • 🔺 🔳

 Used primarily for forming carbide drawing dies, but also can be used for small hole honing in ceramics, fiberglass, plastics, and composite materials



PART #	PRODUCT #	INCLUDED Angle	SHANK Diameter	GRIT SIZE
<b>Tapered Hone</b>	s for Drawing Die	es – Diamond		
3" Overall Len	gth			
662603 <b>95540</b>	TH12-6MD	6°	1/8	150
662603 <b>95541</b>	TH12-8MD	8°	1/8	150
662603 <b>63371</b>	TH25-12CD	12°	1/4	100
662603 <b>95542</b>	TH12-12MD	12°	1/8	150
662603 <b>95543</b>	TH25-12MD	12°	1/4	150

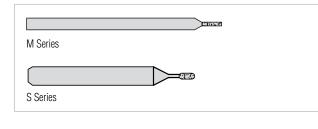
14°

16°

DIAMETER

#### Diamond Micro Drills • 🔺 **•**

- A modification of mounted points, these tools are specifically designed for drilling holes in the .007" to .065" diameter range
- Perfect for drilling sapphire and high density alumina ceramics for hybrid micro-circuit substrates
- M-Series Carefully-sized, uniformly-shaped diamond particles are used on all M-Series drills
- · S-Series Recommended for adapting to ultrasonic drill heads



Shank Diamet	er .040" (1mm)				
662603 <b>95516</b>	M7	.007	.028	11/16	600
662603 <b>95517</b>	M10	.010	.049	11/16	400
662603 <b>95518</b>	M12	.012	.056	13/16	325
662603 <b>95519</b>	M15	.015	.077	13/16	325
		DIAMETER	HEAD	OVERALL	GRIT
PART #	PRODUCT #	INCHES	LENGTH	LENGTH	SIZE
S-Series Micro	o Drills – Diamo	nd			
1/8" Shank x 1	" Overall Length	1			
662603 <b>95520</b>	S16FD	.016	.062	.093	200
662603 <b>92841</b>	S18FD	.018	.062	.125	200
662603 <b>95521</b>	S20FD	.020	.062	.125	200
662603 <b>95522</b>	S25FD	.025	.093	.156	200
662603 <b>95523</b>	S30MD	.030	.093	.156	150
662603 <b>95524</b>	S35MD	.035	.093	.187	150
662603 <b>95525</b>	S40MD	.040	.125	.218	150
662603 <b>95526</b>	S45CD	.045	.125	.218	100
662603 <b>95527</b>	S50CD	.050	.125	.250	100
662603 <b>95528</b>	S60CD	.060	.125	.312	100
	S65CD	.065	.125	.312	100

TARGET MARKET SYMBOLS • = Ceramics

▲ = Tool & Die = Composites

Industrial Market - Full-Line

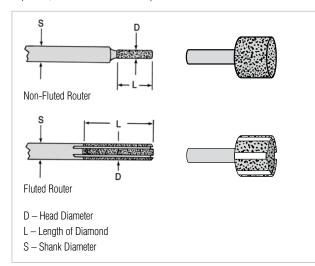


DIAMOND & CBN ABRASIVES Electroplated Products

#### Electroplated Routers and Mounted Contour Tools

Diamond Routers •

- · Used with hand operated tools, drill presses, and milling machines
- Ideal for routing and reaming the highly-abrasive materials of alumina, fiberglass, plastics, and other nonmetallic composite materials.



Fluted Routers – Diamond         5           66260364310         RSF1812CD         1/8         1/2         1/4         2-1/2         60           66260364309         RSF1810CD         1/8         1         1/4         2-1/2         60           66260364309         RSF1810CD         1/8         1         1/4         2-1/2         60           66260364308         RSF1412CD         1/4         1/2         1/4         2-1/2         40           66260364307         RSF1410CD         1/4         1         1/4         2-1/2         40	PART #	PRODUCT #	HEAD Diameter	LENGTH OF Diamond	SHANK Diameter	OVERALL Length	GRIT SIZE
Fluted Routers - Diamond         1/2         1/4         2-1/2         600           66260364310         RSF1812CD         1/8         1/2         1/4         2-1/2         60           66260364309         RSF1810CD         1/8         1         1/4         2-1/2         60           66260364308         RSF1810CD         1/8         1         1/4         2-1/2         60           66260364308         RSF1412CD         1/4         1/2         1/4         2-1/2         40           66260364307         RSF1410CD         1/4         1         1/4         2-1/2         40	<b>Non-Fluted Ro</b>	uters – Diamo	ond				
66260364310         RSF1812CD         1/8         1/2         1/4         2-1/2         60           66260364309         RSF1810CD         1/8         1         1/4         2-1/2         60           66260364308         RSF1810CD         1/8         1         1/4         2-1/2         60           66260364308         RSF1412CD         1/4         1/2         1/4         2-1/2         40           66260364307         RSF1410CD         1/4         1         1/4         2-1/2         40	662603 <b>64302</b>	RNF1410CD	1/4	1	1/4	2-1/2	40
66260364309         RSF1810CD         1/8         1         1/4         2-1/2         60           66260364308         RSF1412CD         1/4         1/2         1/4         2-1/2         40           66260364307         RSF1410CD         1/4         1/2         1/4         2-1/2         40           66260364307         RSF1410CD         1/4         1         1/4         2-1/2         40	Fluted Router	s – Diamond					
66260364308         RSF1412CD         1/4         1/2         1/4         2-1/2         40           66260364307         RSF1410CD         1/4         1         1/4         2-1/2         40	662603 <b>64310</b>	RSF1812CD	1/8	1/2	1/4	2-1/2	60
662603 <b>64307</b> RSF1410CD 1/4 1 1/4 2-1/2 40	662603 <b>64309</b>	RSF1810CD	1/8	1	1/4	2-1/2	60
	662603 <b>64308</b>	RSF1412CD	1/4	1/2	1/4	2-1/2	40
662603 <b>02715</b> BSF3412CD 3/4 1/2 1/2 2-1/2 40	662603 <b>64307</b>	RSF1410CD	1/4	1	1/4	2-1/2	40
	662603 <b>02715</b>	RSF3412CD	3/4	1/2	1/2	2-1/2	40

Type 6A2C cup and Type 01 straight bench and pedestal electroplated wheels are available as madeto order products. Contact your Norton representative for availability and quotation.

#### Diamond and cBN Mounted Contour Tools • 🔺 🔳

- For contour grinding applications on carbide, ceramics, glass, ferrites, and many tough alloys and cements. Best suited for blending radii and deburring operations
- Operating speeds: 15,000-20,000 RPM range
- Variety of tool shapes available as stock to satisfy most tool and die and deburring requirements

Cones		
Ball Ends (Spherical)		
C Round End Tapers		

PART #	PRODUCT #	CONE BASE Diameter	INCLUDED Angle	CONE Length	GRIT SIZE
Cones – Diamond		DIAMETEN	ANULE	LENGTH	UNI 1 312E
1/8" Shank x 2" 0	verall Length				
662603 <b>95484</b>	C14CD	1/8	14°	1/2	100
662603 <b>95488</b>	C35CD	5/32	35°	1/4	100
662603 <b>95490</b>	C60CD	11/64	60°	5/32	100
662603 <b>95492</b>	C90CD	3/16	90°	3/32	100
Cones – cBN					
1/8" Shank x 2" 0	verall Length				
662603 <b>95483</b>	C14CC	1/8	14°	1/2	100
662603 <b>95485</b>	C26CC	3/16	26°	13/32	100
662603 <b>95487</b>	C35CC	5/32	35°	1/4	100
662603 <b>95489</b>	C60CC	11/64	60°	5/32	100
662603 <b>95491</b>	C90CC	3/16	90°	3/32	100

			BALL			
PART #	PRÓDU	CT #	DIAMETER	G	RIT SIZE	
Ball Ends (Sph	erical) – Dia	mond				
1/8" Shank x 2						
66260395434	BE1CD	•	3/64	10	0	
662603 <b>95436</b>	BE2CD		1/16	10	0	
662603 <b>95438</b>	BE3CD		5/64	10	0	
662603 <b>95440</b>	BE4CD		3/32	10	0	
662603 <b>95442</b>	BE5CD		1/8	10	0	
662603 <b>95444</b>	BE6CD		3/16	10	0	
662603 <b>95448</b>	BE8CD		3/8	10	0	
662603 <b>95450</b>	BE9CD		1/2	10	0	
Ball Ends (Sph	erical) – cBN	1				
1/8" Shank x 2						
662603 <b>95437</b>	BE3CC	-	5/64	10	0	
662603 <b>95439</b>	BE4CC		3/32	10	0	
662603 <b>95441</b>	BE5CC		1/8	10	0	
662603 <b>95443</b>	BE6CC		3/16	1(	0	
662603 <b>95445</b>	BE7CC		1/4	10	0	
PART #	PRODUCT #	SMALL HEAD DIAMETER	LARGE HEAD DIAMETER	HEAD Length	INC. Angle	GRIT Size
Round End Tap	ers – Diamo	nd				
1/8" Shank x 2	" Overall Len	gth				
662603 <b>95506</b>	RT44CD	.044	.066	5/16	4°	100
662603 <b>95510</b>	RT78CD	.078	.110	5/16	6°	100
Round End Tap	ers – cBN					
1/8" Shank x 2		gth				
662603 <b>95509</b>	RT78CC	.078	.110	5/16	6°	100
D.D.T. //		HEAI		HEAD		GRIT
PART #	PRODU		IETER	LENGT	1	SIZE
Round End Cyl						
1/8" Shank x 2				4/4		100
662603 <b>95494</b>	RE1CD	1/16		1/4		100
662603 <b>95496</b>	RE2CD	5/64		1/4		100
662603 <b>95498</b>	RE3CD	3/32		1/4		100
662603 <b>95500</b>	RE4CD	1/8		1/4		100
662603 <b>95502</b>	RE5CD	3/16	1	5/16		100
662603 <b>95504</b>	RE6CD	1/4		5/16		100

TARGET MARKET SYMBOLS

= Composites



### DIAMOND & CBN ABRASIVES Electroplated Products

### **Electroplated Files**

Diamond Machine Files • A

- For use in reciprocating hand profiling machines
- Ideal for reworking and finishing carbide dies and molds, blending radii, and deburring and cleaning slots and grooves

DADT #		DIMENCIONO	ABRASIVE					
PART #	PRODUCT #	DIMENSIONS	LOCATION	GRIT SIZE				
Machine Files – Diamond								
5/8" Diamond L	ength, 1/8" Shan	k, 2" Overall Lengt	ih					
662603 <b>95585</b>	1ECD	.020 x .125		100				
662603 <b>95586</b>	2ECD	.030 x .125	:	100				
662603 <b>95587</b>	3ECD	.040 x .125	ê <b>n s</b> ê	100				
662603 <b>95589</b>	3FCD	.120 x .040	·····	100				
662603 <b>95590</b>	4FCD	.157 x .040	<b></b>	100				
662603 <b>95591</b>	5FCD	.203 x .078	•••••	100				
662603 <b>95592</b>	6FCD	.120 x .040		100				
662603 <b>95593</b>	1CCD	.098 x .196	Ö	100				
662603 <b>95594</b>	2CCD	.120 x .250	$\odot$	100				
662603 <b>95596</b>	3TCD	.127 side		100				
662603 <b>95599</b>	2RCD	.080 diam.	Ö	100				
662603 <b>95600</b>	3RCD	.127 diam.	Ö	100				

#### Diamond Hand Files • A

- Indispensable aid for the toolroom
- All purpose hand-held tool useful for deburring, notching, dressing, and honing hard, brittle materials

PART #	PRODUCT #	DIMENSIONS	LOCATION	GRIT SIZE
Hand Files - Diam	ond			
6" Overall Length,	1-1/2" Diamond	l Length		
662603 <b>95605 NS</b>	DF1CD	1/8 x 1/8		100
662603 <b>95606</b>	DF2CD	1/8 x 1/4	·····	100
662603 <b>95607</b>	DF2WCD	1/8 x 1/4		100
662603 <b>95608</b>	DF3CD	1/8 x 3/8	·····	100
662603 <b>92844</b>	DF3FD	1/8 x 3/8	·····	200
662603 <b>95609</b>	DF3WCD	1/8 x 3/8		100
662603 <b>64241</b>	DF3SCD	1/8 x 1/2		100
662603 <b>95611</b>	DF4CD	1/8	Ö:	100
662603 <b>00134</b>	DF4WCD	1/4	Ö	100
662603 <b>95613</b>	DF5CD	1/8	. <u>.</u>	100
662603 <b>92846</b>	DF5FD	1/8	. <u>.</u>	200
662603 <b>95614</b>	DF5WCD	1/4		100
662603 <b>95615</b>	DF6CD	1/8	Ö	100

ABRASIVE

= Ceramics

- Tool & Die

▲ = Tool & Die = Composites



#### **Electroplated Files and Drills**

Diamond Needle Files • A

- · Indispensable aid for the toolroom
- · An all-purpose hand-held tool, useful for deburring, notching, dressing, and honing hard, brittle materials

Ove	erall Length 🗕 🗕
	← Diamond Length →

PART #	PRODUCT #	GRIT SIZE
NFK-6 Needle File Kit	– Diamond	
662603 <b>64008</b>	NFK-6	
<b>Contains one each of</b>	the following:	
	NF1FD	200
	NF2FD	200
	NF3FD	200
	NF4FD	200
	NF5FD	200
	NF6FD	200
DFS-6 Die File Kit – D	iamond	
662603 <b>91830</b>	DFS-6	
Contains one each of	the following:	
	1571	100
	1572	100
	1573	100
	1574	100
	1575	100
	1576	100

