



NORTON *VITRIUM* ³

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 Vitrium3 (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



A Quantum Leap in Technology

A new generation of Norton Quantum ceramic abrasive products is designed for maximizing performance and cost savings in precision grinding. See new Vitrium3 bond Quantum wheels.



Sharper Versatility

Sharp monocrystalline aluminum oxide grain makes Norton 32A the industry's most versatile abrasive; free cutting on full range of applications and materials. See new Vitrium3 bond 32A wheels.



Cooler Cutting

White, friable 38A abrasive grain delivers exceptionally cool cutting in light pressure, toolroom grinding applications.

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 nonferrous MRO, small job shop, and production operation.

Applications: Surface grinding, tool and cutter grinding, and reshaping
 Shapes: 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
 Size Range: 3/4" – 18" diameter
 Grit Range: 46 – 220
 Abrasive Grain: Ceramic Alumina, Aluminum Oxide, Silicon Carbide

MATERIAL-TO-PRODUCT RECOMMENDATION GUIDE

APPLICATION / MATERIAL	PERFORMANCE/PRODUCTIVITY								
	Narrow Contact Area			Medium Contact Area			Wide Contact Area		
	BEST	BETTER	GOOD	BEST	BETTER	GOOD	BEST	BETTER	GOOD
Tool Reshaping									
• Heavy Stock Removal (> .004)									
HSS & Tool Steel RC 50-68	5SG46-KVS	32A46-KVBE	38A46-KVBE	5SG46-JVS	32A46-JVBE	38A46-JVBE	5SG46-GVSP 3SGR46-GVP2	32A46-GVBEP 48A46-GVP2	38A46-GVBEP 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 3SGR60-GVP2	32A60-GVBEP 48A60-GVP2	38A60-GVBEP 38A60-GVP2
Carbide			39C60-JVK			39C60-JVK			
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 3SGR46-GVP2	32A46-GVBEP 48A46-GVP2	38A46-GVBEP 38A46-GVP2
400 Series Stainless									
Soft Steels RC 30-45	5SG46-KVS	32A46-KVBE	38A46-KVBE	5SG46-JVS	32A46-JVBE	38A46-JVBE	5SG46-HVSP 3SGR46-HVP2	32A46-HVBEP 48A46-HVP2	38A46-HVBEP 38A46-HVP2
300 Series Stainless									
Cast Iron: Ductile & Gray	5SG46-KVS	32A46-KVBE	38A46-KVBE	5SG46-JVS	32A46-JVBE	38A46-JVBE	5SG46-HVSP 3SGR46-GVP2	32A46-HVBEP 48A46-HVP2	38A46-HVBEP 38A46-HVP2
Nonferrous Alloys			39C46-JVK			39C46-IVK			
• 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 3SGR60-GVP2	32A60-GVBEP 48A60-GVP2	38A60-GVBEP 38A60-HVBEP
400 Series Stainless									
Soft Steels RC 30-45	5SG60-KVS	32A60-KVBE	38A60-KVBE	5SG60-JVS	32A60-JVBE	38A60-JVBE	5SG60-HVSP 3SGR60-HVP2	32A60-HVBEP 48A60-HVP2	38A60-HVBEP 38A60-HVP2
300 Series Stainless									
Cast Iron: Ductile & Gray	5SG60-KVS	32A60-KVBE	38A60-KVBE	5SG60-JVS	32A60-JVBE	38A60-JVBE	5SG60-HVSP 3SGR60-HVP2	32A60-HVBEP 48A60-HVP2	38A60-HVBEP 38A60-HVP2
Nonferrous Alloys			39C60-JVK			39C60-IVK			
• Light Stock Removal and Finishing (<.001)									
HSS & Tool Steel RC 50-68		32A80-JVBE	38A80-JVBE		32A80-IVBE	38A80-IVBE		32A80-HVBE	38A80-HVBE
400 Series Stainless									
Soft Steels RC 30-45		32A80-KVBE	38A80-KVBE		32A80-JVBE	38A80-JVBE		32A80-IVBE	38A80-IVBE
300 Series Stainless									
Cast Iron: Ductile & Gray		32A80-KVBE	38A80-KVBE		32A80-JVBE	38A80-JVBE		32A80-IVBE	38A80-IVBE
Nonferrous Alloys			39C80-JVK			39C80-IVK			39C80-HVK

Upgrade to Vitrium³ to improve your process and productivity in 3 ways

Vitrium3 bond (VS3) wheels for enhanced-performance are available with these abrasives: NQ, SG, 32A, and 48A

<p>1. COOL CUTTING</p> <p>VITRIUM³ BOND BOND-PART INTERACTION</p> <p>Improved holding power (using less bond-to-abrasive ratio) exposes a larger grain surface area, improving freer cut rate.</p>	<p>2. PRECISE PROFILE</p> <p>Vitrium³ wheel After 5 grinding cycles</p> <p>Superior grain-holding properties significantly improve wheel form and corner holding vs. other bond systems – reducing dressing time and dresser wear.</p>	<p>3. HIGH SPEED</p> <p>High Speed – Norton Vitrium³ bond provides the ultimate wheel strength. This allows for high speed operation on equipment designed and rated for high speed.</p>
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VITRIFIED WHEEL BONDS

Bond	Description
NEW! 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
NEW! 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 (green) and Norton SG (blue): High stock removal; narrow/medium contact area; roughing/finishing; cool cutting
VSP	Quantum (green) 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
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

SELECTING A WHEEL WITH THE CORRECT BOND TYPE

Single Point Diamond Tools

- Use VBE, V, VS, VS3, and VK 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"

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	61463610148	6 x 1 x 1" 37C24-SVK	61463610462
		8 x 1 x 1" 37C24-SVK	61463610471
		Other sizes are available. See the Dressing Stick section.	

DRESSING: SINGLE POINT DRESSING TOOL STARTING RECOMMENDATIONS

Wheel Sizes	Tool Shank Diameter	Ceramic (NQ, Norton SG, TG, Etc.), 37C & 39C Wheels		25A, 32A, 38A, 48A, 53A, 57A, 64A, 86A Wheels	
		Product No.	Part #	Product No.	Part #
Up to 7"	3/8	BCSG2M6	66260157007	BC2M6	66260195000
	7/16	BCSG2M7	66260156905	BC2M7	66260195001
8" to 10"	3/8	BCSG3M6	66260157008	BC3M6	66260195002
	7/16	BCSG3M7	66260156906	BC3M7	66260195003
12" to 14"	3/8	BCSG5M6	66260157009	BC5M6	66260195004
	7/16	BCSG5M7	66260156907	BC5M7	66260195005

*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*

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	C	1C	C
39C		5C	GC	C	11C

TECH TIP

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.



Reshaping the World of Precision Grinding – Norton Vitrium3 VS3 and VS3P Bond Wheels

A Revolutionary Bond That Lowers Process Cost In Three Ways

Our exclusive bond platform provides unprecedented wheel performance and finished part accuracy across many precision grinding applications.

- | | |
|--|---|
| 1. Coolest cutting with maximum chip clearance | <ul style="list-style-type: none"> • Significantly reduces burn • Increases cutting efficiency and cut rate • Improves coolant flow • Reduces wheel loading • Delivers exceptional part quality |
| 2. Optimized precision profile | <ul style="list-style-type: none"> • Ultra radius accuracy • Extended wheel life; highest productivity • Reduced dressing frequency and cost • Improved cycle and process time |
| 3. Able to run at higher operating speeds | <ul style="list-style-type: none"> • Increases throughput and productivity • Leverages existing equipment • Maximizes your machine efficiency • Best choice for machinery designed and rated for high speed |

Available in non-stock wheels made-to-order to your exact requirements, and in an expanded offering of our best-selling stock wheels.

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
	Feed too fast	Reduce stock removed per pass or upgrade to 5SG or 5NQ
Wheel 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



Single-Pack Toolroom Wheels

The Small Quantity Order Solution

Available in our most popular specification of BEST, BETTER and GOOD performance tiers. Norton single-pack toolroom wheels provide many opportunities:

- Test order small quantities of a variety of wheel specifications
- Display and safely store your most often used wheels
- No need to repack small orders from bulk shipments
- Ensure your wheel arrives on site undamaged

NORTON QUANTUM (5NQ) CERAMIC ALUMINA

BEST CHOICE FOR VERSATILITY, MAXIMUM PERFORMANCE AND COST SAVINGS

FEATURES

- Revolutionary, engineered ceramic grain shape and chemistry with proven bond technology – green in color
- NEW! Quantum abrasive with coolest cutting, high-speed, precise form holding Vitrium 3 VS3 Bond – white
- Provide sharp edge on tools and dies

BENEFITS

- Versatile; for all low, medium and high force applications ranging from cast iron, to stainless steel and hard-to-grind Inconel and titanium
- Perform well on old and new machines
- 33% to 100% longer life vs. competitive ceramic products
- 30%+ higher metal removal rate
- 15%+ lower threshold power
- Lowest total grinding costs
- Highest productivity; lowest cycle and process time; most accurate finished parts
- Longer life of tools and dies in production

NORTON SG CERAMIC ALUMINA

BEST CHOICE FOR HIGH PRODUCTIVITY, LOW TOTAL PER-PART GRINDING COST

FEATURES

- High-performance seeded gel ceramic aluminum oxide abrasive
- Self-sharpening abrasive
- NORPOR 3SGR – Norton SG and 48A abrasive blend with VP2 porous bond – purple
- High performance VS and VSP bonds
- 5SG – durable Norton SG and aluminum oxide blend – blue
- NEW! 5SG abrasive with coolest cutting, high-speed, precise form holding Vitrium 3 VS3 Bond – white

BENEFITS

- Fast stock removal, cool, superior cutting
- 3X - 5X more life than aluminum oxide wheels
- Double rough stock removal rate versus conventional abrasives
- Less burn, less dressing; very consistent performing wheel
- Maximum productivity in heat-sensitive, heavy stock removal operations
- Versatile; exceptional form holding
- High stock removal rates, excellent productivity, long wheel life, low overall grinding cost
- Highest productivity; lowest cycle and process time; most accurate finished parts

NORTON 32A ALUMINUM OXIDE

BETTER CHOICE FOR MEDIUM TO HEAVY STOCK REMOVAL

FEATURES

- Sharp monocrystalline aluminum oxide grain – the industry's most versatile abrasive – purple in color
- NEW! 32A abrasive w/ coolest cutting, high-speed, precise form holding Vitrium 3 VS3 bond wheels – white

BENEFITS

- Free cutting on a wide range of applications and materials
- Outstanding form holding
- Highest productivity; lowest cycle and process time; most accurate finished parts



NORTON 38A ALUMINUM OXIDE

GOOD CHOICE FOR LIGHT GRINDING OF TOOL STEEL



FEATURES

- White, friable abrasive grain
- Consistent quality
- NORPOR 38A – most friable, aluminum oxide abrasive with VP2 porous bond – white
- Versatile

BENEFITS

- Cool and burn-free cutting; ideal for heat-sensitive applications with light to moderate feed rates
- Excellent balance and dimensional accuracy time after time
- Exceptionally cool cutting in light pressure grinding applications, or heat-sensitive applications
- Ideal for use across a broad variety of tool steels

NORTON GEMINI ALUMINUM OXIDE

GOOD CHOICE FOR USE ON GENERAL PURPOSE APPLICATIONS; ECONOMICAL



FEATURES

- Durable aluminum oxide abrasive and strong vitrified bond – Blue
- Versatile, economical

BENEFITS

- Consistent stock removing performance on narrow to medium contact areas; cool cutting
- Ideal when numerous small jobs are run on one machine
- The choice when initial price is the main purchasing criterion

ID and Race Wheels



ID and Race Wheel FastTrack Availability

Type 01 Straight				
Diameter: 0.164" thru 4.532"		Thickness: 0.150" thru 2.750"		
Type 05 Recessed One Side				
Diameter: 0.407" thru 4.625"		Thickness: 3/16" thru 3.100"		
ABRASIVE	25A, 32A, 38A, 48A, 53A, 57A	5TG**	Quantum (NQ) 1SG, 3SG, 5SG	32AA
GRIT	46* - 120	80/1, 120/1	36 - 150	46 - 80
GRADE	J - P	I - M	I - N	I - M
STRUCTURE	6	8	6	6
BOND	VFL	VFL	VFL	VFL
SPEED	8,500 SFPM***			
TREAT 22	Available for Quantum (NQ) 32A, and 53A			

* 46 grit only available in .312 Diameter
 ** 5TG is available in /1 combination, only
 *** Speeds up to 12,500 SFPM by request and Safety approval

For more program details, ask your Norton sales representative to review the First Line VFL ID & Race Wheel Brochure #6981 with you.

Vitrified First Line (VFL) ID and Race Wheel availability encompasses over 1,000 wheel sizes and most abrasive types. These high-performance wheels are made-to-order and shipped within two weeks of receipt of your order. Additional dimensions and grinding faces are available as made-to-order products with 4-week lead-times.

Vitrified Wheels For Steel Applications



TIER: **BEST**
 BRAND: Norton
 TRADENAME: **QUANTUM / NORTON SG**
 ABRASIVE: Ceramic Alumina

TIER: **BETTER**
 BRAND: Norton
 TRADENAME: **32A**
 ABRASIVE: Aluminum Oxide

TIER: **GOOD**
 BRAND: Norton
 TRADENAME: **38A**
 ABRASIVE: Aluminum Oxide

SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.	SPEC.	PART #	SPEC.	PART #	MIN./STD. PKG.	SPEC.	PART #
Type O1 Straight									
2 x 1/2 x 3/8	16,235	10/50			32A60-KVBE	66243428214			
3 x 1/4 x 1/2	10,825	10/50			32A60-KVBE	66243528696			
3 x 1/2 x 3/8	10,825	10/50			32A60-KVBE	66243528825	10/50	38A60-JVBE	66243529032
3 x 1/2 x 1/2	10,825	10/50			32A60-KVBE	66243528828			
3 x 1 x 1/2	10,825						10/10	38A60-MVBE	66243529145
							10/10	38A80-MVBE	66243529146
4 x 1/4 x 1/2	8,120	1/10			32A60-KVBE	66243529532	1/10	38A60-KVBE	66243529777
	8,120						1/10	38A100-IVBE	66243529782
4 x 1/4 x 3/4	8,120	1/10			32A60-KVBE	66243529736			
4 x 1/2 x 1/2	8,120	1/10					1/10	38A60-KVBE	66243529947
	8,120						1/10	38A100-KVBE	66243529954
4 x 1/2 x 3/4	8,120	1/10			32A60-KVBE	66243529849	1/10	38A60-KVBE	66243529961
	8,120	1/10			32A80-KVBE	66243529850			
4 x 1 x 1/2	8,120						1/10	38A60-MVBE	66243530126
5 x 1/4 x 1/2	4,970	1/10			32A60-KVBE	66252830572			
6 x 1/8 x 1-1/4	4,140	1/10			32A80-KVBE	66252835361	1/10	38A150-LVBE	66252835506
6 x 1/4 x 1/2	4,140	1/10			32A60-KVBE	66252835784			
6 x 1/4 x 1-1/4	4,140	1/10			32A60-KVBE	66252835786	1/10	38A60-KVBE	66252835803
	4,140						1/10	38A80-KVBE	66252835807
	4,140						1/10	38A150-KV	66252835759
6 x 1/2 x 1/2	4,140	1/10			32A60-KVBE	66252836394	1/10	38A60-KVBE	66252836530
	4,140						1/10	38A80-KVBE	66252836548
6 x 1/2 x 1-1/4	4,140	1/10			32A46-KVBE	66252836380	1/10	38A46-KVBE	66252836520
	4,140	1/10	5SG60-KVS	66252803344	32A60-KVBE	66252836396 B	1/10	38A60-KVBE	66252836533
	4,140	1/10			32A80-JVBE	66252836405	1/10	38A80-KVBE	66252836550
	4,140						1/10	38A120-KVBE	66252836664
6 x 3/4 x 1/2	4,140	1/10			32A60-KVBE	66252837420			
6 x 3/4 x 5/8	4,140						1/10	38A60-KVBE	66252837444
6 x 3/4 x 1-1/4	4,140	1/10			32A60-KVBE	66252837421	1/10	38A60-KVBE	66252837445
6 x 1 x 1-1/4	4,140	1/10			32A60-KVBE	66252837921 B			
7 x 1/8 x 1-1/4	3,275	1/10			32A60-IVBE	66252939112	1/10	38A80-IVBE	66252939219
	3,600						1/10	38A100-KVBE	66252939223
7 x 1/4 x 1-1/4	3,600	1/10	5NQ46-IVS	66253350690	32A46-HVBE	66252939543	1/10	38A46-HVBE	66252939690
	3,600	1/10	5NQ46-IVS3	66243495257	32A46-IVBE	66252939544	1/10	38A46-IVBE	66252939691
	3,600	1/10	5NQ60-JVS	66253293579	32A46-JVBE	66252939545	1/10	38A46-JVBE	66252909755
	3,600	1/10	5NQ60-JVS3	66243495258	32A46-KVBE	66252939862	1/10	38A60-HVBE	66252939695
	3,600	1/10	5SG46-IVS	66252940207 B	32A60-HVBE	66252939547	1/10	38A60-IVBE	66252939696
	3,600	1/10	5SG46-IVS	66253288575 S	32A60-IVBE	66252939548 B	1/10	38A60-JVBE	66252939698
	3,600	1/10	5SG60-IVS	66252939459 B	32A60-IVBE	66253288569 S	1/10	38A60-KVBE	66252939700
	3,600	1/10	5SG60-IVS	66253288576 S	32A60-JVBE	66252939549 B	1/10	38A80-HVBE	66252939707
	3,600	1/10	5SG60-IVS3	66243495259	32A60-KVBE	66252939552 B	1/10	38A80-IVBE	66252939808
	3,600	1/10	5SG60-JVS	66252939460	32A60-KVBE	66253288570 S	1/10	38A80-JVBE	66252939809
	3,600	1/10	5SG60-KVS	66252939461 B	32A60-KVS3	66243495260	1/10	38A80-KVBE	66252939812
	3,600	1/10	5SG60-KVS	66253288577 S	32A80-HVBE	66252939557	1/10	38A100-IVBE	66252939823
	3,600	1/10	5SG80-IVS	66252939462	32A80-IVBE	66252939658 B	1	38A100-IVBE	66253288799 S
	3,600	1/10	5SG80-JVS	66252939463	32A80-IVBE	66253288571 S	1/10	38A100-JVBE	66252939826
	3,600	1/10	5SG80-KVS	66252939464	32A80-JVBE	66252939660 B	1/10	38A100-KVBE	66252939827
	3,600	1/10	5SG100-JVS	66252939467	32A80-KVBE	66252939662 B	1/10	38A100-LVBE	66252939830
	3,600	1/10	5SG100-KVS	66252939468 B	32A80-KVBE	66253288572 S	1/10	38A120-JVBE	66252939833
	3,600	1/10	5SG100-KVS	66253288578 S	32A80-KVS3	66243495262	1/10	38A120-KVBE	66252939834
	3,600	1/10			32A100-IVBE	66252939670 B	1/10	38A150-KVBE	66252939838
	3,600	1/10			32A100-JVBE	66252939672	1/10	38A150-LVBE	66252939839
	3,600	1/10			32A100-IVBE	66253288573 S	1/10	38A150-MV	66252939521
	3,600	1/10			32A100-KVBE	66252939673 B	1/10	38A220-KV	66252939528
	3,600	1/10			32A100-KVBE	66253288574 S	1/10	38A220-LV	66252939529
	3,600	1/10			32A120-IVBE	66252939680	1/10	38A220-LVBE	66252939847

B = Best Seller; performs well in a variety of applications for many satisfied customers
 S = Single Pack

Continued

Vitrified Wheels For Steel Applications (continued)



TIER: BEST
BRAND: Norton
TRADENAME: **QUANTUM / NORTON SG**
ABRASIVE: Ceramic Alumina



TIER: BETTER
BRAND: Norton
TRADENAME: **32A / 48A**
ABRASIVE: Aluminum Oxide



TIER: GOOD
BRAND: Norton
TRADENAME: **38A / 25A / GEMINI**
ABRASIVE: Aluminum Oxide

SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.	SPEC.	PART #	SPEC.	PART #	MIN./STD. PKG.	SPEC.	PART #	
Type O1 Straight										
7 x 1/4 x 1-1/4	3,600	1/10			32A120-KVBE	66252939682	1/10	38A220-MV	66252939530	
	3,600	1/10			32A220-LVBE	66252939689	10/10	Gemini 60-I	66253246722	
	3,600	1/10					10/10	Gemini 60-J	66253246788	
	3,600	1/10					10/10	Gemini 60-K	66253246789	
	3,600	1/10					10/10	Gemini 80-K	66253246792	
7 x 3/8 x 1-1/4	3,600	1/10			32A60-KVBE	66252940276	1/10	38A60-KVBE	66252940294	
	3,600	1/10			32A80-KVBE	66252940284	1/10	38A80-IVBE	66252940297	
7 x 1/2 x 1-1/4	3,600	1/10	5NQ46-HVS3	66253375053	32A46-FVBEP	66252941203	1/10	25A46-HVP2	66252916219	
	3,600	1/10	5NQ46-IVS	69083159103	32A46-GVBE	66252940862	1/10	25A60-HVP2	66252916221	
	3,600	1/10	5NQ46-IVS3	66253375052	32A46-GVBEP	66252941204 B	1/10	38A46-GVBE	66252941022	
	3,600	1/10	5NQ46-JVS	69083159104	32A46-HVBE	66252940863 B	1/10	38A46-GVBEP	66252941323	
	3,600	1/10	5NQ60-GVSP	69083159105	32A46-HVBE	66253288775 S	1/10	38A46-HVBE	66252941023	
	3,600	1/10	5NQ60-IVS3	66253375047	32A46-HVBEP	66252941205 B	1	38A46-HVBE	66253288770 S	
	3,600	1/10	5NQ60-JVS	69083159106	32A46-HVS3	66243494107	1/10	38A46-HVBEP	66252941324	
	3,600	1/10	5NQ60-JVS3	66253375046	32A46-IVBE	66252940864 B	1/10	38A46-HVP2	662529416223	
	3,600	1/10	3SGP46-GVSP	66252911717	32A46-IVBE	66253288776 S	1/10	38A46-IVBE	66252941024	
	3,600	1/10	3SGR46-HVP2	66252916211	32A46-IVBEP	66252941206	1/10	38A46-JVBE	66252941026	
	3,600	1/10	3SGR60-HVP2	66252916213	32A46-IVS3	66243495357	1	38A46-JVBE	66253288767 S	
	3,600	1/10	5SG46-GVSP	66252940522	32A46-JVBE	66252940865 B	1/10	38A46-KVBE	66252941028	
	3,600	1/10	5SG46-HVS3	66253375050	32A46-JVBE	66253288777 S	1/10	38A60-HVBE	66252941035	
	3,600	1/10	5SG46-HVSP	66252941130	32A46-JVS3	66243495264	1/10	38A60-HVBEP	66252941330	
	3,600	1/10	5SG46-IVS	66252940193 B	32A46-KVBE	66252940867 B	1/10	38A60-IVBE	66252941036	
	3,600	1/10	5SG46-IVS	66253288788 S	32A46-KVS3	66243495362	1/10	38A60-JVBE	66252941038	
	3,600	1/10	5SG46-IVS3	66253375049	32A54-IVBE	66252940873	1	38A60-JVBE	66253288766 S	
	3,600	1/10	5SG46-IVSP	66252940523	32A60-GVBEP	66252941313	1/10	38A60-KVBE	66252941041	
	3,600	1/10	5SG46-JVS	66252940194 B	32A60-HVBE	66252940879 B	1	38A60-KVBE	66253288769 S	
	3,600	1/10	5SG46-JVS	66253288789 S	32A60-HVBEP	66252941314	1/10	38A60-LVBE	66252911677	
	3,600	1/10	5SG46-JVS3	66243495263	32A60-IVBE	66252940880 B	1/10	38A80-HVBE	66252941047	
	3,600	1/10	5SG46-KVS	66252940195	32A60-IVBE	66253288779 S	1/10	38A80-IVBE	66252941048	
	3,600	1/10	5SG60-GVSP	66252940524	32A60-IVS3	66243495363	1/10	38A80-JVBE	66252941049	
	3,600	1/10	5SG60-IVS	66252940196 B	32A60-JVBE	66252940882 B	1/10	38A80-KVBE	66252941054	
	3,600	1/10	5SG60-IVS	66253288791 S	32A60-JVBEP	66252941316	1	38A80-KVBE	66253306641 S	
	3,600	1/10	5SG60-IVS3	66253375045	32A60-JVS3	66243495364	1/10	38A80-LVBE	66252941056	
	3,600	1/10	5SG60-IVSP	66252940525	32A60-KVBE	66252940885 B	1/10	38A100-IVBE	66252941163	
	3,600	1/10	5SG60-JVS	66252940197 B	32A60-KVBE	66253288782 S	1/10	38A100-JVBE	66252941165	
	7 x 1/2 x 1-1/4	3,600	1/10	5SG60-JVS	66253288792 S	32A60-LVBE	66252940888	1/10	38A100-KVBE	66252941168
		3,600	1/10	5SG60-JVS3	66253375043	32A80-HVBE	66252940894	1/10	38A120-JVBE	66252941174
		3,600	1/10	5SG60-KVS	66252940198	32A80-IVBE	66252940895 B	1/10	38A120-KVBE	66252941175
		3,600	1/10	5SG60-LVS	66252940199	32A80-IVBE	66253288783 S	1/10	38A150-JVBE	66252941179
		3,600	1/10	5SG80-IVS	66252940200	32A80-JVBE	66252940897 B	1/10	38A150-MV	66252940595
		3,600	1/10	5SG80-IVSP	66252940527	32A80-KVBE	66252940899 B	1/10	38A220-QV	66252940605
		3,600	1/10	5SG80-JVS	66252940201 B	32A80-KVBE	66253288784 S	10/10	Gemini 46-H	66253246795
		3,600	1/10	5SG80-JVS	66253288793 S	32A80-LVBE	66252940900	10/10	Gemini 46-I	66253246800
3,600		1/10	5SG80-KVS	66252940202	32A100-IVBE	66252940907	10/10	Gemini 46-J	66253246802	
3,600		1/10	5SG80-LVS	66252940203	32A100-JVBE	66252941008	10/10	Gemini 46-K	66253246812	
3,600		1/10	5SG100-JVS	66252940204	32A120-LVBE	66252941018 B	10/10	Gemini 60-I	66253246818	
3,600		1/10	5SG100-KVS	66252940205	32A120-LVBE	66253288786 S	10/10	Gemini 60-J	66253246820	
3,600		1/10			48A46-HVP2	66252916215 B	10/10	Gemini 60-K	66253246821	
3,600		1/10			48A60-HVP2	66252916217 B	10/10	Gemini 80-K	66253246832	
3,600		1/10					10/10	Gemini 100-K	66253246838	
7 x 5/8 x 1-1/4		3,600	1/10			32A60-IVBE	66252941762			
7 x 3/4 x 1-1/4		3,600	1/10	5SG46-IVS	66252942304	32A46-GVBEP	66252942070	1/10	38A46-HVBE	66252941950
		3,600	1/10	5SG46-KVS	66252942305	32A46-HVBE	66252941930	1/10	38A46-KVBE	66252941954
	3,600	1/10	5SG60-JVS	66252942307	32A46-IVBE	66252941931	1/10	38A60-IVBE	66252942207	
	3,600	1/10	5SG60-KVS	66252942308	32A46-KVBE	66252941935	1/10	38A60-KVBE	66252942060	
	3,600	1/10			32A60-IVBE	66252941938				
	3,600	1/10			32A60-KVBE	66252941943				
	3,600	1/10			32A80-IVBE	66252941946				

B = Best Seller; performs well in a variety of applications for many satisfied customers
 S = Single Pack

Vitrified Wheels For Steel Applications (continued)



TIER:	BEST	BETTER	GOOD
BRAND:	Norton	Norton	Norton
TRADENAME:	QUANTUM / NORTON SG	32A	38A / 25A / GEMINI
ABRASIVE:	Ceramic Alumina	Aluminum Oxide	Aluminum Oxide

SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.	SPEC.	PART #	SPEC.	PART #	MIN./STD. PKG.	SPEC.	PART #
Type 01 Straight									
7 x 1 x 1-1/4	3,600	1/10	5SG60-JVS	66252942429	32A46-HVBE	66252942513	1/10	38A46-HVBE	66252942534
	3,600	1/10	5SG60-KVS	66252942430	32A46-JVBE	66252942268			
	3,600	1/10			32A60-IVBE	66252942524			
	3,600	1/10			32A60-KVBE	66252942709			
200mm x 10mm x 31.75mm	2,870	5	320 S/C Organic Micro Dressing wheels	66253296349*					
8 x 1/4 x 1-1/4	+	1/10	5SG60-KVS	66253043351	32A46-HVBE	66253043412	1/10	38A60-IVBE	66253043431
	+	1/10	5SG80-KVS	66253043353	32A46-IVBE	66253043310	1/10	38A60-JVBE	66253043432
	3,600	1/10			32A46-KVBE	66253043413	1/10	38A60-KVBE	66253010825
	3,600	1/10			32A60-IVBE	66253043416 B	1/10	38A80-IVBE	66253043437
	3,600	1/10			32A60-IVBE	66253288796 S	1/10	38A80-JVBE	66253043439
	3,600	1/10			32A60-JVBE	66253043417	1/10	38A80-KVBE	66253043461
	3,600	1/10			32A60-KVBE	66253043399	1/10	38A100-IVBE	66253043445
	3,600	1/10			32A80-IVBE	66253043421	1/10	38A100-KVBE	66253043447
	3,600	1/10			32A80-KVBE	66253043458 B	1/10	38A120-KVBE	66253043450
	3,600	1/10			32A80-KVBE	66253288797 S	1/10	38A150-KVBE	66253043451
	3,600	1/10			32A80-LVBE	66253043425			
	3,600	1/10			32A100-IVBE	66253043426			
	3,600	1/10			32A100-KVBE	66253043428			
	8 x 3/8 x 1-1/4	3,600	1/10			32A60-KVBE	66253043565		
8 x 1/2 x 1-1/4	+	1/10	5NQ46-HVS3	66253387211	32A46-GVBEP	66253043882 B	1/10	25A46-HVP2	66253019354
	3,105	1/10	5NQ46-IVS	69083159107	32A46-HVBE	66253043712 B	1/10	38A46-HVBE	66253043746
	3,105	1/10	5NQ46-IVS3	66253387212	32A46-HVBE	66253288800 S	1	38A46-HVBE	66253350640 S
	+	1/10	5NQ46-JVS	69083159108	32A46-HVBEP	66253043883 † B	1/10	38A46-HVBEP	66253043891 †
	+	1/10	5NQ46-JVS3	66243494087	32A46-HVS3	66243495312	1/10	38A46-IVBE	66253043749
	+	1/10	5NQ60-GVSP	69083159109	32A46-HVS3P	66243495368	1/10	38A46-JVBE	66253043752
	+	1/10	5NQ60-IVS3	66253387214	32A46-IVBE	66253043713 B	1/10	38A46-KVBE	66253043762
	+	1/10	5NQ60-JVS	69083159110	32A46-IVS3	66243495313	1/10	38A60-HVBE	66253043756
	3,600	1/10	5NQ60-JVS3	66253387213	32A46-JVBE	66253043715 B	1/10	38A60-IVBE	66253043757
	+	1/10	3SGP46-HVSP	66253011505	32A46-JVBE	66253288801 S	1/10	38A60-JVBE	66253043858
	3,600	1/10	3SGP46-JVH	66253013796	32A46-JVS3	66243495314	1/10	38A60-KVBE	66253043861
	3,600	1/10	3SGR46-GVP2	66253019345	32A46-KVBE	66253043716 B	1/10	38A80-IVBE	66253043866
	+	1/10	3SGR46-HVP2	66253019346	32A60-FVBEP	66253043886 †	1/10	38A80-JVBE	66253013787
	+	1/10	3SGR60-HVP2	66253019348	32A60-GVBEP	66253043887 †	1/10	38A80-KVBE	66253043869
	+	1/10	5SG46-GVSP	66253043649	32A60-HVBE	66253043724	1/10	38A100-KVBE	66253043877
	+	1/10	5SG46-HVS3	66253387220	32A60-HVBEP	66253043888	10/10	Gemini 46-H	66253246841
	+	1/10	5SG46-HVSP	66253043915 †	32A60-IVBE	66253043725 B	10/10	Gemini 46-I	66253246843
	+	1/10	5SG46-IVS	66253044089 B	32A60-IVBE	66253288802 S	10/10	Gemini 46-J	66253246845
	+	1/10	5SG46-IVS	66253288804 S	32A60-JVBE	66253043727 B	10/10	Gemini 46-K	66253246848
	+	1/10	5SG46-IVS3	66253387221	32A60-KVBE	66253043729 B	10/10	Gemini 60-J	66253246857
	+	1/10	5SG46-IVSP	66253043650	32A60-KVBE	66253288803 S			
	3,600	1/10	5SG46-JVS	66253044090 B	32A80-HVBE	66253043733			
	3,600	1/10	5SG46-JVS	66253288806 S	32A80-IVBE	66253043734			

B = Best Seller; performs well in a variety of applications for many satisfied customers S = Single Pack
 * = For fine grit diamond Polyimide wheels
 + = Refer to Tech Tip at the bottom of this page for maximum operating speed

Continued

For non-stock toolroom wheels: if you don't see the toolroom wheel you need in our stock listing, call your local authorized Norton distributor to check our made-to-order non-stock availability – including our revolutionary new Quantum ceramic and Vitrium3 bond wheels.