DIAMOND & cBN ABRASIVES
Electroplated Products

PART #	PRODUCT #	DIMENSIONS	ABRASIVE Location	SHAPE	GRIT Size
leedle Files –		DIMENSIONS	LUGATION	SHAFE	312E
		2" Overall Leng	gth		
62603 <b>02432</b>	LNF2CD	.400 x .100		Equaling	100
62603 <b>05611</b>	LNF2FD	.400 x .100		Equaling	200
62603 <b>02898</b>	LNF3CD	.450 x .150	ä	Half Round	100
62603 <b>05612</b>	LNF3FD	.485 x .150	ä	Half Round	200
2-3/4" Diamon	d Length, 5-3/	4" Overall Leng	gth, With Han	dle	
62603 <b>91729</b>	1571	.055 x .190		Flat	100
62603 <b>91730</b>	1572	.075 x .210	Ä	Half Round	100
62603 <b>91731</b>	1573	.145 x .145	. <u>Å</u> .	Triangle	100
62603 <b>91732</b>	1574	.100 x .100		Square	100
62603 <b>91733</b>	1575	.120	ö	Round	100
62603 <b>91734</b>	1576	.055 x .190		Pointed Flat	100
3" Diamond Le	ngth, 5-1/2" O	verall Length,	With Handle		
62603 <b>95575</b>	NF1FD	.150 x .105	Ö	Oval	200
62603 <b>95576</b>	NF2FD	.218 x .072	ä	Half Round	200
62603 <b>95577</b>	NF3FD	.205 x .058		Equaling	200
62603 <b>95578</b>	NF4FD	.096 x .096		Square	200
62603 <b>95579</b>	NF5FD	.138 x .138		Triangle	200
62603 <b>95580</b>	NF6FD	.118	Ö	Round	200
62603 <b>95578</b> 662603 <b>95579</b>	NF4FD NF5FD	.096 x .096 .138 x .138		Square Triangle	20 20

Needle File	e Shape and Application Key:
Barrette:	A triangle with diamond on the bottom side only
Crossing:	Elongated oval, with more pointed ends than an oval file; has diamonds all around
Equaling:	A rectangle with diamond on all four sides; ideal for filing both sides of an ID simultaneously
Pointed Flat:	A cone with a flat top with diamond on the sides of the cone

#### Diamond Core Drills •

- · High performance on glass and ceramic applications while providing fast, reliable cutting
- · Submersed drilling is highly recommended for optimum operating performance



PART #	PRODUCT #	OUTER Diameter	INNER Diameter	GRIT SIZE
Core Drills -	Diamond			
Straight Tub	e Type, 2" Overall L	ength		
662603 <b>95530</b>	A1MD	1/16	.023	150
662603 <b>95531</b>	A2MD	3/32	.048	150
662603 <b>95532</b>	A3MD	1/8	.075	150
662603 <b>95533</b>	A4MD	5/32	.110	150
662603 <b>95534</b>	A5CD	3/16	.140	100
662603 <b>95535</b>	i A6CD	1/4	.195	100
662603 <b>95536</b>	A7CD	5/16	.255	100

#### Diamond Twist Drills •

- · Recommended for precision drilling on circuit boards containing fiberglass, nylon, and similar tough, abrasive materials
- · Diamond twist drills are also useful for drilling plastics and resin composites and have been successful in drilling soft ductile materials as well as "green" carbide
- · Operating procedures are similar to those of standard twist drills



PART #	PRODUCT #	DRILL DIAMETEI	R DRILL LENGTH	GRIT SIZE
Twist Drills –	Diamond			
662603 <b>95549</b>	TW-1/16	1/16	1-3/4	100
662603 <b>95550</b>	TW-1/8	1/8	2-3/4	100
662603 <b>95551</b>	TW-1/4	1/4	4	100
Diameter toleran	nce equals + or – 1/64	1		

ameter tolerance equals + or 1/64.

TARGET MARKET SYMBOLS • = Ceramics 🔺 = Tool & Die

= Composites

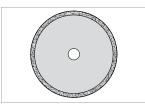


### DIAMOND & CBN ABRASIVES Electroplated Products

### **Electroplated Saw Blades**

Diamond Continuous Rim Cut-off Saw Blades

 Ideal for cutting-off highly-abrasive materials such as alumina, fiberglass, plastics, and other nonmetallic composite materials

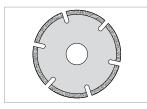


Additional diamond continuous rim and slotted cut-off saw blades, with extended wraps to avoid binding, are available as made-to-order products. Please contact your Norton representative.

PART #	PRODUCT #	DIAM.	OVERALL Thickness	HOLE Size	GRIT Size
<b>Continuous Rin</b>	n Cut-off Saw Blac	des – Diamo	nd		
662603 <b>01990</b>	DS2062-250	2	1/16	1/4	40
662603 <b>91474</b>	DS2094-250	2	3/32	1/4	40
662603 <b>91473</b>	DS3094-250	3	3/32	1/4	40
662603 <b>63036</b>	DS3094-375	3	3/32	3/8	40
662603 <b>95554</b>	DS4094-500	4	3/32	1/2	40
662603 <b>00197</b>	DS4094-750	4	3/32	3/4	40
662603 <b>95557</b>	DS8094-625	8	3/32	5/8	40

#### Diamond Slotted Cut-off Saw Blades

 3/4" wrap: additional 3/4" of electroplated diamond on the blade core increases life of blade on deep cuts, and reduces binding and grinding on the core



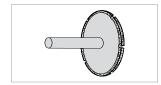
Additional diamond continuous rim and slotted cut-off saw blades, with extended wraps to avoid binding, are available as made-to-order products. Please contact your Norton representative.

			OVERALL	HOLE	GRIT
PART #	PRODUCT #	DIAM.	THICKNESS	SIZE	SIZE
<b>Slotted Cut-off</b>	Saw Blades - Diam	ond			
662603 <b>01989</b>	DSS2062-250	2	1/16	1/4	40
662603 <b>64258</b>	DSS3094-250	3	3/32	1/4	40
662603 <b>95559</b>	DSS4094-500	4	3/32	1/2	40
662603 <b>95560</b>	DSS6094-500	6	3/32	1/2	40
662603 <b>62981</b>	DSS10125-625	10	1/8	5/8	40
662603 <b>64253</b>	DSS14156-500	14	5/32	1/2	40
662603 <b>62989</b>	DSS14156-1	14	5/32	1	40
662603 <b>95565</b>	DSS16156-1	16	5/32	1	40
662603 <b>95566</b>	DSS18156-1	18	5/32	1	40
<b>Slotted Cut-off</b>	Saw Blades with 3/	/4" Wrap –	Diamond		
662603 <b>13423</b>	DSSW4094-750	4	3/32	3/4	40

#### Diamond Mounted Saw Blades

- Ideal for cutting-off highly-abrasive materials such as alumina, fiberglass, plastics, and other nonmetallic composite materials
- 3/4" wrap additional 3/4" of electroplated diamond on the blade core increases life of blade on deep cuts, andreduces binding and grinding on the core

PART #	PRODUCT #	DIAM.	OVERALL Thickness	HOLE Size	GRIT Size
<b>Mounted Saw B</b>	lades – Diamond				
2" Overall Leng	th				
662603 <b>95422</b>	MDS1CD	1	3/32	1/4	40
662603 <b>95423</b>	MDS1-1/2CD	1-1/2	3/32	1/4	40
662603 <b>95424</b>	MDS2CD	2	3/32	3/8	40



TARGET MARKET SYMBOLS

= Ceramics

= Composites

🔺 = Tool & Die

Industrial Market - Full-Line

### **DIAMOND & cBN ABRASIVES** Diamond Lapping Compound

Norton Winter diamond lapping compound polishes all materials - hard and soft. Diamond powders are uniformly distributed in a liquid vehicle for aggressive polishing and consistent part quality. Easy-to-use plastic syringe for quick clean-up.

**Applications:** 

Syringe Size: Type:

Machine Used:

For mold, die, and tool polishing, polishing to final tolerance of ceramic parts, initial charging of lapping plates and discs, and other processes that require mirror finish and close tolerance performance. 5 and 18 gram syringes

Water soluble - when soap/water is used for clean-up Oil soluble - when solvent is used for clean-up



PRODUCT #	MICRO	N GRADE	COLOR	PART #
<b>Diamond Compou</b>	und – Wa	ter Soluble		
<b>5 Gram Syringes</b>				
5PS1/4WSSTD	1/4	Ultra Fine	Gray	662603 <b>00362</b>
5PS1/2WSSTD	1/2	Ultra Fine	Lt. Gray	662603 <b>00417</b>
5PS1WSSTD	1	Ultra Fine	lvory	662603 <b>00368</b>
5PS3WSSTD	3	Super Fine	Yellow	662603 <b>00667</b>
5PS6WSSTD	6	Super Fine	Orange	662603 <b>00372</b>
5PS9WSSTD	9	Super Fine	Green	662603 <b>00375</b>
5PS12WSSTD	12	Super Fine	Aqua	662603 <b>00376</b>
5PS15WSSTD	15	Fine	Blue	662603 <b>00379</b>
5PS30WSSTD	30	Fine	Red	662603 <b>00383</b>
5PS45WSSTD	45	Fine	Brown	662603 <b>00384</b>
5PS60WSSTD	60	Fine	Purple	662603 <b>00388</b>
5PS90WSSTD	90	Fine	Black	662603 <b>00389</b> NS
18 Gram Syringes	S			
18PS1/4WSSTD	1/4	Ultra Fine	Gray	662603 <b>00392</b>
18PS1/2WSSTD	1/2	Ultra Fine	Lt. Gray	662603 <b>00394</b>
18PS1WSSTD	1	Ultra Fine	lvory	662603 <b>00396</b>
18PS3WSSTD	3	Super Fine	Yellow	662603 <b>00398</b>
18PS6WSSTD	6	Super Fine	Orange	662603 <b>00400</b>
18PS9WSSTD	9	Super Fine	Green	662603 <b>00402</b>
18PS15WSSTD	15	Fine	Blue	662603 <b>00406</b>
18PS20WSSTD	20	Fine	Auburn	662603 <b>00408</b>

NORTON

SAINT-GOBAIN

510 .0

PRODUCT #	MICRO	N GRADE	COLOR	PART #
Diamond Compo			COLON	
5 Gram Syringes		Containe		
5PS1/40SSTD	1/4	UltraFine	Gray	614636 <b>91123 NS</b>
5PS1/20SSTD	1/2	UltraFine	Lt. Gray	662603 <b>00363</b>
5PS10SSTD	1	UltraFine	lvory	614636 <b>91133</b>
5PS30SSTD	3	Super Fine	Yellow	614636 <b>91138</b>
5PS60SSTD	6	Super Fine	Orange	614636 <b>91143</b>
5PS90SSTD	9	Super Fine	Green	614636 <b>91148</b>
5PS150SSTD	15	Fine	Blue	614636 <b>91153</b>
5PS300SSTD	30	Fine	Red	614636 <b>91158</b>
5PS450SSTD	45	Fine	Brown	614636 <b>91163</b>
5PS600SSTD	60	Fine	Purple	662603 <b>00386</b>
5PS900SSTD	90	Fine	Black	662603 <b>00390</b>
18 Gram Syringe	s			
18PS1/40SSTD	1/4	UltraFine	Gray	662603 <b>00391</b>
18PS10SSTD	1	UltraFine	lvory	614636 <b>91134</b> NS
18PS30SSTD	3	Super Fine	Yellow	614636 <b>91139</b>
18PS60SSTD	6	Super Fine	Orange	662603 <b>00399</b>
18PS90SSTD	9	Super Fine	Green	614636 <b>91149 NS</b>
18PS150SSTD	15	Fine	Blue	614636 <b>91154</b>
18PS200SSTD	20	Fine	Auburn	662603 <b>00407</b>
18PS300SSTD	30	Fine	Red	662603 <b>00409</b>
18PS450SSTD	45	Fine	Brown	614636 <b>91164</b> NS
18PS600SSTD	60	Fine	Purple	662603 <b>00413</b>
18PS900SSTD	90	Fine	Black	662603 <b>00415</b>

Non-stock; contact your Norton representative for current lead-time

### Marking System

		5 PS 1/4 O	S STD	*
SYRINGE Size	CARTRIDGE Type	MICRON GRADE	VEHICLE TYPE	CONCENTRATION
5 Gram	PS	1/4 – Gray	OS	Standard
18 gram	(Plastic Syringe)	1/2 – Light Gray 1 – Ivory 3 – Yellow 6 – Orange 9 – Green 12 – Aqua 15 – Blue 20 – Auburn 30 – Red 45 – Brown 60 – Purple 90 – Black	(Oil Soluble) WS (Water Soluble)	

### TECH TIP

Diamond Compound Application Guide

APPLICATION	MICRON Grade	MICRON Range	MESH Size Equiv.	COLOR	CONC.
ULTRA FINE	1/4	(0-1/2)	100,000	Gray	Std.
Applying finest finishes	1/2	(0-1)	60,000	Lt. Gray	Std.
on metals and ceramics	1	(0-2)	14,000	lvory	Std.
SUPER FINE	3	(2-4)	8,000	Yellow	Std.
Final finishing of dies,	6	(4-8)	3,000	Orange	Std.
molds, seals, most applications (RMS 4-12)	9	(8-12)	1,800	Green	Std.
	12	(9-15)	1,500	Aqua	Std.
FINE FINISH	15	(12-22)	1,200	Blue	Std.
Preparatory lapping	20	(15-25)	800	Auburn	Std.
(RMS 12-20)	30	(22-36)	600	Red	Std.
	45	(36-45)	325	Brown	Std.
	60	(54-80)	230	Purple	Std.
	90	(80-100)	170	Black	Std.

## **Construction Products**

GIGE

## the Norton Clipper brand **HITS THE PAVEMENT**

The leader for diamond blades, tools, and light machines for construction and cutting materials is "Redefining Jobsite Muscle – Rugged. Reliable. Affordable."



### CONSTRUCTION PRODUCTS **Diamond Blades**



With faster cut rates, constant depth of cut, and less downtime, Norton Clipper diamond blades are the choice of professionals versus conventional abrasive blades. Norton Clipper diamond blades are available for high-speed saws, portable hand-held saws, and walk-behind saws. For the full offering of diamond blades, see the Norton Clipper Construction Products Catalog #7719.

**Applications:** Size Range: **Thickness Range: Segment Height:** Range: **Abrasive Grain: Mounting Options:** Shape: **Machines Used:** 

Cutting concrete, stone, tile, and other building materials 4" - 18" .080" - .375"

.210" - .550"

HIGH-SPEED GAS

OR ELECTRIC SAW

Diamond 1"/20mm universal arbor, 7/8"-5/8"-20mm, DM-7/8"-5/8", 5/8"-11 Type 01







**RIGHT-ANGLE** CIRCUI SAW GRINDER

WALK-BEHIND SAW

SAW

### **Diamond Blade Rim Types**

There are three main diamond blade rim types: segmented, turbo, and continuous rim.



Most aggressive cutting action for general-purpose and

· Use when cutting speed and productivity are more

masonry applications

important than finish

· Best life, best cut rate, good finish

#### Turbo

- Aggressive cutting action with a smoother quality of cut than segmented rim blades
- For use on harder materials, such as granite, marble, and stone to reduce chipping
- · Better life and cut rate, better finish

#### Continuous

- · Provides the smoothest of cuts
- · Best performance when used wet
- · Use on porcelain, tile, marble, and other hard materials requiring a high-quality cut
- · Good life, good cut rate, best finish

### Material / Application-to-Product Recommendation Guide

Icon	Description	Application
	Multi-Purpose, All Materials	Concrete, reinforced concrete, granite, building materials, thin steel sections, angle iron up to 1/2" material thickness, rebar up to no. 5.
	Natural Stone and Tiles	Ceramic and stone tiles, granite, marble, very hard bricks and other very hard and dense materials.
	Reinforced Concrete and Harder Building Materials	Reinforced concrete, hard bricks, limestone, terrazzo, and other hard materials.
	General Purpose and Masonry Building Materials	Blocks, medium-hard building bricks, paving slabs, concrete roof tiles and other medium-hard materials.
	Asphalt	Asphalt, green concrete, asphalt over concrete, abrasive blocks, mortar and other abrasive materials.

### **Diamond Performance Tiers**

Best Best Performance Better High Performance

Good Good Performance

Value

Consistent Performance

$\bigcirc \oslash \oslash \oslash \oslash \oslash \oslash $	
<b>2</b>	

### TECH TIP

	Never twist or turn a segmented blade in the cut because it may result in segment breakage
•	Never use wet blades dry
•	Remove dry blades from cut for 10 seconds of each minute of cut to air cool

- · Never operate any saw, wet or dry, without the blade guard

It is the user's responsibility to refer to and comply with ANSI B7.1



### CONSTRUCTION PRODUCTS – DIAMOND BLADES High-Speed Saw Blades

### For Reinforced Concrete and Harder Building Materials

### DRY – Segmented Rim ()+()

#### DUO EVO

The unique shape of the DUO EVO segments optimizes the angle of attack while enhancing the evacuation of the debris. With a new manufacturing process, the DUO EVO segments provide an exceptional cutting speed for optimum performance and increased life up to 20% over the original DUO EVO design.

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #	
12 x .110 x 1"/20mm	.590"	6,300	DU0EV012110	701846 <b>84217</b>	
14 x .118 x 1"/20mm	.590"	5,460	DU0EV014118	701846 <b>84218</b>	
16 x .130 x 1"/20mm	.590"	4,500	DU0EV016130	701846 <b>93356</b>	

#### DUO

Our exclusive design has become a dominant name in the market. The unique dual segment per land technology provides excellent cutting speed with low vibration and high comfort of cut. The exclusive arrow shape gullets not only indicate blade direction, but also assist in fast removal of cutting debris. Maximum general purpose performance when cutting medium to low reinforcement, hard materials.

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #
12 x .110 x 1"/20mm	.393"	6,300	DU012110	701846 <b>83611</b>
14 x .110 x 1"/20mm	.393"	5,460	DU014110	701846 <b>83612</b>
14 x .125 x 1"/20mm	.393"	5,460	DU014125	701846 <b>83613</b>
16 x .125 x 1"/20mm	.393"	4,500	DU016125	701846 <b>83798</b>

### For Asphalt and Abrasive Materials

#### DRY – Segmented Rim

DUO ASPHALT Constraints and green concrete. The laser-welded, wear-retardant drop segments extend blade life. Scoop gullets for faster swarf removal increases cut speed. Stroboscopic indicators to control cut depth and show rotation direction.

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #
14 x .125 x 1"/20mm	.590"	5,460	DUOASP14125	701846 <b>84315</b>
16 x .125 x 1"/20mm	.590"	4,500	DUOASP16125	701846 <b>84544</b>

#### DUO ABRASIVE

Utilizes the basic characteristics of the original DUO blade and adds a unique segment shape that optimizes the angle of attack while enhancing the evacuation of the particles. The result is an exceptional cutting speed allied with very good performance and life in abrasive materials and concrete block. The bond specification lends additional life when high-speed cutting.

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #	
14 x .110 x 1"/20mm	.327"	5,460	DUOAB14110	701846 <b>84291</b>	
14 x .125 x 1"/20mm	.327"	5,460	DUOAB14125	701846 <b>84292</b>	

### For General-Purpose and Masonry Building Materials

DRY – Segmented Rim ()+

CLASSIC				
The improved bond provid	es longer life at an economica	al price in medium-har	d materials such as concrete wi	th light to medium reinforcement.
SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #
12 x .110 x 1"/20mm	.256"	6,300	COHSGP1220	701846 <b>81383</b>
14 x .110 x 1"/20mm	.256"	5,460	COHSGP1420	701846 <b>81309</b>
14 x .125 x 1"/20mm	.256"	5,460	COHSGP1420P	701846 <b>84268</b>
16 x .125 x 1"/20mm	.256"	4,500	COHSGP1620	701846 <b>40356</b>

VALUPLUS				
For value and performance on	small- to medium-size jobs.	The sintered blade cuts uni	reinforced soft-to-medium cor	crete fast on saws up to 13 HP.
SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #
12 x .110 x 1"/20mm	.393"	6,300	VPHSGP1220	701846 <b>84180</b>
14 x .110 x 1"/20mm	.393"	5,460	VPHSGP1420	701846 <b>84181</b>
14 x .110 x 1"/20mm	.393"	5.460	VPHSGP1420 20PK	701846 <b>84428</b>



















### CONSTRUCTION PRODUCTS – DIAMOND BLADES High-Speed Saw Blades

### Multi-Fulpose, Fol All Materia

### Dry – Segmented Rim ()+()

#### 4X4 MAX CUT

Taking high-speed cutting versatility to an all new level. The same standard features as the 4X4 with its anti-crack gullets and patented depth indicators that not only cool the blade, but also allow the operator to know how deep they are cutting. An all-new bond and diamond specification improves blade life in a wide range of materials while excelling in steel. New segment wear indicators give the operator an idea of remaining blade life.

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #	
12 x .118 x 1"/20mm	.472"	6,300	4X4MC12118	701846 <b>45927</b>	
14 x .125 x 1"/20mm	.472"	5,460	4X4MC14125	701846 <b>45926</b>	

## Multi-purpose laser welded blade for dry cutting a range of construction materials without sacrificing performance or price. Depth of cut is easily controlled with the patented depth-of-cut indicators cut into the steel core. Anti-crack gullets for enhanced safety cutting steel and metal (up to 5mm thick).

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #	
12 x .110 x 1"/20mm	.393"	6,300	4X412110	701846 <b>84548</b>	
14 x .118 x 1"/20mm	.393"	5,460	4X414118	701846 <b>84547</b>	
16 x .125 x 1"/20mm	.393"	4,500	4X416125	701846 <b>45306</b>	

MULTI-CUT $\otimes \bigotimes \bigotimes$					
The perfect combination of performance and price on high-speed, masonry, and floor saws. The laser welded segments are designed for cutting speed and long life, while a precise 1"/20mm laser cut dual arbor hole provides consistently secure mounting on the saw. Premium features combined with low pricing make for a reliable, fast cutting, long life blade for a variety of common construction materials.					
SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #	
14 x .125 x 1"/20mm	.472"	5,460	MULTICUT14125	701846 <b>09680</b>	
16 x .125 x 1"/20mm	.472"	4,500	MULTICUT16125	701846 <b>31788</b>	







### TECH TIP

#### High-Speed Hand Saw Blades – Maximum Blade Cutting Depths and Recommended Operating Speeds

Note: Diamond blade cutting depths listed are approximate. Actual cutting depth will vary with the exact blade diameter or saw type, or the exact diameter of the blade flanges. Cutting depth will also be reduced if saw components extend below the blade flanges.

BLADE DIAMETER	CUTTING DEPTH	MAXIMUM SPEED (RPM)	
12"	4"	6,300	
14"	5"	5,460	
16"	6"	4,500	
•	0	1,000	-

It is the user's responsibility to refer to and comply with ANSI B7.1



### CONSTRUCTION PRODUCTS – DIAMOND BLADES Hand-Held Saw Blades

### For Reinforced Concrete and Harder Building Materials

#### DRY – Crack Chasing ()+()

CHARGER	
A heavy V-shaped segment designed with a special bond and diamond content for ma	ximum removal of grout, mortar jointing, crack chasing and
crack widening. East cutting and long life in abrasive materials using portable tools. H	lightly competitive to others of its kind in the market

crack widening. Fast cutting and long life in abrasive materials using portable tools. Highly				ghly competitive to others of it	s kind in the market.
	SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #
	4 x .375 x 7/8-5/8-20mm	.550"	15,000	CGCC0400	701846 <b>83856</b>
	7 x .375 x 7/8-5/8-20mm	.550"	8,730	CGCC0700	701846 <b>83859</b>

### For Asphalt and Abrasive Materials

Dry – Tuck Pointing 🚺 + 🔏

#### CLASSIC

An economical solution for small to medium tuck pointing jobs. High-quality performance for heavy grout removal or mortar jointing. The heavy-duty wide segment reduces wear in abrasive materials.

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #	
4 x .250 x 7/8-5/8	.275"	15,000	CHTUCK0400	701846 <b>81776</b>	
4-1/2 x .250 x 7/8-5/8	.275"	13,300	CHTUCK0450	701846 <b>81777</b>	
5 x .250 x 7/8-5/8	.275"	12,000	CHTUCK0500	701846 <b>81778</b>	
7 x .250 x 7/8-5/8	.275"	8,730	CHTUCK0700	701846 <b>81779</b>	

### For General-Purpose and Masonry Building Materials

(**)**+

#### Dry – Segmented Rim ()+()

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #
4 x .080 x 7/8-5/8-20mm	.393"	15,000	CGDSEG0400	701846 <b>81505</b>
4-1/2 x .080 x 7/8-5/8-20mm	.393"	13,300	CGDSEG0450	076607 <b>04021</b>
5 x .080 x 7/8-5/8-20mm	.393"	12,000	CGDSEG0500	701846 <b>82851</b>
6 x .080 x 7/8-5/8-20mm	.393"	10,185	CGDSEG0600	701846 <b>83820</b>
7 x .090 x DM-7/8-5/8	.393"	8,730	CGDSEG0700	076607 <b>04020</b>

#### VALUPLUS

For value and performance on small- to medium-size jobs cutting soft abrasive materials like brick and tile. The sintered rim delivers a quality cut and good life.

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #
4 x .080 x 7/8-5/8-20mm	.315"	15,000	VPSEG0400	701846 <b>84098</b>
4-1/2 x .080 x 7/8-5/8-20mm	.315"	13,300	VPSEG0450	701846 <b>84099</b>
7 x .090 x DM-7/8-5/8	.315"	8,730	VPSEG0700	701846 <b>84100</b>

#### Dry – Turbo Rim

CHARGER

Combines the characteristics of a standard Charger blade with a turbo rim configuration for cutting hard, dense materials with minimal effort. A better bond and diamond concentration for maximum cutting speed, life and quality of cut.

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #
4 x .080 x 7/8-5/8-20mm	.393"	15,000	CGTURB0400	076607 <b>05475</b>
4-1/2 x .080 x 7/8-5/8-20mm	.393"	13,300	CGTURB0450	076607 <b>04023</b>
5 x .080 x 7/8-5/8-20mm	.393"	12,000	CGTURB0500	701846 <b>82853</b>
7 x .090 x DM-7/8-5/8	.393"	8,730	CGTURB0700	076607 <b>04022</b>

### For Natural Stone and Tiles

Dry – Continuous Rim 💧+🎸

CLASSIC	
An economical solution for small- to medium-size jobs cutting softer ceramic tile and stone materials with efficient cutting ability.	

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #
4 x .080 x 7/8-5/8-20mm	.275"	15,000	CON4DT	076607 <b>02793</b>
4-1/2 x .080 x 7/8-5/8-20mm	.275"	13,300	CON45DT	076607 <b>01194</b>
7 x .090 x DM-7/8-5/8	.275"	8,730	CON7DT	076607 <b>02788</b>















### CONSTRUCTION PRODUCTS – DIAMOND BLADES Walk-Behind Saw Blades

### For Reinforced Concrete and Harder Building Materials

#### WET – Medium Aggregates

#### CHARGER

The steel core is designed to keep the cut straight while the .410" segment height prolongs cutting wear. Suitable for cutting medium ag with up to 35 HP walk-behind saws.	jgregates

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	POWER	PART #	UPC #
14 x .125 x 1	.413"	4,365	35hp	CGWCMD1412	701846 <b>81366</b>
18 x .125 x 1	.413"	3,395	35hp	CGWCMD1812	701846 <b>81368</b>

#### CLASSIC

Laser welded blade at an economical price for general purpose cutting of cured concrete, medium-hard aggregate and no steel reinforcement. The bond and diamond combination allow fast cutting action on limited horse powered walk-behind saws.

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	POWER	PART #	UPC #
16 x .125 x 1	.315"	3,820	35hp	CHWCGP1612	701846 <b>81360</b>
18 x .125 x 1	.327"	3,395	35hp	CHWCGP1812	701846 <b>81361</b>

### For Asphalt and Abrasive Materials

()+()

DRY – Green Concrete

GMAX – MULTI-PURPOSE Designed specifically for our GC55 down-cut green concrete push saw, the GMAX Multi-Purpose blade is excellent in green concrete. The unique segment specification and anchor slot gullet allows this blade to be used in green concrete applications with outstanding results.