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)



TIER: **BEST**
 BRAND: Norton
 TRADENAME: **QUANTUM / NORTON SG**
 ABRASIVE: Ceramic Alumina

TIER: **BETTER**
 BRAND: Norton
 TRADENAME: **32A / 48A**
 ABRASIVE: Aluminum Oxide

TIER: **GOOD**
 BRAND: Norton
 TRADENAME: **38A / 57A**
 ABRASIVE: Aluminum Oxide

SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.	SPEC.	PART #	SPEC.	PART #	MIN./STD. PKG.	SPEC.	PART #	
Type 01 Straight										
8 x 1/2 x 1-1/4	3,600	1/10	5SG46-KVS	66253044091	32A80-JVBE	66253043736				
	3,600	1/10	5SG60-GVSP	66253043651 †	32A80-KVBE	66253043737				
	3,600	1/10	5SG60-IVS	66253044092	32A100-IVBE	66253043740				
	3,600	1/10	5SG60-IVS3	66253387225	32A100-KVBE	66253043742				
	3,600	1/10	5SG60-IVSP	66253043652	48A46-HVP2	66253019350 B				
	3,600	1/10	5SG60-JVS	66253044093 B						
	3,600	1/10	5SG60-JVS	66253288808 S						
	3,600	1/10	5SG60-JVS3	66253387228						
	3,600	1/10	5SG60-KVS	66253044094						
	3,600	1/10	5SG80-JVS	66253044096						
	3,600	1/10	5SG80-KVS	66253044097						
	3,600	1/10	5SG100-KVS	66253019435						
	8 x 3/4 x 1-1/4	3,105	1/10	5NQ46-IVS	69083159111	32A46-GVBEP	66253044195	1/10	38A46-HVBE	66253044175
		3,105	1/10	5NQ46-IVS3	66243494089	32A46-HVBE	66253044159	1/10	38A46-IVBE	66253044177
3,600		1/10	5NQ46-JVS	69083159112	32A46-HVBEP	66253044196 †	1/10	38A46-KVBE	66253044180	
+		1/10	5NQ46-JVS3	66243494090	32A46-IVBE	66253044215	1/10	38A60-IVBE	66253044184	
+		1/10	5NQ60-GVS3P	66243495369	32A46-JVBE	66253044161				
+		1/10	5NQ60-GVSP	69083159113	32A46-KVBE	66253044165				
+		1/10	5NQ60-JVS	69083159114	32A60-GVBEP	66253044198				
3,600		1/10	5NQ60-JVS3	66243494091	32A60-HVBE	66253044168				
+		1/10	5SG46-IVS	66253044098	32A60-IVBE	66253044169				
3,600		1/10	3SGP46-JVH	66253013792	32A60-JVBE	66253044171				
3,600		1/10	5SG46-JVS	66253044099 B	32A60-KVBE	66253044173				
3,600		1/10	5SG46-JVS3	66243495315	32A80-KVBE	66253044064				
3,600		1/10	5SG60-IVS	66253044101						
3,600		1/10	5SG60-JVS	66253044102						
8 x 1 x 1-1/4	+	1/10	5SG46-KVS	66253002588	32A46-HVBE	66253044616	1/10	38A46-IVBE	66253044636	
	+	1/10	5SG60-GVSP	66253003228 †	32A46-IVBE	66253044617	1/10	38A60-IVBE	66253044456	
	3,600	1/10	5SG60-IVS	66253002639	32A46-KVBE	66253044622	1/10	57A60-MVBE	66253044270	
	3,600	1/10			32A60-IVBE	66253044624				
10 x 1/4 x 3	2,485					1	38A80-KVBE	66253149572		
10 x 1/2 x 3	2,485	1			32A60-JVBE	66253149729	1	38A60-KVBE	66253149859	
	2,485						1	38A80-KVBE	66253149865	
10 x 3/4 x 3	2,485	1			32A46-IVBE	66253160024	1	38A46-JVBE	66253160158	
	2,485	1			32A60-IVBE	66253160137	1	38A60-IVBE	66253160163	
	2,485	1			32A60-KVBE	66253160143				
10 x 1 x 1-1/4	2,485	1			32A60-KVBE	66253160774				
10 x 1 x 2	2,485	1			32A46-IVBE	66253160749				
10 x 1 x 3	2,485	1	5SG46-GVSP	66253160494	32A46-HVBE	66253160747	1	38A46-IVBE	66253160889	
	2,485	1	5SG46-IVS	66253160400	32A46-IVBE	66253160750	1	38A46-JVBE	66253160892	
	2,485	1	5SG46-JVS	66253160401	32A46-JVBE	66253160754	1	38A60-IVBE	66253160898	
	2,485	1	5SG46-JVS3	66243495316	32A46-KVBE	66253160758	1	38A60-KVBE	66253160900	
	2,485	1	5SG46-KVS	66253160402	32A60-IVBE	66253160769				
	2,485	1	5SG60-GVSP	66253160495	32A60-KVBE	66253160777				
	2,485	1	5SG60-IVS	66253160403	32A80-KVBE	66253160782				
	2,485	1	5SG60-JVS	66253160404						
	2,485	1	5SG60-KVS	66253160405						

B = Best Seller; performs well in a variety of applications for many satisfied customers S = Single Wheel Pack
 + = Refer to Tech Tip at the bottom of this page for maximum operating speed

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)



TIER: **BEST**
 BRAND: Norton
 TRADENAME: **QUANTUM / NORTON SG**
 ABRASIVE: Ceramic Alumina

TIER: **BETTER**
 BRAND: Norton
 TRADENAME: **32A / 48A**
 ABRASIVE: Aluminum Oxide

TIER: **GOOD**
 BRAND: Norton
 TRADENAME: **38A**
 ABRASIVE: Aluminum Oxide

SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.	SPEC.	PART #	SPEC.	PART #	MIN./STD. PKG.	SPEC.	PART #
Type 01 Straight									
12 x 1/2 x 3	2,070	2			32A60-JVBE	66253262134			
	2,070	2			32A80-KVBE	66253262110			
12 x 1/2 x 5	2,070	2			32A60-KVBE	66253262107			
	2,070	2			32A80-KVBE	66253262111			
12 x 3/4 x 3	2,070	1	5SG46-IVS	66253262204	32A46-GVBEP	66253262392	1	38A46-JVBE	66253262281
	2,070	1			32A46-HVBE	66253262260			
	2,070	1			32A46-IVBE	66253262261			
	2,070	1			32A60-IVBE	66253262270			
	2,070	1			32A60-KVBE	66253262273			
12 x 1 x 1-1/4	2,070	1			32A46-KVBE	66253262570			
12 x 1 x 3	•	1	3SGR46-HVP2	66253220885	32A46-GVBEP	66253262840	1	38A46-HVBE	66253262700
	2,070	1	5SG46-HVSP	66253262488	32A46-HVBE	66253262562	1	38A46-IVBE	66253262702
	2,070	1	5SG46-IVS	66253262500	32A46-HVBEP	66253262842	1	38A46-JVBE	66253262704
	2,070	1	5SG46-JVS	66253262501	32A46-IVBE	66253262564	1	38A60-IVBE	66253262713
	2,070	1	5SG46-JVS3	66243495317	32A46-JVBE	66253262567			
	2,070	1	5SG46-KVS	66253262502	32A46-KVBE	66253262572			
	2,070	1	5SG46-KVS3	66243495318	32A60-HVBE	66253262580			
	2,070	1	5SG60-GVSP	66253262593	32A60-IVBE	66253262581			
	2,070	1	5SG60-IVS	66253262503	32A60-KVBE	66253262689			
	2,070	1	5SG60-JVS	66253262504	32A80-KVBE	66253262532			
	•	1	5SG60-KVS	66253262505	48A60-HVP2	66253220891			
12 x 1 x 5	2,070	1	5SG46-GVSP	66253262594	32A46-GVBEP	66253262841	1	38A46-IVBE	66253262703
	2,070	1	5SG46-IVS	66253262508	32A46-HVBE	66253262563	1	38A60-KVBE	66253262719
	2,070	1	5SG46-JVS	66253262509 B	32A46-IVBE	66253262565			
	2,070	1	5SG46-KVS	66253262510	32A46-KVBE	66253262573			
	2,070	1	5SG60-GVSP	66253262595	32A60-HVBE	66253262734			
	2,070	1	5SG60-IVS	66253262511	32A60-IVBE	66253262582			
	2,070	1	5SG60-JVS	66253262512	32A60-JVBE	66253262686			
	2,070	1	5SG60-KVS	66253262513	32A60-KVBE	66253262691 B			
	2,070	1	5SG80-JVS	66253262515	32A80-JVBE	66253262696			
	2,070	1			32A80-KVBE	66253262697			
12 x 1-1/4 x 3	2,070	1			32A46-IVBE	66253262301			
12 x 1-1/2 x 1-1/4	2,070	1			32A46-KVBE	66253263146			
12 x 1-1/2 x 3	2,070	1	5SG46-IVS	66253202820	32A46-HVBE	66253263143			
	2,070	1			32A46-IVBE	66253263144			
	2,070	1			32A60-JVBE	66253263123			
12 x 1-1/2 x 5	2,070	1	5NQ46-IVS	69083159115	32A46-GVBEP	66253263192	1	38A46-IVBE	66253214987
	2,070	1	5NQ46-IVS3	66243494092	32A46-HVBE	66253263128			
	2,070	1	5NQ46-JVS	69083159116	32A46-IVBE	66253263145			
	2,070	1	5NQ46-JVS3	66243494093	32A46-JVBE	66253263120			
	2,070	1	5NQ60-GVSP	69083159117	32A60-HVBE	66253263149			
	2,070	1	5NQ60-JVS	69083159118	32A60-KVBE	66253263034			
	2,070	1	3SGP60-GVSP	66253215030					
	2,070	1	5SG46-GVSP	66253203453					
	2,070	1	5SG46-IVS	66253202842					
	2,070	1	5SG46-IVS3	66243495319					
	2,070	1	5SG46-JVS	66253202926					
	2,070	1	5SG60-GVSP	66253262596					
12 x 2 x 1-1/4	2,070	1			32A46-KVBE	66253263461			
	2,070	1			32A46-MVBE	66253263463			
12 x 2 x 3	2,070	1			32A46-IVBE	66253263459			
12 x 2 x 5	2,070	1			32A46-HVBE	66253263403			
	2,070	1			32A46-IVBE	66253262302			
	2,070	1			32A60-KVBE	66253263465			

+ † Refer to the Tech Tips at the bottom of page 223 • 12" Type 01 Wheel Maximum RPM: NORPOR 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 "Diamond Tool" and "Dressing Sticks" sections for truing and dressing products.