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	POWER	PART #	UPC #
8 x .095 x 1-5/8	.393"	7,640	6hp	NXDGRN0895	701846 <b>83758</b>
9 x .110 x 1-5/8	.275"	6,600	6hp	EE9110	701846 <b>75125</b>
10 x .110 x 1-5/8	.275"	6,115	6hp	EE10110	701846 <b>84508</b>

#### WET – Asphalt

#### CHARGER

For large road and construction jobs with saws up to 35 HP. Higher diamond content increases productivity and offers faster cutting and longer life in asphalt and green concrete applications.

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	POWER	PART #	UPC #
14 x .125 x 1	.327"	4,365	35hp	CGWASP1412	701846 <b>81478</b>
18 x .125 x 1	.307"	3,395	35hp	CGWASP1812	701846 <b>81479</b>

#### CLASSIC

An economical choice for fast cutting and good life when performing jobs in a variety of abrasive materials such as green concrete and asphalt on saws up to 35 HP.

SIZE (D x T x H)	SEGMENT HEIGHT	MAX RPM	POWER	PART #	UPC #
14 x .125 x 1	.326"	4,365	35hp	CHWASP1412	701846 <b>81375</b>
18 x .125 x 1	.326"	3,395	35hp	CHWASP1812	701846 <b>81376</b>













### **TECH TIP**

Walk-Behind Saw Blades – Maximum Blade Cutting Depths and Recommended Operating Speeds

Note: Diamond blade cutting depths listed are approximate. Actual cutting depth will vary with the exact blade diameter or saw type, or the exact diameter of the blade flanges. Cutting depth will also be reduced if saw components extend below the blade flanges.

BLADE Diameter	CUTTING DEPTH	IDEAL SPEED (RPM)	MAXIMUM SPEED (RPM)
8"	2"	4,536	7,640
9"	2-1/2"	2,640	6,600
10"	3"	2,446	6,115
10" 14"	4-5/8"	2,592	4,365
18"	6-5/8"	2,016	3,395

It is the user's responsibility to refer to and comply with ANSI B7.1



# Diamond Cup Grinders



Norton Clipper cup grinders are available in a range of specifications and diameters providing a solution for a number of applications in the building and construction industry. There are many benefits to diamond grinding. It's very fast, low-cost and creates little noise compared to other concrete cutting options. It has become a very popular choice in the commercial construction and DIY home improvement industries.

#### Applications: Size Range: Segment Height: Range:

Used on right angle grinders to grind concrete, stone and masonry materials. 4" – 7" 177" 210"

Range: Abrasive Grain: Mounting Options: Options: .177", .210"

Diamond 5/8"-11 attachment optimized for all popular angle grinders, 7/8-5/8"-20mm

Standard – single row or double row available iHD (Infiltrated High-Density) has thicker body, larger ventilation holes for better cooling

Machines Used:

### RIGHT-ANGLE

GRINDER

### General-Purpose and Masonry Building Materials

Dry – Cup Grinder 💧+🎸

#### 3X3 WITH IHD TECHNOLOGY

The 3X3 cup grinder ensures very high material removal rate, extreme comfort while working without vibrations and a self-sharpening feature. These new iHD cups offer the best finishing and longest life even on softer, more abrasive materials.

SIZE (D x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #	
4 x 5/8"-11	.177"	15,000	3X3CG0400	701846 <b>01763</b>	
5 x 5/8"-11	.177"	12,000	3X3CG0500	701846 <b>01766</b>	
7 x 5/8"-11	.177"	8,730	3X3CG0700	701846 <b>01769</b>	

#### CHARGER WITH IHD TECHNOLOGY

The Charger cup grinder ensures a high material removal rate and more comfortable work. These new iHD cups provide a better finish and long life on a wide range of materials.

on a mao rango or matorialor				
SIZE (D x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #
4 x 5/8"-11	.177"	15,000	CGCG0400	701846 <b>01762</b>
5 x 5/8"-11	.177"	12,000	CGCG0500	701846 <b>01765</b>
7 x 5/8"-11	.177"	8,730	CGCG0700	701846 <b>01768</b>

#### CLASSIC WITH iHD TECHNOLOGY

The Classic cup grinder provides efficient material removal rate thanks to the small contact surfaces of the segments. The cups also have flat sides to avoid damaging walls or ceilings during flush grinding.

SIZE (D x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #	
4 x 5/8"-11	.177"	15,000	CCCG0400	701846 <b>01761</b>	
5 x 5/8"-11	.177"	12,000	CCCG0500	701846 <b>01764</b>	
7 x 5/8"-11	.177"	8,730	CCCG0700	701846 <b>01767</b>	

#### CLASSIC

Available in a range of sizes and segment designs for optimum performance by life or by speed. Ideal for leveling all types of masonry materials, brick, block, concrete and stone. Strategically placed hole designs help ventilate dust from the surface to extend the life of the cups.

,,							
SIZE (D x H)	SEGMENT HEIGHT	MAX RPM	PART #	UPC #			
<b>Single Row for Fast S</b>	tock Removal						
4 x 7/8-5/8-20mm	.210"	15,000	CHSCPH0400	701846 <b>82585</b>			
5 x 7/8-5/8-20mm	.210"	12,225	CHSCPH0500	701846 <b>84035</b>			
7 x 7/8-5/8-20mm	.210"	8,730	CHSCPH0700	701846 <b>82594</b>			
4 x 5/8"-11	.210"	15,000	CHSCPT0400	701846 <b>82555</b>			
5 x 5/8"-11	.210"	12,000	CHSCPT0500	701846 <b>84036</b>			
7 x 5/8"-11	.210"	8,730	CHSCPT0700	701846 <b>82593</b>			
<b>Double Row for Long</b>	Life, Smooth Finish						
4 x 7/8-5/8-20mm	.210"	15,000	CHDCPH0400	701846 <b>82588</b>			
5 x 7/8-5/8-20mm	.210"	12,225	CHDCPH0500	701846 <b>84037</b>			
7 x 7/8-5/8-20mm	.210"	8,730	CHDCPH0700	701846 <b>82596</b>			
4 x 5/8"-11	.210"	15,000	CHDCPT0400	701846 <b>82586</b>			
5 x 5/8"-11	.210"	12,000	CHDCPT0500	701846 <b>84038</b>			
7 x 5/8"-11	.210"	8,730	CHDCPT0700	701846 <b>82595</b>			

#### Accessories

#### VACUUM SHROUD KIT

The Vacuum Shroud's design creates a cyclonic affect extracting dust and debris from the work surface into the support vacuum. This prolongs the life of the grinding cup and grinder and provides a smoother surface while decreasing the chance of dust particle inhalation.

#### DESCRIPTION

5" vacuum shroud kit – includes one shroud, five different adapter rings to fit most popular right angle grinders, 70184694059 and one 5" x 5/8-11 Norton Clipper cup wheel.











IPC #



### CONSTRUCTION PRODUCTS **Diamond Core Bits**



Core bits are cutting tools used to remove a cylindrically shaped piece of material. A core drill is designed to cut a hole and remove a core sample or to drill a hole without leaving material behind. Diamond core bits have diamond cutting tips and are frequently used for drilling in materials such as concrete, stone, and asphalt.

Applications: Size Range: Segment Height Range: .254", .393" Abrasive Grain: **Mounting Options:** Machines Used:

Used on core drills in materials such as concrete, stone and other hard materials 2" - 10"

Diamond 1-1/4"-7 threads



### Reinforced Concrete and Harder Building Materials

WET – Hard Aggregates

PARADIGM	$\bigcirc \bigcirc \oslash \oslash \oslash \oslash \bigcirc$
Premium diamond in the turbo segment permits the core to penetrate quickly and efficiently	into the toughest cured concrete, for significantly
	1.11

increased performance. The 14" tube length with 1-1/4"-7 threads fits a wide range of core drill mounting arbors.						
SIZE IN INCHES	SIZE IN MM	SEGMENT HEIGHT	MAX RPM	PART #	UPC #	
2	51mm	.490"	2,000	PDBIT0200	701846 <b>01410</b>	
2-1/2	64mm	.490"	1,300	PDBIT0250	701846 <b>01411</b>	
3	76mm	.490"	1,300	PDBIT 0300	701846 <b>01412</b>	
3-1/2	89mm	.490"	1,300	PDBIT0350	701846 <b>01413</b>	
4	102mm	.490"	1,000	PDBIT0400	701846 <b>01414</b>	
4-1/2	114mm	.490"	800	PDBIT0450	701846 <b>01415</b>	
5	127mm	.490"	800	PDBIT0500	701846 <b>01416</b>	
6	152mm	.490"	665	PDBIT0600	701846 <b>01417</b>	
7	178mm	.490"	600	PDBIT0700	701846 <b>01418</b>	
8	203mm	.490"	500	PDBIT0800	701846 <b>01419</b>	
10	254mm	.490"	400	PDBIT1000	701846 <b>01706</b>	





CLASSIC

OLAGOIO					
Economical choic	e for use in harder	concrete with heavy reinf	orcement and mas	onry materials with good perfor	mance.
SIZE IN INCHES	SIZE IN MM	SEGMENT HEIGHT	MAX RPM	PART #	UPC #
2	51mm	.350"	2,000	CHBIT0200	701846 <b>82762</b>
3	76mm	.350"	1,300	CHBIT0300	701846 <b>82765</b>
4	102mm	.350"	1,000	CHBIT0400	701846 <b>82767</b>
6	152mm	.350"	665	CHBIT0600	701846 <b>82771</b>
8	203mm	.350"	500	CHBIT0800	701846 <b>82773</b>
10	254mm	.350"	400	CHBIT1000	701846 <b>82774</b>



> <--->



### TECH TIP

Core Bits – Minimum and Maximum **Recommended Operating Speeds** 

<b>BIT DIAME</b>	TER MINIMUM RPM	IDEAL SPEED (RPM)	MAXIMUM RPM
1	2,400	3,200	4,000
2	1,200	1,600	2,000
3	800	1,050	1,300
4	600	800	1,000
5	475	640	800
6	400	530	665
7	340	450	600
8	300	400	500
10	240	320	400

Note: For half inch increments, go to the next larger bit diameter.

It is the user's responsibility to refer to and comply with ANSI B7.1



### CONSTRUCTION PRODUCTS Equipment



#### High-Speed Gas Saws

No more pre-mixing oil and fuel - the patented iLube option automatically controls mixing for maximum efficiency, and the saw drops to idle speed when the oil is low - eliminating possible machine damage

#### Walk-Behind Saws

Proven, robust and functional for ideal user comfort. The professionals' choice for outstanding walk-behind cutting performance, wet or dry.

#### Masonry Saws

Norton introduced the first masonry saw over 85 years ago and they have become the industry standard for masons worldwide.

For the full line of quality Norton Clipper equipment, please contact your local Norton sales representative

#### **High-Speed Gas Saws**

#### CP500 SERIES HIGH-SPEED SAWS

The Norton Clipper CP500 high-speed cut-off saw might be new to the market, but it's destined to be an asset on any crew. It's fully designed with the user in mind to not only cut a smooth, fast track, but it's also fully equipped to handle the everyday performance of any jobsite with unrelenting durability and reliability. Select a standard model or upgrade to the world's first patented automatic lubrication system, Norton Clipper Lube. The patented iLube option automatically controls mixing of oil and fuel for maximum efficiency. An electronic sensor will

indicate a low oil level and adjust the engine to idle to prevent engine damage.

		-	
DESCRIPTION	SHAFT RPM	PART #	UPC #
14" Standard High-Speed Cut-Off Saw	4,500	CP514-350	701846 <b>47563</b>
14" iLube High-Speed Cut-Off Saw	4,500	CP514-350i iLube	701846 <b>47565</b>
ACCESSORIES			
High-Speed Saw Wheel Kit			005101 <b>09845</b>
High-Speed Saw Tool Kit			005101 <b>09846</b>













### CONSTRUCTION PRODUCTS Equipment



#### **GC55 EARLY ENTRY/GREEN SAW**

UPC # 701846**30005** 

With a compact, light-weight design backed by the reliable Honda 5HP gasoline engine, the GC55 early entry saw is intended for a variety of applications. From green, cured or decorative concrete cutting to expansion joints, the features of this small push saw are hard to beat in a single saw. The low, wide profile of the frame, along with the front mount blade, contribute to producing a more disciplined cut.

Honda GX160 115 lbs

10"

UPC 70184642453



#### **C1318P GASOLINE SAV**

The next generation of 13HP saws. The C1318P features shock-absorbing handle bars. The new sleek design of the water tank, with increased capacity and improved securing, adds an additional 1.5 gallons of water over the cut. And, a newly-designed belt tensioning system helps keep the saw cutting tried and true. All these features, coupled with the Honda 13HP engine, make the C1318P the premiere choice for rental and service work

Honda GX390 220 lbs

18"



#### **C13PE GASOLINE SAW**

Rental equipment has to withstand any and all conditions by user and application. For that reason, the Norton Clipper C13PE suits any rental fleet that both the novice and expert will appreciate to hold-up through tough situations. The 18" blade guard, ride-on water system and guick-release blade guard lock all keep safety in mind while the rugged frame, powerful engine and easy-to-use console makes cutting a breeze.

UPC #	MOTOR	WEIGHT	GUARD
70184647524	Honda GX390	220 lbs	18"





### Large Masonry Saws

#### BBL BLOCKBUSTER LARGE MASONRY SAWS

Having introduced the first masonry saw over 70 years ago, the Norton Clipper BBL heavy-duty block saws have become the industry standard for masons worldwide. These models are equipped with single-phase electric motors and come with a blade capacity of 14" or 20". Extended water pan and open back frame allow cutting of larger materials. The balanced cutting head makes for effortless cutting depth positioning. Having a rugged all-steel frame design with forklift brackets allows these saws to resist twisting and damage during transport around a job site.

For other sizes and horsepower machines, or for gasoline-powerered versions, contact your Norton sales representative.