Vitrified Wheels For Steel Applications (continued)



TIER:	BEST	BETTER
BRAND:	Norton	Norton
TRADENAME:	QUANTUM / NORTON SG	32A
ABRASIVE:	Ceramic Alumina	Aluminum Oxide

GOOD
Norton
38A / 57A
Aluminum Oxide

SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.	SPEC.	PART #	SPEC.	PART #	MIN./STD. PKG.	SPEC.	PART #	
Type O1 Straight										
14 x 1/2 x 5	1,800	1	5SG80-KVS	66253363814	32A60-KVBE	66253363761				
14 x 3/4 x 5	1,800	1			32A60-KVBE	66253363772				
14 x 1 x 3	1,800	1	5SG46-IVS	66253363960	32A46-HVBE	66253363912				
	1,800	1	5SG46-KVS	66253363961	32A46-IVBE	66253363914				
	1,800	1			32A60-IVBE	66253363927				
14 x 1 x 5	1,800	1	5SG46-GVSP	66253364108	32A46-GVBEP	66253364074	1	38A46-HVBE	66253364043	
	1,800	1	5SG46-HVSP	66253313990	32A46-HVBE	66253363913	1	38A60-IVBE	66253363947	
	1,800	1	5SG46-IVS	66253363970	32A46-IVBE	66253363915	1	38A60-JVBE	66253364051	
	1,800	1	5SG46-JVS	66253363971	32A46-JVBE	66253363919	1	38A60-KVBE	66253364053	
	1,800	1	5SG46-JVS3	66243495320	32A46-KVBE	66253363921	1	38A80-KVBE	66253364058	
	1,800	1	5SG60-IVS	66253363974	32A60-GVBEP	66253364077	1	57A60-KVBE	66253364065	
	1,800	1	5SG60-IVSP	66253363871	32A60-HVBE	66253363926	1	57A60-LVBE	66253364066	
	1,800	1	5SG60-JVS	66253363975	32A60-JVBE	66253363930	1	57A80-MVBE	66253364070	
	1,800	1	5SG60-KVS	66253363976	32A60-KVBE	66253363932				
	1,800	1	5SG80-JVS	66253363979	32A60-LVBE	66253364035				
	1,800	1	5SG80-KVS	66253364003	32A80-JVBE	66253364038				
	1,800	1			32A80-KVBE	66253364039				
	14 x 1 x 8	1,800	1			32A60-IVBE	66253363887			
	14 x 1-1/2 x 5	1,800	1	5NQ46-HVS3	66253387216	32A46-GVBEP	66253364238	1	38A46-HVBE	66253313968
1,800		1	5NQ46-IVS3	66253387219	32A46-HVBE	66253364335 B	1	38A46-HVBEP	66253313969	
1,800		1	5NQ46-IVS	69083159119	32A46-HVBEP	66253364243	1	38A46-IVBE	66253364090	
1,800		1	5NQ46-JVS	69083159120	32A46-IVBE	66253364336	1	38A46-JVBE	66253364240	
1,800		1	5NQ46-JVS3	66243494095	32A46-JVBE	66253364337	1	38A60-IVBE	66253364247	
1,800		1	5NQ60-GVS3P	66243495372	32A46-KVBE	66253364339				
1,800		1	5NQ60-GVSP	69083159122	32A60-HVBE	66253364340				
1,800		1	5NQ60-JVS	69083159124	32A60-IVBE	66253364239				
1,800		1	5NQ60-JVS3	66243494096	32A60-JVBE	66253364341				
1,800		1	3SGP46-GVSP	66253306780	32A60-KVBE	66253364342				
1,800		1	3SGP46-HVSP	66253307025	32A80-JVBE	66253364246				
1,800		1	3SGP46-JVH	66253313976						
1,800		1	5SG46-GVSP	66253364320						
1,800		1	5SG46-HVS3	66253387231						
1,800		1	5SG46-HVSP	66253302625						
1,800		1	5SG46-IVS	66253364097						
1,800		1	5SG46-IVS3	66253387234						
1,800		1	5SG46-IVSP	66253302498						
1,800		1	5SG46-JVS	66253364098 B						
1,800		1	5SG60-IVS	66253364100						
1,800	1	5SG60-JVS	66253364101							
1,800	1	5SG60-KVS	66253302160							
1,800	1	5SG80-KVS	66253363815							
14 x 2 x 5	1,800	1	5SG60-JVS	66253364414	32A46-IVBE	66253364323				
	1,800	1			32A46-JVBE	66253364508				
	1,800	1			32A46-KVBE	66253364509				
	1,800	1			32A60-KVBE	66253364510				

B = Best Seller; performs well in a variety of applications for many satisfied customers

DRESSING: SINGLE POINT DRESSING TOOL STARTING RECOMMENDATIONS

Wheel Sizes	Tool Shank Diameter	Ceramic (NQ, Norton SG, TG, etc.), 37C & 39C Wheels		25A, 32A, 38A, 48A, 53A, 57A, 64A, 86A Wheels	
		Product No.	Part #	Product No.	Part #
12" to 14"	3/8"	BCSG5M6	66260157009	BC5M6	66260195004
	7/16"	BCSG5M7	66260156907	BC5M7	66260195005

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.

Vitrified Wheels For Steel Applications (continued)



TIER: **BETTER**
 BRAND: Norton
 TRADENAME: **32A / 23A**
 ABRASIVE: Aluminum Oxide

GOOD
 Norton
38A / 53A / 57A
 Aluminum Oxide

SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.	SPEC.	PART #	MIN./STD. PKG.	SPEC.	PART #
Type O2 Cylinder							
6 x 1 x 4	3,600	1/10	32A46-KVBE	66252838308	1/10	38A80-HVBE	66252838314
Rim 1"	3,600	1/10	32A60-JVBE	66252838309			
Plate A47466							
8 x 2 x 5-1/2	2,865				1/8	53A46-KVBE	66253044942
Rim 1-1/4"							
Plate A50831							
10 x 2 x 7-1/2	2,295	1	32A54-JVG	66253161687	1	53A60-KVG	66253161701
Rim 1-1/4"							
(ME62845)							
Plate A110170							
11 x 5	1,910	1	32A30-HVBE	66253161800			
Rim 1" (ME33437)							
Tape Wound							
11 x 5	1,740	1	32A36-EVBEP	66253161780	1	38A46-GVBE	66253161807
Rim 1" (ME52726)	1,910	1	32A36-GVBEP	66253161808			
Tape Wound	1,910	1	32A46-HVBE	66253161893			
14 x 4 x 11	1,640				1	38A46-KVBE	66253364652
Rim 1-1/2"							
(ME62806)							
Plate A52814							
Tape Wound							
18 x 5 Rim 1-1/2"	1,065	1	32A30-E19VCP	66253465142			
(ME15536)							
Tape Wound							
18 x 5 Rim 1-1/2"	1,170	1	23A30-F19VCP	66253465235			
(ME52719)							
Tape Wound							
Includes Strips							
Type O5 Recessed One Side							
3/4 x 3/4 x 1/4	43,290	5/40	32A60-KVBE	66243427582			
Recess 1/S 3/8 x 3/8							
1 x 1 x 1/4	32,470	5/40	32A60-KVBE	66243427769			
Recess 1/S 1/2 x 1/2							
1 x 1 x 3/8	32,470	5/40	32A60-KVBE	66243427773			
Recess 1/S 1/2 x 1/2							
1-1/4 x 1 x 3/8	25,975	5/40	32A60-KVBE	66243427799			
Recess 1/S 5/8 x 1/2							
1-1/2 x 1 x 3/8	25,975	5/40	32A60-KVBE	66243427938			
Recess 1/S 5/8 x 1/2							

Continued

For non-stock toolroom wheels: if you don't see the toolroom wheel you need in our stock listing, call your local authorized Norton distributor to check our made-to-order non-stock availability – including our revolutionary new Quantum ceramic and Vitrium3 bond wheels.

To maximize the performance of these wheels and finished part quality, refer to the beginning of this section and the "Diamond Tool" and "Dressing Sticks" sections for truing and dressing products.

Vitrified Wheels For Steel Applications (continued)



TIER:	BEST	BETTER
BRAND:	Norton	Norton
TRADENAME:	QUANTUM / NORTON SG	32A / 48A
ABRASIVE:	Ceramic Alumina	Aluminum Oxide