DESCRIPTION	HP	PAKI #	UPC #
BBL547 Blockbuster Saw with Baldor electric motor; 14" blade guard capacity	5	BBL547	701846 <b>83211</b>
BBL527 Blockbuster Saw with Baldor electric motor; 20" blade guard capacity	5	BBL527	701846 <b>83150</b>
ACCESSORIES			
Electric Water Pump – PE-1			701846 <b>68392</b>
Conveyor Cart Replacement for BBL			003100 <b>07390</b>

Conveyor Cart Replacement for BBL



### CONSTRUCTION PRODUCTS Equipment



#### **Compact Masonry Saws**

Combines the performance of a full size masonry saw with the convenience of portability. Also available in gas or electric versions, the BBC saws have a rugged jig-welded frame, durable enough for even the heaviest work load. Standard rear wheel dolly design and removable legs make transport and set-up easy.

For other sizes and horsepower machines, or for gasoline-powered versions, contact your Norton sales representative.

DESCRIPTION				H	P PART #	UPC #	
BBC157 Blockbuster	Saw with Baldor	electric motor;	14" blade guard c	apacity 1.	5 BBC157	701846 <b>8248</b>	8
BBC207 Blockbuster	Saw with Baldor	electric motor;	14" blade guard c	apacity 2	BBC207	701846 <b>8250</b>	)1
BBC307 Blockbuster	Saw with Baldor	electric motor; 2	20" blade guard c	apacity 3	BBC307	701846 <b>3001</b>	1
BBC547 Blockbuster	Saw with Honda	gasoline motor;	; 14" blade guard	capacity 5.	5 BBC547	701846 <b>8217</b>	'5
BBC507 Blockbuster	Saw with Honda	gasoline motor;	; 20" blade guard	capacity 5.8	5 BBC507	701846 <b>3001</b>	2
ACCESSORIES							
Electric Water Pump	– PE-1					701846 <b>6839</b>	2
Conveyor Cart Repla	cement for BBC					003100 <b>0736</b>	7
Mechanical Water Pu	imp Assembly (wa	iter pump not ir	ncluded)			003100 <b>0423</b>	7
Water Pump Pulley						003100 <b>0466</b>	9





Industrial Market - Full-Line

**BBC** Conveyor

Cart Replacement



### CONSTRUCTION PRODUCTS Equipment

### Mini Masonry Saws

#### BBM BLOCKBUSTER MINI MASONRY SAWS

The innovative design of these small masonry saws has been copied many times due to its compact, all-steel unibody construction, giving the best weight-to-strength distribution. A 14" blade capacity and ergonomically-designed, three-position locking, cutting head provides a safe, clear view of the work area. Whether your choice is the 3HP brush motor or the 1.5HP induction motor for heavier commercial use, both come with features such as overload protection, garden hose connection and a channeled-flow water pan to direct dust and slurry away from the operator.

DESCRIPTION	HP	PART #	UPC #
Blockbuster Mini Masonry Saw with AC universal motor; gear drive	3	BBM307	701846 <b>00684</b>
Blockbuster Mini Masonry Saw with Induction motor; belt drive	2	BBM158	701846 <b>26327</b>
ACCESSORIES			
Conveyor Cart with Vacuum Attachment			701846 <b>02862</b>
Wet Kit			701846 <b>00704</b>
Stand			701846 <b>00691</b>







00000000

## shine on EVERY STEP OF THE WAY

Finishing and masking products to help you finish the job right. Our polishing compounds and surface finishing products along with application accessories are designed to provide the highest level of shine.





### FINISHING PRODUCTS Buffing Compounds



The Farécla system of compounds and waxes is designed to achieve a perfect finish on painted and gel coat surfaces. A full line of cutting and polishing compounds, along with application accessories, will enhance the highest-level shine. Farécla compounds contain a unique abrasive technology that removes sanding marks permanently, avoiding costly reworks.

Farécla polishing compounds and surface finishing products are used on a wide variety of substrates and have been used by automotive bodyshops, detailers, boat builders, woodworkers, composite manufacturers and other industrial applications since 1952.

Products: Markets: Surface Types: Machine Used: Liquid Compound, Paste Compound, Wax, Applicator Pads, Microfiber Cloths Marine, Prime Automotive, General Transportation, Solid Surfaces, Instruments and more Paint/Laquer, Gel Coat, Composite

HAND



PNEUMATIC OR VARIABLE SPEED BUFFER



Step One – Compounding



For use on all wood lacquers, clear coats and paints

### PROFILE ADVANCED PLUS 400 LIQUID COMPOUND

- · Offers the highest level of cut and gloss on painted surfaces and wood lacquers
- Unique abrasive technology which contains no fillers or silicones allow operators to see sanding marks from up to P1500 grit permanently removed
- · Provides a high shine finish with good depth and clarity

### Technical Information

APPEARANCE	VISCOSITY	VOC CONTENT	RELATIVE DENSITY	PH	PAINT TYPE COMPLIANCE
White colored liquid	Medium	152 g/L	0.95	8 - 9	All wood lacquers, clear coats and paints



#### For use on any gel coat surfaces

## PROFILE SELECT 200 LIQUID COMPOUND

- A great value, swirl-free, versatile, cutting compound aimed at OEM applications removes P800 grit or finer sanding
  marks from tooling or production gel coats in a single step
- Used with a wool pad, quickly removes sanding marks up to P1500 on painted surfaces, performs best on a twisted wool compounding pad at high speeds of 2,000-3,500 rpm
- Clean in use, and loads application pads evenly for a fine shine

Technical Information								
APPEARANCE	VISCOSITY	VOC CONTENT	RELATIVE DENSITY	PH	PAINT TYPE COMPLIANCE			
White colored liquid	Medium	152 g/L	0.95	8 - 9	Any painted or industrial surface			

Fo	r use on marine o	ael coats, wo	od, aerospace	e, caravans, a	nd motorhomes etc.
		,,,		,	

### PROFILE PREMIUM PASTE

- · Ideal for removing sanding marks of P1200 and finer or restoring oxidized and weathered gel coat surfaces
- · Works great as a single step on dark colors delivering a high gloss finish
- · Use as the first stage of a two-part process where higher gloss and lower swirl is desired

APPEARANCE	VISCOSITY		RELATIVE DENSITY	
White thick liquid	High	266g/L	1.15	7 – 8

PAINT TYPE COMPLIANCE Marine gel coats, wood, aerospace, caravans, and motorhomes etc.



### Step One – Compounding continued

otep				lueu							
			F	or use on m	arine gel coats,	wood, aeros	pace, caravans, a	and motorhomes etc.			
			•	Removes sanding Easy to apply; wi	g marks up to P800 wi th added lubrication it	hile leaving you v resists drying ou	vith a high gloss finish				
APPEARA	ICE	mation viscosity High	VOC CONTENT KG	relative di 1.65	ensity ph 10			ace, caravans, and motorhomes etc.			
			F	or use on ha	rd tooling and p	production g	el coats, and soli	d surfaces			
			•	Coarse, water-ba Removes up to P	sed cutting compound 600 sanding marks; le	l designed for ag eaves a low level	gressive compounding (	on tough resins and gel coats			
APPEARA	ICE	mation viscosity High	voc content Og/L	relative di 1.57	ENSITY PH 9.6			coats, and solid surfaces			
			F	or use on po ood lacquer	olyester, acrylic a s and solid surf	and epoxy re aces	esins and gel coa	ts, industrial paint finishes,			
	Pr	OFILE 3000	•	Versatile, mid-rai Restores gloss ar	nge, high gloss, water nd color to virtually an	-based compoun y gel coated or p	d capable of removing F ainted surface	1000 or P1200 dry abrasive marks			
APPEARA	ICE	VISCOSITY						v resins and gel coats, industrial paint			
						finis	hes, wood lacquers and	d solid surfaces			
SIZE			PART #	PRODUCT #	PART #	PRODUCT #	PART #				
1 Litre 1 Gallon 5 Gallon	6 2 1	PRA118 PRA518	780727 <b>15148</b> 780727 <b>29474</b>	PRS101 PRS106 PRS506	780727 <b>00168</b> 780727 <b>00169</b> 780727 <b>29473</b>	PRL112 PRL118	780727 <b>63911</b> 780727 <b>64005</b>				
Paste		PROFILE 100		PROFILE PRE		PROFILE 300					
SIZE 3 kg	TRADENAME: ORD. QTY. 24	PRODUCT # PRE306	<b>7 CUT</b> Part # 780727 <b>63866</b>	COARSE CUT PRODUCT # PRP306	PASTE PART # 780727 <b>64019</b>	PRODUCT # PRO300-3000	<b>OMPOUND</b> Part # 780727 <b>64012</b>				
	Techni APPEARAI White thic Techni APPEARAI White colc Techni APPEARAI White colc Liquid SIZE	Technical Infor APPEARANCE White thick liquid Technical Infor APPEARANCE White colored paste Technical Infor APPEARANCE Technical Infor APPEARANCE	A       VISCOSITY         Mite thick liquid       High         APPEARANCE       VISCOSITY         White colored paste       High         APPEARANCE       VISCOSITY         Appearance       VISCOSITY         Appearance       PROFILE ADV         Sigailon       1       PRAST8         Paste       TRADENAME:       PROFILE ADV         Size       ORD. QY       PRODUCT #	Image: State of the second state of	PROFILE       9. Removes sandin         2 Easy to apply; will       0 (then used as the         Technical Information         Presentation         Presentation <td <="" colspan="2" td=""><td>For use on marine gel coats,         PROFILE 100 EXTR,         • Removes sanding marks up to P800 wi         • Easy to apply, with added lubrication it         • Other used as the sole compound on with the thick liquid         VISCOSITY VIC CONTENT RELATIVE DERSITY PH         White thick liquid       High       KG       1.65       10         Profue on hard boiling and ph         Profue on paste High       Other colspan="2"&gt;Profue on photosister, acrification ph         Profue on paste High       Other colspan="2"&gt;Profue on photosister, acrification ph         Profue on paste High       Other colspan="2"&gt;Profue on photosister, acrification ph         Profue on paste High       Other colspan="2"&gt;Profue on photosister, acrification ph         Profue on paste High       Other colspan="2"<td>And and a set of the set</td><td>For use on marine gel coats, wood, aerospace, caravane, e         PROFILE 100 EXTRA HEAVY CUT PAST</td><td>Processes and large docate, wood, aerospace, caravane, and motorhomes etc.           PROFILE OPECTRUE HEAVY CUT PASTE COMPOUND.           - Intrustication of the configuration of the configura</td></td></td>	<td>For use on marine gel coats,         PROFILE 100 EXTR,         • Removes sanding marks up to P800 wi         • Easy to apply, with added lubrication it         • Other used as the sole compound on with the thick liquid         VISCOSITY VIC CONTENT RELATIVE DERSITY PH         White thick liquid       High       KG       1.65       10         Profue on hard boiling and ph         Profue on paste High       Other colspan="2"&gt;Profue on photosister, acrification ph         Profue on paste High       Other colspan="2"&gt;Profue on photosister, acrification ph         Profue on paste High       Other colspan="2"&gt;Profue on photosister, acrification ph         Profue on paste High       Other colspan="2"&gt;Profue on photosister, acrification ph         Profue on paste High       Other colspan="2"<td>And and a set of the set</td><td>For use on marine gel coats, wood, aerospace, caravane, e         PROFILE 100 EXTRA HEAVY CUT PAST</td><td>Processes and large docate, wood, aerospace, caravane, and motorhomes etc.           PROFILE OPECTRUE HEAVY CUT PASTE COMPOUND.           - Intrustication of the configuration of the configura</td></td>		For use on marine gel coats,         PROFILE 100 EXTR,         • Removes sanding marks up to P800 wi         • Easy to apply, with added lubrication it         • Other used as the sole compound on with the thick liquid         VISCOSITY VIC CONTENT RELATIVE DERSITY PH         White thick liquid       High       KG       1.65       10         Profue on hard boiling and ph         Profue on paste High       Other colspan="2">Profue on photosister, acrification ph         Profue on paste High       Other colspan="2">Profue on photosister, acrification ph         Profue on paste High       Other colspan="2">Profue on photosister, acrification ph         Profue on paste High       Other colspan="2">Profue on photosister, acrification ph         Profue on paste High       Other colspan="2" <td>And and a set of the set</td> <td>For use on marine gel coats, wood, aerospace, caravane, e         PROFILE 100 EXTRA HEAVY CUT PAST</td> <td>Processes and large docate, wood, aerospace, caravane, and motorhomes etc.           PROFILE OPECTRUE HEAVY CUT PASTE COMPOUND.           - Intrustication of the configuration of the configura</td>	And and a set of the set	For use on marine gel coats, wood, aerospace, caravane, e         PROFILE 100 EXTRA HEAVY CUT PAST	Processes and large docate, wood, aerospace, caravane, and motorhomes etc.           PROFILE OPECTRUE HEAVY CUT PASTE COMPOUND.           - Intrustication of the configuration of the configura



### FINISHING PRODUCTS Buffing / Finishing Compounds

### Step Two – Finishing



#### For use on all paint types

### PROFILE FINISH LIQUID COMPOUND

- · Fine abrasive formulation quickly and permanently removes swirls and holograms
- · Restores dull surfaces and enhances color for a high shine finish with good depth clarity
- · Ideal economical solution to compounding with low viscosity

#### Technical Information

APPEARANCE	VISCOSITY	VOC CONTENT	RELATIVE DENSITY	PH	PAINT TYPE COMPLIANCE	
White colored liquid	Medium	152 g/L	0.95	8 - 9	All paint types	

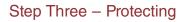


	TRADENAME:	<b>PROFILE FINISH</b>				
SIZE	ORD. QTY.	PRODUCT #	PART #			
1 Litre	6	PRF101	78072700164			





### FINISHING PRODUCTS Buffing / Protecting Compounds





#### For use on any painted or industrial surface

### PROFILE POLYMER WAX

- · Quick and easy to use making short work of large surfaces, perfect for use on boats, vans, trucks and planes
- Creates a durable, highly water resistant protective coating which repels many common contaminants; high-gloss finish has excellent evenness and real transparency on dark colors
- · Sprayable formulation is perfect for ultra-fast applications due to its low viscosity and drying resistance

#### Technical Information

APPEARANCE	VISCOSITY	VOC CONTENT	RELATIVE DENSITY	PH	PAINT TYPE COMPLIANCE
Pink colored liquid	Low / Medium	131 g/L	0.960	7	Any painted or industrial surface



#### For use on all paint types

### PROFILE UV WAX

- Carnauba based wax incorporating special UV absorbers to give up to 3 month's protection to gel coats and paints
  exposed to external weathering
- High Carnauba content ensures long-lasting protection against rain and salt water while the UV absorbers protect
  against exposure to sunlight
- Gives a high-gloss, long-lasting finish on most surfaces; well suited for use on boats, caravans, trains, planes, lacquered wood and UPVC surfaces

#### Technical Information

APPEARANCE	VISCOSITY	VOC CONTENT	RELATIVE DENSITY	PH	PAINT TYPE COMPLIANCE
Pale purple liquid	Medium viscosity	167g/L	0.970	7 (approx.)	All paint types



#### For use on all paint types and surfaces

### PROFILE RAPID DETAILER CLEANER & WAX

- Fast liquid spray wax for that "just waxed" look or a quick clean leaving a high-gloss finish
- · Perfect for paintwork, rubber, vinyl, plastic, glass, and chrome
- · Won't remove previously applied polishes or waxes aiding continuous protection

#### Technical Information

APPEARANO	CE	VISCOSITY	VOC CONTENT	RELATIVE DENSITY	PH	PAINT TYPE COMPLIANC	E
Colorless th	nin liquid	Low viscosity	27g/L	0.990	8 - 9	All paint and surface type	25
	TRADENAME:	PROFILE POLY	MER WAX	PROFILE UV W	AX	PROFILE RAPI	D DETAILER CLEANER & WAX
SIZE	ORD. QTY.	PRODUCT #	PART #	PRODUCT #	PART #	PRODUCT #	PART #
1 Litre	6	PRW101	780727 <b>00171</b>	PRU101	780727 <b>00170</b>		
1 Gallon	2					PRD106	780727 <b>17216</b>



## Farécla

### FINISHING PRODUCTS Applicator Pads & Accessories



Having the right applicator pad, whether it's a wool, waffle or dimple configuration will help others see the perfection in your work. Multiple choices in size and face to evenly distribute the Farécla compounds and create a reflection others will envy.