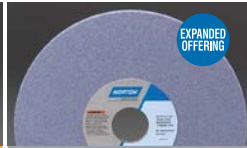
GOOD
Norton
38A / GEMINI
Aluminum Oxide

SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.	SPEC.	PART #	SPEC.	PART #	MIN./STD. PKG.	SPEC.	PART #
Type O5 Recessed One Side									
1-1/2 x 1 x 3/8 Recess 1/8 3/4 x 1/2	21,645	5/40			32A60-KVBE	66243427937			
2 x 1 x 3/8 Recess 1/8 3/4 x 1/2	16,235	5/40			32A60-KVBE	66243428329			
2 x 1-1/2 x 5/8 Recess 1/8 1 x 3/4	16,235	10/30			32A60-KVBE	66243428332			
7 x 3/4 x 1-1/4 Rec 1/8 2-3/4 x 1/4	3,600	1/10	5SG46-IVS	66252941976	32A46-HVBE	66252942209	1/10	38A46-IVBE	66252942222
	3,600	1/10	5SG46-IVS3	66243494097	32A46-IVBE	66252942211	1/10	38A60-IVBE	66252942225
	3,600	1/10	5SG60-IVS	66252942312	32A46-IVS3	66243495322			
	3,600	1/10			32A46-JVBE	66252942213			
	3,600	1/10			32A46-JVS3	66243495323			
	3,600	1/10			32A60-IVBE	66252942217			
	3,600	1/10			32A60-JVBE	66252942218			
	3,600	1/10			32A60-KVBE	66252942205			
7 x 3/4 x 1-1/4 Rec 1/8 3 x 1/4	3,600						10/10	Gemini 46-J	66253246826
	3,600						10/10	Gemini 60-J	66253246830
7 x 1 x 1-1/4 Rec 1/8 2-3/4 x 1/2	3,600	1/10	5NQ46-IVS3	66243495326	32A46-GVBEP	66252942826			
	3,600	1/10	3SGR46-HVP2	66252916228	32A46-HVBE	66252942688			
	3,600	1/10	5SG46-IVS	66252942318	32A46-HVBEP	66252942828			
	3,600	1/10	5SG46-IVS3	66243494098	32A46-IVBE	66252942691			
	3,600	1/10	5SG46-JVS	66252942427	32A46-KVBE	66252942708			
	3,600	1/10	5SG46-JVS3	66243494099	32A60-IVBE	66252942699			
	3,600	1/10	5SG60-JVS	66252942431	32A60-JVBE	66252942701			
	3,600	1/10	5SG60-JVS3	66243494100	32A60-KVBE	66252942703			
	3,600	1/10			48A46-HVP2	66252916232			
7 x 1 x 1-1/4 Rec 1/8 3 x 1/2	3,600	1/10	5NQ46-IVS	66253350691	32A46-HVBE	66252942689	1/10	38A46-HVBE	66252942707
	3,600	1/10	5SG46-IVS	66252901814	32A46-IVBE	66252942690	1/10	38A46-IVBE	66252942809
	3,600	1/10	5SG46-IVS3	66243494101	32A60-IVBE	66252942686	1/10	38A46-KVBE	66252942793
	3,600	1/10	5SG60-IVS	66252906907			1/10	38A60-IVBE	66252942815
	3,600	1/10	5SG60-IVS3	66243494102			1/10	38A60-JVBE	66252942816
	3,600						1/10	38A60-KVBE	66252942817
	3,600						10/10	Gemini 46-H	66253246831
	3,600						10/10	Gemini 46-J	66253246835
	3,600						10/10	Gemini 60-J	66253246839
7 x 1-1/4 x 1-1/4 Rec 1/8 2-3/4 x 5/8	3,600	1/5			32A46-HVBE	66252942833			
	3,600	1/5			32A60-IVBE	66252942859			
	3,600	1/5			32A60-JVBE	66252942835			
7 x 1-1/2 x 1-1/4 Rec 1/8 2-3/4 x 3/4	3,600	1/5			32A46-IVBE	66252942843			
	3,600	1/5			32A60-IVBE	66252942844			
8 x 3/4 x 1-1/4 Rec 1/8 3-1/4 x 1/4	3,105	1/10			32A46-IVBE	66253044213			
8 x 1 x 1-1/4 Rec 1/8 3 x 1/2	3,105						10/10	Gemini 46-H	66253246849
	3,600						10/10	Gemini 46-J	66253246850
8 x 1 x 1-1/4 Rec 1/8 3-1/4 x 1/2	3,105	1/10	5SG46-IVS	66253013543	32A46-IVBE	66253044790			
	+	1/10	5SG46-IVS3	66243494103	32A46-JVBE	66253044382			
	3,600	1/10	5SG46-JVS	66253003301	32A46-JVS3	66243495329			
	3,600	1/10	5SG46-JVS3	66243494104	32A60-IVBE	66253044753			
	3,600	1/10			32A60-IVS3	66243495330			
	3,600	1/10			32A60-KVBE	66253044810			
10 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	66253160189			

Continued

For non-stock toolroom wheels: if you don't see the toolroom wheel you need in our stock listing, call your local authorized Norton distributor to check our made-to-order non-stock availability – including our revolutionary new Quantum ceramic and Vitrium3 bond wheels.

Vitrified Wheels For Steel Applications (continued)



TIER: BEST	TIER: BETTER	TIER: GOOD
BRAND: Norton	BRAND: Norton	BRAND: Norton
TRADENAME: NORTON SG	TRADENAME: 32A / 48A	TRADENAME: 38A / 25A / 53A
ABRASIVE: Ceramic Alumina	ABRASIVE: Aluminum Oxide	ABRASIVE: Aluminum Oxide

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									
12 x 1-1/2 x 3 Rec 1/S 6 x 1/2	2,070	1			32A46-IVBE	66253263186			
12 x 1-1/2 x 5 Rec 1/S 7-1/2 x 1/2	• 2,070 2,070 2,070 2,070	1 1 1 1 1	3SGR46-HVP2 5SG46-GVSP 5SG46-GVS3P 5SG46-IVS 5SG46-IVS3	66253220904 66253263127 66243495374 66253202883 66243494105	32A46-HVBEP 32A46-IVBE 32A46-JVBE 32A46-KVBE 32A60-KVBE	66253263180 66253263166 66253263169 66253263170 66253263172	1	38A46-IVBE	66253263175
14 x 1-1/2 x 5 Rec 1/S 8 x 1/2	• • • 1,800 1,800 • 1,800 1,800	1 1 1 1 1 1 1	3SGR46-GVP2 3SGR46-HVP2 3SGR60-HVP2 5SG46-IVS 5SG46-IVS3 5SG46-JVS 5SG60-IVS 5SG60-JVS	66253319953 66253319954 66253319956 66253364102 66243494106 66253364103 66253364104 66253364105	32A46-HVBE 32A46-IVBE 32A46-KVBE 32A60-JVBE 32A60-KVBE 48A46-HVP2	66253364359 66253364300 66253364362 66253364364 66253364365 66253319958			
14 x 2 x 5 Rec 1/S 8 x 1/2	2,320 2,320 2,320	1 1 1	3SGR46-GVP2 3SGR46-HVP2	66253319936 66253319937	48A46-HVP2	66253319941	1 1 1	25A46-HVP2 38A46-HVP2 38A60-HVP2	66253319945 66253319949 66253319951
14 x 2 x 5 Rec 1/S 8 x 1	1,800 1,800	1 1			32A60-KVBE 32A60-LVBE	66253364390 66253364525			
<ul style="list-style-type: none"> • 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 									
Type 06 Straight Cup									
3-1/2 x 1-1/2 x 1/2 Rim 1/2" Back 1/2"	6,550						1/10	38A60-KVBE	66243529372
100mm x 50mm x 20mm Rim 10mm, Back 13mm	6,550						1/10	38A80-JVBE	66243530429
4 x 1-1/2 x 1/2 Rim 1/2" Back 1/2"	5,730	1/10			32A60-KVBE	66243530218			
4 x 1-1/2 x 1-1/4 Rim 1/2" Back 1/2"	5,730						1/10	38A60-KVBE	66243530221
4 x 2 x 20mm Rim 3/8" Back 1/2"	5,730						1/10	38A80-JVBE	66243530523
5 x 1-1/2 x 1-1/4 Rim 3/8" Back 3/8"	4,585	1/10			32A46-KVBE	66252830832	1/10	38A46-KVBE	66252830842
Face Y (ME19243)	4,585	1/10			32A60-JVBE	66252830837		38A60-KVBE	66252830846
5 x 2 x 5/8 Rim 1/2" Back 1/2"	4,585	1/10			32A60-KVBE	66252830838			
6 x 1-1/2 x 1/2 Rim 1" Back 1/2"	3,820	1/10			32A60-JVBE	66252830987			
6 x 2 x 1-1/4 Rim 1/2" Back 1/2"	3,820	1/10			32A46-KVBE	66252838458			
7 x 2 x 1-1/4 Rim 1/2" Back 1/2"	3,275	1/8			32A46-IVBE 32A60-JVBE	66252838544 66252838538	1/10	38A60-KVBE	66252838486
9-1/2 x 1-1/2 x 1-1/2 Rim 1-1/2" Back 5/8"	2,415						1	53A46-LVBE	66253149136
10 x 4 x 1-1/2 Rim 1-1/4" Back 1" Tape Wound	2,295						1	38A46-IVBE	66253161797
12 x 2-1/2 x 7 Rim 1-1/2" Back 7/8"	1,910	1			32A46-LVBE	66253263614			

For non-stock toolroom wheels: if you don't see the toolroom wheel you need in our stock listing, call your local authorized Norton distributor to check our made-to-order non-stock availability – including our revolutionary new Quantum ceramic and Vitrium3 bond wheels.

Vitrified Wheels For Steel Applications (continued)



TIER:	BEST	BETTER	GOOD
BRAND:	Norton	Norton	Norton
TRADENAME:	NORTON SG	32A	38A
ABRASIVE:	Ceramic Alumina	Aluminum Oxide	Aluminum Oxide

SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.	SPEC.	PART #	SPEC.	PART #	MIN./STD. PKG.	SPEC.	PART #
Type 07 Recessed Two Sides									
12 x 2 x 3	2,070	1			32A46-IVBE	66253263588			
Rec 2/S 5-1/2 x 3/8					32A46-IVS3	66243495383			
12 x 2 x 3	2,070	1			32A46-HVBE	66253263590			
Rec 2/S 7-1/4 x 1/2	2,070	1			32A46-HVS3	66243495377			
	2,070	1			32A46-JVBE	66253263348			
12 x 2 x 5	2,070	1			32A46-IVBE	66253263594			
Rec 2/S 7-1/4 x 1/2									
12 x 2 x 5	2,070	1	5SG46-JVS	66253209930	32A46-HVBE	66253263591	1	38A46-IVBE	66253263600
Rec 2/S 7-1/2 x 1/2	2,070	1			32A46-HVBEP	66253263603			
	2,070	1			32A46-JVBE	66253263483			
	2,070	1			32A46-KVBE	66253263596			
	2,070	1			32A60-IVBE	66253263597			
Type 11 Flaring Cup									
3/2-1/4 x 1-1/4 x 3/4	7,640	1/10			32A60-JVBE	66243529183	1/10	38A60-JVBE	66243529197
Rim 1/4" Back 3/8"	7,640	1/10			32A60-KVBE	66243529187			
Face Z (ME21560)	7,640	1/10			32A60-KVS3	66243495338			
3-1/2/2-3/4 x 1-1/2 x 1-1/4	7,640	1/10			32A60-KVBE	66243529358			
Rim 1/4" Back 3/8"									
Face Z (ME24327)									
4/3 x 1-1/2 x 1-1/4	5,730	1/5	5SG46-IVSP	66243530127	32A46-IVBE	66243530240	1/10	38A46-KVBE	66243530378
Rim 1/4" Back 1/2"	5,730	1/5	5SG46-KVS	66243503342	32A46-KVBE	66243530246	1/10	38A60-JVBE	66243530387
Face Z (ME19237)	5,730	1/5	5SG46-KVS3	66243495339	32A60-JVBE	66243530256	1/10	38A60-KVBE	66243530390
	5,730	1/5	5SG60-JVS	66243530415	32A60-KVBE	66243530361	1/10	38A80-JVBE	66243530393
	5,730	1/5	5SG60-JVS3	66243495342	32A60-KVS3	66243495345	1/10	38A80-KVBE	66243530395
	5,730	1/5	5SG60-LVS	66243530417	32A80-KVBE	66243530368			
	5,730	1/5	5SG80-JVS	66243530419					
	5,730	1/5	5SG80-KVS	66243530420					
4-1/2/3-3/4 x 2 x 1-1/4	5,730	1/5			32A46-KVBE	66252830539			
Rim 1/4"									
Back 1/2"(ME20115)									
5/3-3/4 x 1-3/4 x 1-1/4	4,585	1/5	5SG46-KVS	66252803291	32A46-JVBE	66252830858	1/5	38A46-KVBE	66252830971
Rim 1/4" Back 1/2"	4,585	1/5	5SG60-KVS	66252830737	32A46-KVBE	66252830859	1/5	38A60-JVBE	66252830973
Face Z (ME21563)	4,585	1/5	5SG60-KVS3	66243495574	32A46-KVS3	66243495576	1/5	38A60-KVBE	66252830975
	4,585	1/5	5SG60-LVS	66252830736	32A60-JVBE	66252830962			
	4,585	1/5			32A60-KVBE	66252830964			
6/4-1/2 x 2 x 1-1/4	3,820	1/5			32A46-JVBE	66252838491	1/5	38A46-KVBE	66252838495
Rim 3/8" Back 1/2"	3,820	1/5			32A46-KVBE	66252838528	1/5	38A60-KVBE	66252838497
Face Z (ME19241)	3,820	1/5			32A60-JVBE	66252838492			
7/5 x 2 x 1-1/4	3,275	1/8			32A46-JVBE	66252942959	1/8	38A46-HVBE	66252942963
Rim 3/4" Back 1/2"									
(ME19242)									

For non-stock toolroom wheels: if you don't see the toolroom wheel you need in our stock listing, call your local authorized Norton distributor to check our made-to-order non-stock availability – including our revolutionary new Quantum ceramic and Vitrium3 bond wheels.

To maximize the performance of these wheels and finished part quality, refer to the beginning of this section and the "Diamond Tool" and "Dressing Sticks" sections for truing and dressing products.

Vitrified Wheels For Steel Applications (continued)



TIER:	BEST	BETTER
BRAND:	Norton	Norton
TRADENAME:	NORTON SG	32A
ABRASIVE:	Ceramic Alumina	Aluminum Oxide

TIER:	GOOD
BRAND:	Norton
TRADENAME:	38A
ABRASIVE:	Aluminum Oxide

SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.	SPEC.	PART #	SPEC.	PART #	MIN./STD. PKG.	SPEC.	PART #
Type 12 Dish									
4 x 1/2 x 3/4 (ME19226)	6,207	1/10			32A60-KVBE	66243530067			
6 x 1/2 x 1-1/4 (ME19229)	4,140	1/10	5SG60-LVS	66252836574	32A46-JVBE	66252836860	1/10	38A60-JVBE	66252836977
	4,140	1/10			32A60-JVBE	66252836966			
6 x 3/4 x 1-1/4 (ME19230)	4,140	1/10	5SG60-KVS	66252837771	32A46-KVBE	66252837732			
	4,140	1/10			32A60-JVBE	66252837734			
	4,140	1/10			32A60-KVBE	66252837735			
7 x 1/2 x 1-1/4 (ME13717)	3,600	1/10			32A46-KVBE	66252941644			
	3,600	1/10			32A60-KVBE	66252941647			
8 x 3/4 x 1-1/4 (ME19231)	3,600						1/10	38A60-KVBE	66253044319
10 x 1 x 1 (ME38702)	2,485	1			32A54-JVBE	66253161196			
10 x 1 x 1-1/4 (ME38702)	2,485	1			32A54-JVBE	66253161197			
Type 20 Concave One Side									
14 x 1-1/2 x 5	1,800	1	5SG60-JVS	66253302265	32A60-JVBE	66253364250			
Concave from Periphery	1,800	1			32A60-KVBE	66253364332			
1/2" Deep to 8" Flat Spot	1,800	1			32A60-LVBE	66253364375			
Type 35 Plate Mounted Disc									
9 x 2 x 4-15/16	2,550	1			32A46-MVBE	66253049115			
Rim 2-1/32" (ME31130)	2,550	1			32A60-J25VCF2	66253006557			
Plate A47248	2,550	1			32A70-JVBEP	66253049112			

For non-stock toolroom wheels: if you don't see the toolroom wheel you need in our stock listing, call your local authorized Norton distributor to check our made-to-order non-stock availability – including our revolutionary new Quantum ceramic and Vitrium3 bond wheels.

To maximize the performance of these wheels and finished part quality, refer to the beginning of this section and the "Diamond Tool" and "Dressing Sticks" sections for truing and dressing products.



These sharp silicon carbide, vitrified wheels are used for grinding non-steel applications.

- Applications:** 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).
- Shapes:** Type 01 Straight, Type 02 Cylinder, and Type 05 Recessed 1 Side
- Size Range:** 3" – 14" diameter
- Grit Range:** 24 – 120
- Abrasive Grain:** 39C Green Silicon Carbide, 37C Black Silicon Carbide



Vitrified Wheels For Non-Steel Applications

TIER: GOOD
BRAND: Norton
TRADENAME: 39C / 37C
ABRASIVE: Silicon Carbide

TIER: GOOD
BRAND: Norton
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-MVK	66243529041
3 x 1 x 1/2	10,825	10/10	37C60-MVK	66243529166
	10,825	10/10	37C80-HVK	66243529170
	10,825	10/10	37C80-MVK	66243529171
	10,825	10/10	37C100-HVK	66243529172
	10,825	10/10	37C100-MVK	66243529070
3-1/2 x 1-1/2 x 7/8 (ME622)	7,095	1/10	37C24-SVK	66243529339
	7,095	1/10	37C30-SVK	66243529338
4 x 1/2 x 1/2	8,120	1/10	37C60-MVK	66243529960
	8,120	1/10	39C100-IVK	66243530064
6 x 1/2 x 1-1/4	4,140	1/10	39C60-IVK	66252836706
	4,140	1/10	39C80-IVK	66252836816
	4,140	1/10	39C100-IVK	66252836827
	4,140	1/10	39C120-IVK	66252836836
6 x 3/4 x 1-1/4	4,140	1/10	39C60-IVK	66252837584
	4,140	1/10	39C80-IVK	66252837598
	4,140	1/10	39C100-IVK	66252837717
	4,140	1/10	39C60-IVK	66252838161
7 x 1/4 x 1-1/4	3,600	1/10	39C80-JVK	66252940007
	3,600	1/10	39C100-IVK	66252940109
7 x 1/2 x 1-1/4	3,600	1/10	39C120-IVK	66252940111
	3,600	1/10	37C46-JVK	66252941488
	3,600	1/10	37C60-OVK	66252941498
	3,600	1/10	39C60-IVK	66252941609
	3,600	1/10	39C60-JVK	66252941611
	3,600	1/10	39C60-KVK	66252941613
	3,600	1/10	39C80-IVK	66252941617
	3,600	1/10	39C80-JVK	66252941618
	3,600	1/10	39C100-HVK	66252941622
	3,600	1/10	39C100-IVK	66252941624
7 x 3/4 x 1-1/4	3,600	1/10	39C120-IVK	66252941632 B
	3,600	1/10	39C80-JVK	66252942096
	3,600	1/10	39C100-JVK	66252942104
7 x 1 x 1-1/4	3,600	1/10	39C60-IVK	66252942666
	3,600	1/10	39C80-IVK	66252942413
	3,600	1/10	39C120-IVK	66252942416
8 x 1/4 x 1-1/4	3,600	1/10	39C80-IVK	66253014526
8 x 3/8 x 1-1/4	3,600	1/10	39C80-IVK	69936664144
8 x 1/2 x 1-1/4	3,600	1/10	39C60-IVK	66253044013
	3,600	1/10	39C80-IVK	66253044015
	3,600	1/10	39C100-IVK	66253044017 B
	3,600	1/10	39C60-JVK	66253044312
8 x 3/4 x 1-1/4	3,600	1/10	39C80-IVK	66253350645
	3,600	1/10	39C100-IVK	66253044314

SIZE (D x T x H)	MAX. RPM	MIN./STD. PKG.	SPEC.	PART #
Type 01 Straight				
8 x 1 x 1-1/4	3,600	1/10	39C60-JVK	66253044770
	3,600	1/10	39C80-IVK	66253044425 B
	3,600	1/10	39C100-IVK	66253044379
10 x 1 x 3	2,485	1	39C60-JVK	66253160348
10 x 1-1/2 x 2	2,485	1	39C60-JVK	66253161640
12 x 1 x 3	2,070	1	39C60-IVK	66253262985
12 x 1 x 5	2,070	1	39C60-IVK	66253262884
	2,070	1	39C80-JVK	66253262988
14 x 1 x 5	1,800	1	39C60-JVK	66253364206
	1,800	1	39C80-JVK	66253364208
14 x 1-1/2 x 5	1,800	1	39C60-JVK	66253364242
	1,800	1	39C60-JVK	66253364322
Type 02 Cylinder				
6 x 1 x 4	3,600	1/10	39C60-IVK	66252838322
Rim 1"	3,600	1/10	39C60-JVK	66252838324
Plate A47466	3,600	1/10	39C80-IVK	66252838327
	3,600	1/10	39C100-IVK	66252838330
	3,600	1/10	39C120-IVK	66252838193
6 x 1-1/4 x 4	3,600	1/10	39C60-IVK	66252838345
Rim 1"				
Plate A47466				
7 x 1-1/2 x 5	3,600	1/8	39C60-IVK	66252942848
Rim 1"				
Plate A39027				
10 x 2 x 7	2,100	1	39C60-HVK	66253161675
Rim 1-1/2"	2,295	1	39C60-JVK	66253161678
Plate A83831	2,295	1	39C120-IVK	66253161784
14 x 4 x 11	1,640	1	39C60-JVK	66253364657
Rim 1-1/2"				
Plate A52814				
Tape Wound				
Type 05 Recessed One Side				
14 x 1-1/2 x 5	1,800	1	39C60-IVK	66253364328
Rec 1/S 8 x 1/2				

B = Best Seller; performs well in a variety of applications for many satisfied customers

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:
- Producing flat stock
 - Grinding large molds and dies
 - Sharpening knives, blades and cutlery
 - Manufacturing broaches
- Shape: Type 01 Straight, Type 05 Recessed 1 Side, Type 07 Recessed 2 Sides
- Size Range: Stock: 20" diameter
1" – 6" thickness
- Abrasive Grain: Aluminum Oxide

CROSS REFERENCE GUIDE

NORTON	GOOD GEMINI
Camel	91A
Cincinnati Milacron	29A, 97A
Radiac	WAA, 97A, 45A

NORTON GEMINI ALUMINUM OXIDE BLEND

GOOD CHOICE WHEN A BROAD RANGE OF PARTS ARE GROUND ON A FEW MACHINES

FEATURES

- Specially blended aluminum oxide abrasive for many surface grinding applications
- Porous bond
- Versatile

BENEFITS

- Consistent performance at an economical price
- Faster grinding rates remove stock; lower rates produce finer finishes
- Cool cutting on medium to wide contact areas; high chip clearance and stock removal
- Ideal when a broad range of tool steel parts are ground on a few machines

TIER: **GOOD**

TRADENAME: **NORTON GEMINI**

ABRASIVE: Aluminum Oxide

SIZE (D x T x H)	RECESS	MAX. RPM	STD. PKG.	SPEC.	PART #
Type 01 Straight Wheels					
20 x 1 x 8	—	1,625	1	Norton Gemini A46-H	66253246937
20 x 2 x 10	—	1,625	1	Norton Gemini A36-J	66253246956
Type 05 Recessed One Side Wheels					
20 x 1-1/2 x 8	Recess 1 Side 11-1/2 x 1/2	1,625	1	Norton Gemini A46-H	66253246941
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	66253246949
	Recess 2 Sides 11-1/2 x 1/2	1,625	1	Norton Gemini A46-G VSP	66253246953
20 x 3 x 8	NEW! Recess 2 Sides 11-1/2 x 1/2	1,625	1	Norton Gemini A36-J/K P	66253246965
	Recess 2 Sides 11-1/2 x 1/2	1,625	1	Norton Gemini A46-G VSP	66253246972
	NEW! Recess 2 Sides 11-1/2 x 1/2	1,625	1	Norton Gemini A46-I	66253246960
20 x 3 x 10	NEW! Recess Side A 12-1/2 x 1/2, Side B 12-1/2 x 1	1,625	1	Norton Gemini A46-G P	66253246995
	Recess Side A 12-1/2 x 1/2, Side B 12-1/2 x 1	1,625	1	Norton Gemini A46-I	66253246978
	Recess 2 Sides 12-1/4 x 3/4	1,625	1	Norton Gemini 59A46-I VSP	66253058315
	Recess Side A 12-1/2 x 1/2, Side B 12-1/2 x 1	1,625	1	Norton Gemini A36-J VSP	66253246980
	Recess Side A 12-1/2 x 1/2, Side B 12-1/2 x 1	1,625	1	Norton Gemini A46-D VSP	66253246988
20 x 4 x 8	NEW! Recess 2 Sides 11-1/2 x 1/2	1,625	1	Norton Gemini A46-G P	66253247012
20 x 4 x 10	NEW! Recess Side A 12-1/2 x 5/8, Side B 12-1/2 x 1-1/4	1,625	1	Norton Gemini A46-I	66253247017
20 x 6 x 12	NEW! Recess 2 Sides 14-1/4 x 1	1,625	1	Norton Gemini A36-J/K P	66253247038

There are many more sizes and specifications available made-to-your-order. Contact your Norton representative with your custom requirements.