Products: Application: Machine Used: Foam Pads, Waffle Pads, Wool Pads, Buffing Pads, Spot Repair Pads, Micro-Fiber Cloths Even distribution of compounds and waxes; polishing



HAND APPLICATION

PNEUMATIC OR VARIABLE SPEED BUFFER

### Single-Sided Pads



Single-Sided Pads have a beveled edge design to allow access under trim and improve user control. The recessed back provides accurate alignment for balance and protects against backing plate contact.

SIZE/DESCRIPTION	STD. PKG.	PART #
CCS Dimple Foam Pad - Single-Sided		
3.25" Cutting and Polishing - Orange	6	662610 <b>85302</b>
3.5" Cutting- White	6	666233 <b>91319</b>
3.5" Polishing - Black	6	666233 <b>91320</b>
3.5" Finishing - Blue	6	666233 <b>91321</b>
Cutting Wool Pads – Single-Sided		
3.5" Cutting Wool	6	666233 <b>91318</b>
CCS Waffle Foam Pads - Single-Sided		
8" Cutting- White	6	666233 <b>91306</b>
8" Polishing - Black	6	666233 <b>91307</b>
8" Finishing - Blue	6	666233 <b>91308</b>
Finishing Wool Pads		
8" Single-Sided Wool Pad	6	666233 <b>91315</b>
8" Single-Sided Blended Yellow Wool Pad	6	780727 <b>59561</b>
8" Double-Sided Blended Yellow Wool Pad	6	780727 <b>59563</b>

### **Double-Sided Pads**



Double-Sided Pads have a highly engineered center plate designed to minimize pad hop or chatter with the perfect amount of flexibility when buffing contours.

SIZE/DESCRIPTION	STD. PKG.	PART #
CCS Waffle Foam Pads - Double-Sided		
8" Cutting - White	6	666233 <b>91310</b>
8" Polishing - Black	6	666233 <b>91311</b>
8" Finishing - Blue	6	666233 <b>91312</b>



### FINISHING PRODUCTS Applicator Pads & Accessories

### Spot Repair Pads for Buffing/Polishing

Hook and loop polishing pads for small spot repair					
SIZE/DESCRIPTION	STD. PKG.	PART #			
Spot Repair Foam Pads					
3" Super Cut Wool Pad	40	636425 <b>43832</b>			
3" Blue Cutting Foam Pad	40	636425 <b>05459</b>			
3" White Finishing Foam Pad	40	636425 <b>05460</b>			
Back-up Pad					
3" Back-up Pad	40	636425 <b>06128</b>			

### **Buffing Pads and Accessories**



Wool pads give a high cut and great finish. Our polish applicator pads are available in sizes to suit a range of rotary	
polishers, including 3" and 8" with backing plates also available.	

SIZE/DESCRIPTION	STD. PKG.	PRODUCT #	PART #
G Mop Series Buffing Pads			
8" G Mop Single-Sided Red Waffle Pad	6	PRF801	780727 <b>44634</b>
Buffing Pads			
8" Single-Sided Lambswool Pad	6	LPS801	780727 <b>45650</b>
8" Double-Sided Wool Pad	6	10045	780727 <b>45643</b>
8" US Advanced Wool Compounding Pad	6	40012	780727 <b>45649</b>
Accessories for G Mop Series Buffing Pads			
3" and 6" Rotary Extension	6		666233 <b>91317</b>
3.5" Back-up Plate	6		666233 <b>91316</b>
8" Double-Sided Pad Adapter	6		666233 <b>91313</b>
8" Double-Sided Quick-Change Pad Adapter	6		666233 <b>91330</b>
8" Back-up Plate	6		666233 <b>91314</b>
Pad Conditioning Brush	6		666233 <b>91489</b>



### FINISHING PRODUCTS Micro-Fiber Cloths

#### **Micro-Fiber Performance Cloths**



 $\label{eq:Cleaning Cloth-Blue: Used for general-purpose wet or dry applications. Works best when sprayed with a light water mist to deep clean.$ 

Dry Tack Cloth – Red: This woven terry cloth has a low profile to resist snagging and help pick up embedded debris.

Polishing Cloth – Yellow: Streak-free cleaning of mirrors, optical lens and highly-polished items.

SIZE	COLOR	STD. PKG.	PART #
<b>Micro-Fiber Clean</b>	ling Cloth		
16" x 16"	Dark Blue (thick)	20	636425 <b>04402</b>
16" x 16"	Light Blue	20	076607 <b>05300</b>
Micro-Fiber Dry T	ack Cloth		
16" x 16"	Red	20	076607 <b>04025</b>
<b>Micro-Fiber Polis</b>	hing Cloth		
16" x 16"	Yellow	20	076607 <b>05301</b>

### **TECH TIP**

- Use these micro-fiber cloths dry for general cleaning
- To remove spills, stains or grime, lightly dampen the cloth for best results
- All micro-fiber cloths can be used with or without chemicals
- Micro-fiber cloths can be washed up to 300+ times without losing cleaning and trapping abilities
  Clean often for best results



It is the user's responsibility to refer to and comply with all safety regulations.



### FINISHING PRODUCTS Masking Products

Norton masking tapes feature a special solvent-based, rubber adhesive system and strong holding properties. These tapes adhere and release cleanly while providing clean edges on a variety of flat, contoured, and irregular surfaces. Norton sheetings provides superior solvent, paint, and contaminant penetration resistance. Use them during paint preparation and anywhere you need work area protection. Tear-resistant properties allow movement without ripping.

#### Products: Machine Used:

Attachment Tape, Masking Tape, Sheeting

```
HAND
APPLICATION
```

NDRTDN

SAINT-GOBAIN



### Best choice for dynamic bus, truck and trailer bonding applications

### NORBOND A7600 DOUBLE-SIDED ACRYLIC FOAM TAPE

- High performance, double-sided acrylic foam tape with outstanding viscoelastic and adhesion properties and great conformability to dynamic stress loads
- · Offers ideal bonding performance for many interior and exterior industrial and automotive applications
- Formulated for durable, long-lasting adhesion, exceeds industry standards for shear strength and bonding to high surface energy substrates, even at elevated temperatures

## Good choice for bonding performance for many interior and exterior commercial applications

### PREMIUM ATTACHMENT TAPE

- · Double sided, gray foam tape used in bonding performance for many interior and exterior commercial applications
- · Good conformability and stretching
- Resistance to weathering degradation (UV and high temperature)

DESCRIPTION	THICKNESS	3/8" x 108'	1/2" x 108'	3/4" x 108'	1" x 108'	1-1/2" x 108'
Norbond A7600						
Double-Sided Acrylic Foam Tape	.043" (1.1mm)	780727 <b>59979 NS</b>	780727 <b>64821</b>	780727 <b>02902</b>	780727 <b>02903</b>	780727 <b>02904 NS</b>
	.063" (1.6mm)		780727 <b>75703</b>	780727 <b>59947</b>	780727 <b>64819</b>	780727 <b>59983 N</b> S
Rolls/Case		25/1	20/1	10/1	10/1	8/1
DESCRIPTION	THICKNESS	1/4" X 20 YDS	1/2" X 20 YDS	7/8" X 20 YDS		
Premium Attachment Tape						
Gray Double-Sided Acrylic Foam Tape	.043" (1.1mm)	636425 <b>05620</b>	636425 <b>05621</b>	636425 <b>05622</b>		
Rolls/Case		12/1	12/1	12/1		
Adhesion Promoter						
Dauber - 4 oz.		666233 <b>91030</b>				
Qty/Case		6				

NS Non-Stock: Please contact your Norton representative for current lead-times.

#### Technical Data

Performance tests are run using standard test procedures. The values presented are typical values and should not be used for specification purposes.

	90° PEEL ADHESION¹ (3-DAY DWELL) Ib/in² (N/cm²)	T-BLOCK <sup>2</sup> Ib/in <sup>2</sup> (N/cm <sup>2</sup> )	DYNAMIC SHEAR <sup>3</sup> lb/in <sup>2</sup> (N/cm <sup>2</sup> )	STATIC SHEAR <sup>4</sup> 7 Days /1 kg	SERVICE TEMPERATURE
WITHOUT LINER	ALUMINUM	ALUMINUM	S/S	S/S	
Norbond A7600	22 (39)	83 (57)	79 (54)	Pass and Exceed	-30°F to 200°F (-35°C to 93°C)
Premium Attachment Tape	33 (57)	100 (69)	48 (33)	Pass and Exceed	-30°F to 200°F (-35°C to 93°C)
<sup>1</sup> Based on ASTM D3330 <sup>2</sup>	Based on ASTM D897 3 Based on ASTM D10	02 4 Based on ASTM	1 D3654		





It delivers very sharp, clean edges on smooth- to moderately-textured surfaces

### BLUE CORE 14-DAY TAPE

- Our paint masking tape has a specially formulated adhesive system that provides optimum low- to medium-tack
  adhesion and clean removal from a variety of surfaces, for up to 14 days
- Blue Core masking tape can be used indoors or out
- The crepe paper backing is designed to enable easy unrolling and to minimize slivering

		TIER:	GOOD
		TRADENAME:	BLUECORE 14 DAY TAPE
		BACKING	Fine Crepe Paper
		ADHESIVE	Synthetic Rubber
		TENSILE STRENGTH	23 lbs/in (101 N/25mm)
		ELONGATION AT BREAK	11%
		TOTAL THICKNESS	5.5 mils (0.14mm)
METRIC	IMPERIAL	ROLLS/CASE	PART #
Blue Core 14-Day Tape			
36mm x 54.8m	1-1/2" x 60 yards	24	076607 <b>21954</b>
48mm x 54.8m	2" x 60 yards	24	076607 <b>21955</b>

Bulk packed as individual rolls



#### Good multi-purpose choice provides durability and excellent protection

### HIGH DENSITY SHEETING (HDPE)

Our multi-purpose painters' plastic sheeting protects virtually any area from sanding dust and paint overspray with ease – even after repositioning. Our High Density Plastic Sheeting (HDPE) is designed to be one of the strongest most durable products on the market.

- · Resists tearing and solvent bleed-through with light weight .31 mil High Density Polyethylene plastic (HDPE)
- · Holds in place as it clings to horizontal or vertical surfaces during taping with its natural electrostatic properties
- · Attracts and holds sanding debris for a dust-free finish
- Drapes easily over furniture

SIZE	THICKNESS	COLOR	QTY/PACK	PACKS/CASE	PART #
9' x 400'	.31 mil	Clear	1	1	076607 <b>68142</b>
12' x 400'	.31 mil	Clear	1	1	076607 <b>68143</b>

Also available by the pallet.

## DON'T LEARN **SAFETY GUIDES** BY ACCIDENT!

### SAFETY IS EVERYONE'S JOB

Make the safety of yourself and your team a priority on every job site and learn the proper use and function of all your Norton products and equipment.



# Safety Leadership / References

#### 100 Years of Safety Leadership

The year 2016 marked the 100-year anniversary of the leadership of the former Norton Company in the creation of the first ever safety code for abrasives.

In 1916, following more than a decade of safety research, advocacy, and leadership by the Norton Company (now Norton | Saint-Gobain Abrasives), "The Safety Code for the Use and Care of Abrasive Wheels" was published. This 13-page booklet, containing an unprecedented set of safety device recommendations and procedures, was the spark that changed the entire future of the abrasives industry.

In the 1970s, this code received the ultimate endorsement when selected by OSHA as the basis of new federal regulations concerning abrasive wheel machinery. Today, the ever-evolving "Safety Requirements for the Use, Care and Protection of Abrasive Wheels" (commonly known as the ANSI B7.1 standard) continues to mirror the latest technologies and remains the global authoritative abrasives safety standard.



#### Breakages/Personal Injury

In the event of on-machine breakage of Norton abrasive products, call your local Norton distributor immediately. Whether involving personal injury or not, the abrasive user should leave the equipment and other evidence undisturbed until a Norton sales representative has been notified and conducts an investigation. Prompt action on the part of abrasive users, distributor, and Norton sales personnel is important to ensure swift determination of the breakage cause and to guard against recurrence.





It is the user's responsibility to refer to and comply with ANSI B7.1 and B7.7 – Contact us for a free copy.



Safety Poster (Form # 7868-English, 7868-French, 7868-Spanish)

To order this poster for your shop, mailto:nortonliterature@saint-gobain.com

#### Abrasive Safety References



#### Safety Information on the Web

Visit our newly updated safety website for safety guides, safety data sheets, videos and lots of additional safety resources. <u>nortonsga.us/safety</u>

UAMA (United Abrasives Manufacturers Association) website at <u>safety.uama.org</u>

#### Safety Videos



Watch our Safety Videos **& YouTube.com/NortonAbrasives** 

- Safety, It's The Smart Thing To Do (Safety information for portable grinding and cutting wheels)
- Foundry Safety
- First in Precision Grinding Safety
- Proper Grinding Wheel Mounting
- Railroad Abrasive Safety
- Coated Abrasive Belt and Disc Safety



## UAMA Approved Safety Icons

The UAMA has approved a new set of standardized icons to be used throughout the Abrasive industry to convey safety information to the users. Below are the approved icon types and their definitions.

ICON TYPES	EXAMPLE
Safety Icon: A pictorial whose purpose is to relay safety related information to the user.	
<b>Hazard Alert Icon:</b> This type of safety icon conveys information primarily related to the nature of a hazard. It contains a graphical depiction of the hazard drawn within a yellow equilateral triangle.	
<b>Prohibition Icon:</b> This type of safety icon conveys actions that should not be taken. It consists of a red circular band with a 45° diagonal red band from upper left to lower right. The icon contains a black depiction of what should not be done within the red band on a white background.	
<b>Mandatory Action Icon:</b> This type of safety icon conveys actions that should be taken to avoid hazards. It consists of a white image within a solid blue or black circular surround shape.	
<b>Proper Machine Use Icon:</b> This type of icon is designed to show the use of the wheel on a proper machine. The icon can be a bit more realistic to show components such as a safety guard and an auxiliary handle. The recommended angle of use may also be depicted.	

ICON	MEANING	ICON	MEANING
	Improper use may break wheel and cause serious injury or death.		Always use wheel guard for angle grinder.
	No side grinding. Cutting only.	GUARD	Always use wheel guard for non-portable machine.
	No side grinding. Cutting only		Protect your eyes.
	No cutting. Side grinding only.		Protect your face.
	No cutting. Side grinding only, grouped icon.		Protect your lungs against dust.



## SAFETY Safety Icon Meanings

## UAMA Approved Safety Icons continued

ICON	MEANING	ICON	MEANING	
	Do not use a damaged wheel.		Protect your hearing.	
	Do not use on high-speed gas saws.	T	Protect your eyes and face.	
	Do not use on angle grinders.		Protect your eyes and hearing. Combined icon.	
	Do not use on die grinders		Protect your eyes, ears and lungs.	
	Warning alert symbol.	M2	Protect your hands.	-
<b>C</b>	Read OSHA and ANSI B7.1.		Use matched diameter, relieved flanges.	
safety.uama.org)	Read OSHA and ANSI B7.1. Visit the industry safety page: <u>safety.UAMA.org</u>			



## Coated Abrasive Disc and Wheel Safety Do's and Don'ts

#### Warning

Improper use may cause wheel breakage and serious injury. Comply with ANSI B7.7, OSHA and safety guide provided with the package. Always follow all manufacturer's recommended procedures and safety instructions. Never exceed tool manufacturer's maximum operating speed.

Exposure to DUST generated from workpiece and/or abrasive materials can result in lung damage and/or other physical injury. Use dust capture or local exhaust as stated in the SDS. Wear government–approved respiratory protection and eye and skin protection. Failure to follow this warning can result in serious lung damage and/or physical injury.

Lead Poisoning can develop as a result of inhalation and/or ingestion of the dust generated from sanding any product containing lead, including lead based paint. Lead Poisoning is an illness which can permanently damage the body's physical, neurological and/or reproductive systems. Care must be taken to avoid the inhalation and/or ingestion of dust containing lead

	DO'S	DON'TS
INSPECT / STORAGE / SPEED	<ul> <li>D0 read all manuals, operating instructions and warnings</li> <li>D0 read SDS for the disc/wheel and the work-piece material.</li> <li>D0 check all products for damage before mounting.</li> <li>D0 make sure the machine speed does not exceed the speed marked on the package or back up pad.</li> <li>D0 store products prior to use at 35 – 50% relative humidity and 60 – 80°F.</li> </ul>	<ul> <li>DON'T use products that have been dropped or damaged.</li> <li>DON'T use on machines that do not show a MAX RPM speed.</li> </ul>
MOUNT / GUARD	<ul> <li>D0 use the wheel guard provided with machine. Position it so it protects the operator and covers the wheel.</li> <li>D0 use recommended back up pad or mandrel for the product.</li> <li>D0 run wheels ONLY in direction of directional arrow stenciled on wheel and in core (except Unified Wheels, which can be run in either direction).</li> <li>D0 run discs/wheels in a protected area for one minute before grinding.</li> </ul>	<ul> <li>DON'T remove or modify any guard. ALWAYS use a proper guard.</li> <li>DON'T use excessive pressure when mounting a wheel. Tighten enough only to hold wheel firmly.</li> </ul>
PROTECT	<ul> <li>D0 wear ANSI Z87+ safety glasses and face protection, if required.</li> <li>D0 wear safety shoes, arm guards, leather gloves and aprons.</li> <li>D0 employ dust controls and/or protective measures appropriate to the material being ground.</li> </ul>	<ul> <li>DON'T use products near bystanders if they are not wearing protective equipment.</li> </ul>
OPERATE	<ul> <li>D0 support work-piece firmly.</li> <li>D0 hold machine firmly in two hands.</li> <li>D0 stop the equipment at once if chattering or vibration occurs during use. Determine cause of the problem and correct before remounting.</li> <li>D0 ease the disc into the work piece at a 5-10° angle to the work piece surface.</li> </ul>	<ul> <li>DON'T allow untrained people to handle, store, mount or use discs/wheels.</li> <li>DON'T twist, jam or bend any wheel.</li> <li>DON'T force or bump wheel so that the tool motor stalls.</li> <li>DON'T use discs/wheels in the presence of combustible materials.</li> <li>DON'T use disc/wheel for applications other than for which they were designed. Refer to ANSI B7.7.</li> </ul>



## SAFETY Portable Grinding Safety

## Portable Grinding Safety Do's and Don'ts

	DO'S	DON'TS
INSPECT / SPEED	<ul> <li>D0 read all manuals, operating instructions and warnings.</li> <li>D0 read SDS for the wheel and workpiece material.</li> <li>D0 check all wheels for cracks or other damage before mounting.</li> <li>D0 make sure the machine does not exceed the maximum operating speed marked on the wheel.</li> <li>D0 store according to ANSI B7.1.</li> </ul>	<ul> <li>DON'T use wheels that have been dropped or damaged.</li> <li>DON'T use on grinders that do not show a MAX RPM.</li> </ul>
MOUNT / GUARD	<ul> <li>DO use an ANSI B7.1 wheel guard. Position it so it protects the operator.</li> <li>DO be sure wheel hole or threads fit machine properly and that the flanges are clean, flat, undamaged and the proper type.</li> <li>DO run wheel in a protected area for one minute before grinding.</li> </ul>	<ul> <li>DON'T remove or modify any guard. ALWAYS use a proper guard.</li> <li>DON'T alter a wheel or force it on to the spindle.</li> <li>DON'T mount more than one wheel on an arbor.</li> <li>DON'T use excessive pressure when mounting a wheel. Tighten enough only to hold wheel firmly.</li> </ul>
PROTECT	<ul> <li>D0 wear ANSI Z87+ safety glasses and face protection, if required.</li> <li>D0 wear gloves, hearing and body protection.</li> <li>D0 employ dust controls and/or protective measures appropriate to the material being ground.</li> <li>D0 comply with OSHA regulations 29 CFR 1926.1153 when working on materials containing crystalline silica such as concrete.</li> </ul>	• <b>DON'T</b> use wheels near bystanders if they are not wearing protective equipment.
OPERATE	<ul> <li>DO support work-piece firmly.</li> <li>DO hold grinder firmly with two hands.</li> </ul>	<ul> <li>DON'T allow untrained people to handle, store, mount or use wheels.</li> <li>DON'T use grinding wheels or cutting wheels on pistol grip air sanders.</li> <li>DON'T use any cutting wheel for grinding nor apply side pressure on a cutting wheel. Use for CUTTING ONLY.</li> <li>DON'T use a cutting wheel to cut curves. Cut in straight lines only.</li> <li>DON'T twist, bend or jam any wheel.</li> <li>DON'T force or bump wheel so that the tool motor slows or stalls.</li> <li>DON'T use wheels in the presence of combustible materials.</li> <li>DON'T use wheels for applications other than for which they were designed.</li> </ul>



# Portable Grinding Safety

## Dangerous Pairing: Die Grinders and Cut-off Wheels

While die grinders and portable cut-off tools may look similar, they are by no means interchangeable. Several crucial differences exist between the two handheld machines.

#### GUARD

Cut-off wheels must be used on guarded machines for the safety of the operator and bystanders.

#### SPEED

Cut-off wheels must be used at or below their maximum operating speed, marked clearly on the side of the wheel. Excessive speed can result in breakage and serious personal injury.

Die grinders often operate above 25,000 rpm and therefore are too fast for abrasive wheels. The speed hazard is increased by the absence of a guard. Portable cut-off tools, however, rotate at speeds compatible with the abrasive wheels for which they are designed. And, their guards prevent use of an oversize wheel.

#### MOUNTING

Cut-off wheels must be mounted between proper flanges, as described in the national safety standard for abrasive wheels, ANSI B7.1. Die grinders make use of a collet for mounting

Portable cut-off tools use flanges for mounting, flanges designed according to the ANSI B7.1 safety standard.

Now that you have learned the three crucial differences between die grinders and portable cut-off tools – GUARD, SPEED and MOUNTING – be on watch for the dangerous pairing of cut-off wheels and die grinders, and warn your friends and colleagues of the same.

## A Deadly Equation

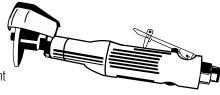
Pistol Grip Air Sander + Grinding Wheel = Certain Injury!

- Never use a high-speed air sander as a portable grinder
- Use only sanding discs specifically designed for sanders
- Because the speed of these sanders far exceeds the maximum rated speeds for grinding wheels, a potentially lethal wheel breakage might occur





Die Grinder



Portable Cut-off Tool



# Starting a Grinding Wheel / Ring Test

## Starting a Grinding Wheel

#### ANSI's Procedure for Starting an Abrasive Wheel

This article is designed to remind users of the proper procedure when starting a machine with a new abrasive wheel mounted on it, starting a machine after the machine and wheel have been stored for a period of time, or remounting a wheel. ANSI B7.1 requires the following procedure when starting a newly mounted grinding wheel.

#### 9.8 Starting the Wheel (Requirements)

All abrasive wheels shall be run at operating speeds with the safety guard in place or in a protected enclosure for at least one minute before applying work. During this time no one shall stand in front of or in line with the wheel. (See section 4, for safety guard requirements.) This provision shall apply each time one of the following conditions occur: a) a new wheel has been mounted; or b) a used wheel has been remounted.

#### E 9.8 Starting the Wheel (Explanatory Information)

An abrasive wheel may be damaged in shipment or storage, or the wheel may be subjected to improper, excessive stresses during mounting. Wheels which have been damaged or are under excessive stress, are likely to fracture within the first minute of rotation at operating speed. While this procedure is most important at the time when an abrasive wheel is mounted or remounted, damage may also occur to a wheel during a shut down of the machine on which it is mounted. The user should evaluate the circumstances and length of machine shut down to determine additional times that the operating rule should be followed.

Improper wheel mounting is a major cause of wheel breakages. Always use proper mounting procedures as outlined in ANSI B7.1, machine manufacturer's instructions and those supplied with the abrasive wheel. Be safe, know and follow the rules!



## How to Perform a Ring Test on a Grinding Wheel

One method of grinding wheel inspection is called ring testing. OSHA, ANSI and the grinding wheel manufacturers require this method of grinding wheel inspection. It must be performed BEFORE the wheel is mounted on a grinding machine. Ring testing depends on the damping characteristics of a cracked wheel to alter the sound emitted when the wheel is tapped lightly. It is subject to interpretation by the inspector and is primarily applicable to vitrified bonded wheels. To perform the ring test, wheels should be tapped gently with a light nonmetallic implement, such as the handle of a screw driver for light wheels, or a wooden mallet for heavier wheels.

- Tap wheels about 45 degrees each side of the vertical line and about 1" or 2" from the periphery. Rotate the wheel 45 degrees and repeat the test.
- Large and thick wheels may be given the ring test by striking the wheel on the periphery rather than the side of the wheel.
- A sound and undamaged wheel will give a clear tone. If cracked, there will be a dead sound and not a clear ring and the wheel should not be used.
- Wheels must be dry and free of sawdust when applying the ring test, otherwise the sound may be deadened. The ring test is not applicable to certain wheels because of their size, shape or composition.

	Ζ
(0	Wadini ic niameters ne crimining wheel s to cive slireare speen in
ő	ц
Φ	2
ø	ä
ä	ΰ
	Ч
Φ	0
e	S
5	5
5	Ξ
	Ï
Φ	1
Ō	
ש	
	2
	Ë
2	č
é	Ë
2	ų
0	
0	
	=
	$\subseteq$
	N

IONS PER MINUTE FOR VARIOUS DIAMETERS OF GRINDING WHEELS TO GIVE SURFACE SPEED IN FEET PER MINUTE AS INDICATED (FOR WHEEL MARKING PURPOSES THE CALCULATED RPM FIGURES LISTED BELOW ARE ROUNDED OFF TO THE NEXT 5) REVOLUTIONS PER MINUTE FOR VARIOUS DIAMETERS OF

20,000		76,395	38,195	25,465	19,100	15,280	12,730	10,915	9,550	8,490	7,640	6,365	5,455	4,775	4,245	20	02:	3,185	2,940	2,730	2,545	2,385	2,245	2,120	2.010	1,910	1,820	]
												6,3	5,4	4,7	4,2	3,820	3,470	3,1	2,9	2,7	2,5		2,2	2,1				-
19,685	-	75,190	37,595	25,065	18,800	15,040	12,530	10,740	9,400	8,355	7,520	6,265	5,370	4,700	4,175	3,760	3,420	3,135	2,890	2,685	2,505	2,350	2,210	2,090	1,980	1,880	1,790	_
17,000	_	64,935	32,465	21,645	16,235	12,985	10,820	9,275	8,115	7,215	6,495	5,410	4,640	4,060	3,605	3,245	2,950	2,705	2,495	2,320	2,165	2,030	1,910	1,085	1,710	1,625	1,545	_
16,500	_	63,025	31,510	21,010	15,755	12,605	10,505	9,005	7,880	7,000	6,300	5,250	4,500	3,940	3,500	3,150	2,865	2,625	2,425	2,250	2,100	1,970	1,855	1,750	1,660	1,575	1,500	_
16,000		61,116	30,558	20,372	15,278	12,224	10,186	8,732	7,640	6,792	6,112	5,092	4,366	3,820	3,396	3,056	2,776	2,546	2,352	2,182	2,056	1,910	1,796	1,698	1,608	1,528	1,464	_
14,200		54,240	27,120	18,080	13,560	10,850	9,040	7,750	6,780	6,030	5,425	4,520	3,875	3,390	3,015	2,715	2,465	2,260	2,090	1,940	1,810	1,695	1,595	1,510	1,430	1,355	1,295	
12,500		47,745	23,875	15,915	11,940	9,550	7,960	6,820	5,970	5,305	4,775	3,980	3,410	2,985	2,655	2,390	2,170	1,990	1,840	1,705	1,595	1,495	1,405	1,330	1,260	1,195	1,140	
0 9,500 10,000 12,000 12,500	ute (RPM)	45,836	22,918	15,278	11,459	9,168	7,639	6,548	5,729	5,092	4,584	3,820	3,274	2,865	2,546	2,292	2,084	1,910	1,762	1,637	1,528	1,432	1,348	1,273	1,206	1,146	1,090	VSI B7.1
<b>10,000</b>	Revolutions Per Minute (RPM)	38,196	19,098	12,732	9,549	7,640	6,366	5,456	4,775	4,244	3,820	3,183	2,728	2,387	2,122	1,910	1,736	1,591	1,468	1,364	1,274	1,194	1,124	1,061	1,006	956	908	2.10 of AI
9,500	Revolu	36,287	18,143	12,096	9,072	7,258	6,048	5,183	4,535	4,032	3,629	3,023	2,592	2,268	2,016	1,814	1,649	1,512	1,395	1,296	1,210	1,134	1,067	1,007	955	908	863	ted in Section 1.2.10 of ANSI B7.1
9,000		34,377	17,188	11,459	8,595	6,876	5,729		4,297	3,820	3,438	2,864	2,455	2,149	1,910	1,719	1,562	1,433	1,322		1,146	1,074	1,011	954	904	860	818	listed in S
8,500		32,467	16,238	10,822	8,116	6,494	5,411	4,638	4,058	3,606	3,247	2,705	2,319	2,029	1,803	1,623	1,476	1,353	1,248	1,159	1,082	1,014	955	902	854	812	775	formula
8,000		30,558	15,278	10,186	7,640	6,112	5,092	4,366	3,820	3,396	3,056	2,546	2,182	1,910	1,698	1,528	1,388	1,274	1,176	1,092	1,018	954	898	848	804	764	732	d use the
7,500		28,647	14,328	9,549	7,162	5,730 (	4,775	4,092	3,580	3,182	2,865	2,386	2,046	1,791	1,591	1,432	1,302	1,194	1,101	1,023	955 1	895 5	843 843	795 8	754 8	716	682	s not liste
7,000		26,737 2	13,368 1	8,913 5	6 685 7	5,348 5	4,456 4	3,820 4	3,342 3	2,970 3	2,674 2	2,228 2	1,910 2	1,672 1	1,485 1	1,337 1	1,215 1	1,115 1	1,028 1	955 1	891 (	836 8	786 8	742 7	704	669 7	636 6	For intermediate diameters not listed use the formula list
6,500 7		24,828 2	12,414 1	8,276 8	6,207 6	4,966 5	4,138 4	3,547 3	3,103 3	2,758 2	2,483 2	2,069 2	1,773 1	1,552 1	1,379 1	1,241 1	1,128 1	1,034 1	955 1,	887 91	828 8	776 8	730 7	690 7	653 7	620 6	591 6	mediate
Diameter of Wheel <b>6</b>		1 2.	2 12	3 8,	4 6,	5 4,	6 4,	7 3,	8 3,	9 2,	10 2,	12 2,	14 1,	16 1,	18 1,	20 1,	22 1,	24 1,	26 95	28 86	30 82	32 77	34 73	36 65	38 65	40 62	42 59	For intermediate diameters not listed use the for



## SAFETY Wheel Speed Conversion Table

Industrial Market - Full-Line

To convert meters per second (m/s) to SFPM: m/s x 196.85 = SFPM

To convert SFPM to m/s: SFPM/196.85 = m/s. To convert RPM to SFPM: Wheel Diameter x RPM  $\times$  0.262 = SFPM



### Silica and What You Need to Know

#### Background and Health impacts

Silica (SiO2) is one of the most common minerals in the earth's crust. Glass, beach sand, silicone and granite are all "silica" materials. Products containing silica have been used for thousands of years in building and is a key ingredient in many products we use every day. There are two forms of silica; crystalline and non-crystalline. Crystalline silica is a mineral that occurs in several forms. Quartz, the most common form, is a component of sand, stone, rock concrete, brick, block and mortar. Non-crystalline silica is found in glass, silicon carbide and silicone.

When rocks containing crystalline silica are cut, crushed, ground, drill or used in similar industrial processes, dust particles are produced. These particles are very fine, at least 100 times smaller than ordinary beach sand – known as respirable crystalline silica or RCS. Inhaling very small or respirable crystalline silica particles is most hazardous and may cause multiple diseases such as silicosis, followed in severe cases by lung cancer.

#### Who is at risk from exposure to crystalline silica?

It is estimated that 2.3 million workers are exposed to crystalline silica on the job. The majority of the workers, about 2 million, are in the construction industry. The hazard exists when specific activities create respirable dust that is released into the air.

#### The New OSHA Standard

OSHA's recently implemented silica standards for Construction "29 CFR 1926.1153" and General Industry "29 CFR 1910.1053" suggests procedures applicable for work in these environments. This new standard affects all activities that generate silica dust on a jobsite. Trades involving brick, stone, concrete and other materials that are difficult to replace must comply with the standard. This is a change around "process", not specific products.

#### Impacts on Industry

Industries affected by this regulation include Construction, Glass manufacturing, Pottery products, Structural clay products, Concrete products, Foundries, Cut stone and Stone products, Railroads, Refractory products and Asphalt products manufacturing to name a few. Always read the Safety Data Sheet for the workpiece and abrasive before use.

The Occupational Safety and Health Administration (OSHA) has a number of available resources to help companies understand the general information and requirements to explain the new regulations including:

OSHA's Crystalline Silica Rule: Construction <u>osha.gov/Publications/OSHA3681.pdf</u>

OSHA Fact Sheet osha.gov/publications/OSHA3682.pdf

Small Entity Compliance Guide for Respirable Crystalline Silica Standard for Construction <u>osha.gov/publications/OSHA3902.pdf</u>

Small Entity Compliance Guide for Respirable Crystalline Silica Standard for General Industry and Maritime osha.gov/publications/OSHA3911.pdf





## GENERAL INFORMATION Product Warranty / Trademarks

## **Product Warranty**

WARRANTY – Saint-Gobain Abrasives warrants the products in this catalog to be free from defects in material or workmanship for a period of one year from the date of purchase. Saint-Gobain Abrasives' sole obligation under this warranty shall be to repair or replace, at Saint-Gobain Abrasives' option, any product which is non-conforming provided any such product failure was not caused by a subsequent modification of the product, misuse or a failure to follow any applicable instructions for the product.

EXCEPT FOR THE FOREGOING, SAINT-GOBAIN ABRASIVES EXPRESSLY DISCLAIMS ALL OTHER GUARANTIES AND/ OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

## **Liability Limitation**

SAINT-GOBAIN'S LIABILITY FOR ANY LOSS OR DAMAGE ARISING OUT OF OR RESULTING FROM THE USE OF THE PRODUCT SHALL NOT EXCEED THE PURCHASE PRICE THEREOF, REGARDLESS OF WHETHER SUCH LIABILITY ARISES IN CONTRACT, TORT (INCLUDING WITHOUT LIMITATION NEGLIGENCE OR STRICT LIABILITY), OR OTHERWISE, AND IN NO EVENT SHALL SAINT-GOBAIN BE LIABLE FOR INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND. NO REPRESENTATIVE OF SAINT-GOBAIN, NOR ANY OF SAINT-GOBAIN'S DISTRIBUTORS OR DEALERS, IS AUTHORIZED TO MODIFY THIS WARRANTY OR ISSUE ANY WARRANTY REGARDING THE PRODUCTS IN THIS CATALOG.

## Product Quality Complaints

All product quality complaints should be submitted to your local Norton Distributor.

## Trademarks

All trademarks used in these pages are trademarks of Saint-Gobain Abrasives unless otherwise indicated.

A275 Original Performance® Adalox® Alundum® Ascent® AVOS® Aztec® Bear-Tex® Because Right Choices Matter™ BlackIce® Blaze® Blue-Bak™ Blue-Core™ BlueFire® BPR™ Century45® Charger™ Classic™ Clean Bond® **Clipper**® **Crystolon®** DiaLast™ **DryIce**® Duo® Duo Evo™

Farécla® Fast Cut™ FastTrack™ FlexDrum™ Foundry X<sup>™</sup> Furioso™ Gemini® G-Force™ India® JobPack™ Liquid Ice® Long Life™ Merit® MeshPower™ Metalite® Mini-Dex™ MSL® Multi-Air Cyclonic® Multi-Oilstone® MultiSand™ The Muscle Behind The Machine® NEX™

No-Fil®

NORaX®

NorBide®

NorKut™ NorPor® **Norton**® Norton Clipper® Norton Design® (Parallelogram) Norton Design® (Triple Stripe Design) Norton SG® NorZon® Norton Onyx® Pacesetter™ Paradigm® **Plyweld**® ProSand™ Pure Ice™ QuadroFlex™ Quantum™ Rail Cut™ Rapid Blend® Rapid Cut™ Rapid Finish® Rapid Prep® Rapid Strip® Red Heat® Reshaping the World of Precision Grinding™

Reshaping Your World® **RightCut®** Sand-O-Flex™ Screen-Bak® SoftTouch® Speed-Change™ Speed-Grip® Speed-Lok® Stick & Sand® Targa® Thin Flex™ **TufBak**® U-Dex-It™ Univel™ USB™ Vitrium3® V-Prime™ Vortex<sup>®</sup> Winter® and others

Durite®



## GET ACCESS TO THE INDUSTRY'S BEST SELECTION OF ABRASIVE SOLUTIONS!

## Boost your knowledge and add selling confidence

Sign up for industry leading training from a world leader in abrasives manufacturing. Visit nortonabrasives.com/en-us/norton-tech to find out more about our Norton Tech online training.

## **NORTON TECH** School of Abrasives



## Put our NEW merchandizing displays to work for you

We offer a complete set of Norton branded merchandising displays and point of sale graphics that can be tailored to your requirements, and support your sales growth for industrial, commercial MRO, and welding distributors. Contact your local Norton sales representative to find out more!



2

3

P

20

## GENERAL INFORMATION Contact Us / myAbrasives

## Contact Us

To place an order, contact our customer service support center with:

- Customer number and contact name
- Any special shipping needs
- Complete product information:
  - » 11-digit Part Number
  - » Product description
- » Quantity and unit of measure

E.

6

FO

5

E>

8

9

5

» Price by unit of measure

G

8

To ensure minimal errors and faster turnaround, using electronic media is preferred.



Email: nacustomerservice@saint-gobain.com

U.S. Phone: Fax: 800-551-4413 800-551-4416

#### For 24-hour support please visit our myAbrasives Distributor Portal:

**myAbrasives** – Our secure online portal that can be used to place orders, as well as see order status, tracking, pricing and availability, quotes and invoices.

- Register by calling 877-447-5353 or emailing us at myabrasives.na@saint-gobain.com
- Visit our myAbrasives information site for more details at nortonsga.us/myabrasives



59

·:- F10



#### SAINT-GOBAIN

The world leader in abrasives for more than 130 years, the Norton brand offers the widest portfolio of grinding, cutting, blending, finishing and polishing solutions which deliver the highest productivity and cost performance ratio in both stock and made-to-order solutions.



For 80 years, the Clipper brand has been a trusted equipment source on the jobsite. Now, the Norton Clipper brand will cut a new path for future growth with an industry-leading line of diamond products, abrasives, and light equipment to tackle even the toughest construction environment.





SAINT-GOBAIN

The world's leading brand for high-quality, innovative diamond and cBN precision grinding products for the automotive, aerospace, bearing, tools and electronics industries. Norton Winter is quality and precision at its finest.

# Farécla

Farécla Products Ltd offers a comprehensive line of polishing compounds and surface finishing products to complement the Norton abrasive portfolio. Farécla has been providing surface finishing solutions to automotive bodyshops, detailers, boat builders, woodworkers, composite manufacturers and other industrial customers since 1952.

GOOD





NORTON

0



www.facebook.com/NortonAbrasivesNA | www.youtube.com/NortonAbrasives | www.nortonabrasives.com **USA CUSTOMER SERVICE:** Toll Free Phone: 1 (800) 551-4413 1 (800) 551-4416 Toll Free Fax:

CANADA CUSTOMER SERVICE: Toll Free Phone: 1 (800) 263-6565 Toll Free Fax: 1 (800) 561-9490

NO-RISK TEST

Consistent Performance - Low Initial Price

FORM #7362 REV. 05/23 © Saint-Gobain May 2023. Norton, Bear-Tex, Clipper, Merit, and Winter are registered trademarks of Saint-Gobain Abrasives.