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
Sharpening knives, blades, cutlery

Abrasive Grain: Ceramic Alumina, Aluminum Oxide



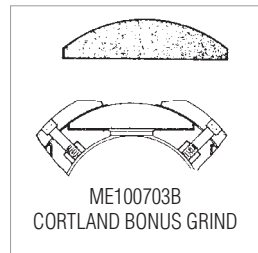
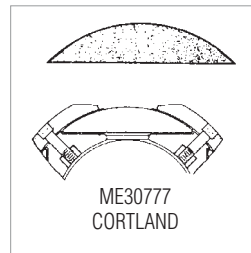
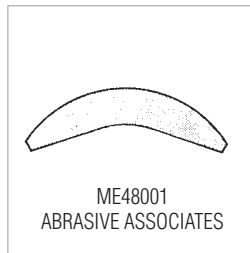
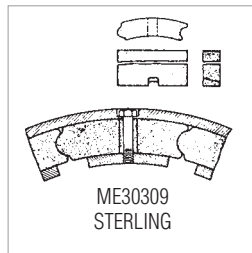
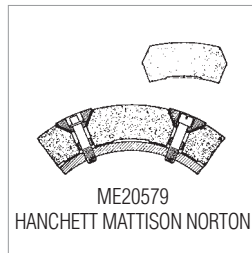
MATERIAL-TO-PRODUCT RECOMMENDATION GUIDE

Material	Heavy-Duty	General-Duty
Aluminum	86A30-E20VTX2	Norton Gemini 30-E
Bronze (hard)		Norton Gemini 30-G
Cast Iron	QuantumX 20-G	Norton Gemini 30-G
Hastalloy	86A24-G20VTX2	Norton Gemini 30-E
Inconel	QuantumX 30-F	Norton Gemini 30-E
Hardened Steel	QuantumX 20-G	Norton Gemini 30-E
High Speed Steel	QuantumX 20-G	Norton Gemini 30-E
Soft Steel	86A24-G20VTX2	Norton Gemini 30-G
Stainless Steel 300	86A30-E20VTX2	Norton Gemini 30-E
Stainless Steel 400	86A30-E20VTX2	Norton Gemini 30-F

TROUBLESHOOTING GUIDE

PROBLEM	CORRECTION
Segment acting too hard	Increase rate of downfeed
	Increase table rotation speed (watch amp-meter)
	Dress more frequently
Segment acting too soft	Consider reducing area of table load
	Decrease rate of downfeed
	Decrease table rotation speed
Glazing and/or burning	Check for abnormal machine vibration
	Choose a softer grade
	Increase table speed (watch amp-meter)

SEGMENT BLUEPRINTS



NORTON QUANTUM AND QUANTUMX CERAMIC ALUMINA

BEST CHOICE FOR ALL LOW-, MEDIUM-, AND HIGH-FORCE APPLICATIONS RANGING FROM CAST IRON, TO STAINLESS STEEL AND HARD-TO-GRIND ALLOYS

FEATURES

- Revolutionary, engineered ceramic grain shape and chemistry with proven bond technology
- Perform well on old and new machines
- QuantumX with controlled porosity Vitrium³ bond

BENEFITS

- Versatile; for applications ranging from cast iron, to stainless steel and hard-to-grind alloys
- 33% to 100% longer life versus competitive ceramic products
- 30%+ higher metal removal rate
- 15%+ lower threshold power
- Lowest total grinding costs
- 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



NORTON 86A ALUMINUM OXIDE

BETTER CHOICE FOR VERSATILE, CONSISTENT PERFORMANCE

FEATURES

- Sharper aluminum oxide abrasive
- VTX2 Vitrium 3 bond

BENEFITS

- Cooler cutting
- 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



NORTON GEMINI ALUMINUM OXIDE BLEND

GOOD CHOICE WHEN A BROAD VARIETY OF PARTS ARE GROUND ON A FEW MACHINES

FEATURES

- Quality aluminum oxide abrasive blend

BENEFITS

- Excellent value for general purpose use, and for the account where initial price is a main purchasing consideration



TIER: **BEST**
 TRADENAME: **NORTON QUANTUM/QUANTUMX**
 ABRASIVE: Ceramic Alumina

TIER: **BETTER**
 TRADENAME: **NORTON 86A**
 ABRASIVE: Aluminum Oxide

TIER: **GOOD**
 TRADENAME: **NORTON GEMINI**
 ABRASIVE: Aluminum Oxide Blend

WIDTH	THICK	HEIGHT	BLUEPRINT NO.	STD. PKG.	SPEC.	UPC NO.	SPEC.	UPC NO.	SPEC.	UPC NO.
5	1-1/2	6	ME20579	8	QUANTUMX 20-G	66253350603	86A24-G20VTX2	66253350601	Gemini 30-E	66253050295
				8	QUANTUMX 20-H	66253350604	86A24-H20VTX2	66253350602	Gemini 30-F	66253050297
				8			86A30-F12VBEP	61463650273	Gemini 30-G	66253050299
6-13/16	1-1/2	6	ME30309	8			86A24-G20VTX2	66253350595		
				8			86A24-H20VTX2	66253350596		
11	2-1/8	6	ME48001	5			86A24-G20VTX2	66253350586		
				5			86A24-H20VTX2	66253350590		
11-1/4	2-1/4	6	ME30777	5	QUANTUMX 20-G	66253350607	86A24-E12VBEP	61463650279	Gemini 30-E	69936699706
				5	QUANTUMX 20-H	66253350608	86A24-G20VTX2	66253350605	Gemini 30-F	69936699709
				5	3NQP36-G12VSP	66253251527	86A24-H20VTX2	66253350606	Gemini 30-G	69936699710
				5			86A30-E12VBEP	61463650285	Gemini 30-H	66243447588
				5			86A30-F12VBEP	61463650287		
				5			86A30-G12VBEP	61463650289		
11-1/4	2-1/4	8	ME30777	5	QUANTUMX 20-G	66253350612	86A24-G20VTX2	66253350609	Gemini 30-E	69936699712
				5	QUANTUMX 20-H	66253350615	86A24-H20VTX2	66253350610	Gemini 30-F	69936699716
				5	QUANTUMX 30-E	66253387810	86A30-E20VTX2	66253387812	Gemini 30-G	69936699717
				5	QUANTUMX 30-F	66253387811	86A30-F20VTX2	66253387813	Gemini 30-H	66243447591
				5	3NQP30-F12VSP	66253238276			Gemini 30-I	66243447592
				5					Gemini 30-E	69936699725
11-1/4	3	8	ME100703B	4	QUANTUMX 20-G	66253350623	86A24-G20VTX2	66253350617	Gemini 30-F	69936699727
				4	QUANTUMX 20-H	66253350624	86A24-H20VTX2	66253350621	Gemini 30-G	69936699728
				4	QUANTUMX 30-E	66253387808			Gemini 30-H	66243447594
				4	QUANTUMX 30-F	66253387809			Gemini 30-I	66243447595
				4	3NQP30-F12VSP	69083156473			Gemini 30-K	66253344077
				4						
	1-5/8			10	Vitrified Burr Remover	61463650268*				

*Minimum Quantity = 2

TECH 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

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, and toolroom

Shape: Type 01 Straight, Type 05 Recessed One Side, and Type 07 Recessed 2 Sides

Size Range: 16", 18", 20", 24" and 30" diameter

Abrasive Grain: Ceramic Alumina and Aluminum Oxide



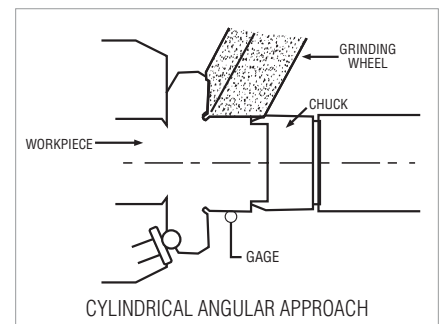
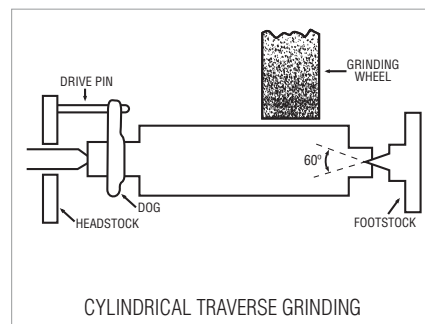
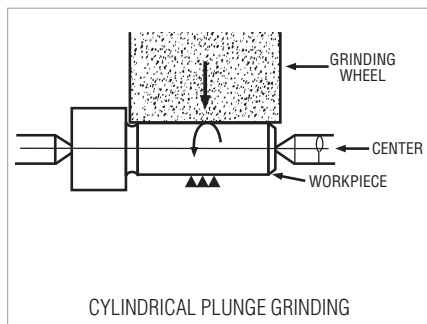
STATIONARY DRESSING TOOL RECOMMENDATIONS FOR CYLINDRICAL WHEELS

Grinding Wheel Diameter	Diamond Carat Weight	Single Point		Multi-Point (Grit)			Tool Product/Part #		Shape	
		Tool Product/Part #	0° Angle	Tool Product/Part #	Shape	Tool Product/Part #	15° Angle	Shape		
16" - 20"	3/4	BC7M7	66260195007	BC62	66260195012	1/4 x 1/2 Rect.	BC63	66260195013	1/4 x 1/2 Rect.	
		NS7M7	66260195132	2A6D7	66260195046		2A6E7	66260195049		
21" +	1	BC10M7	66260195009	BC61	66260195011	1/4 x 3/4 Rect.	BC60	66260195010	1/4 x 3/4 Rect.	
		NS10M7	66260195137	1A6A7	66260195031		1A6C7	66260195039		

NS Single Point Diamond Tools are resetaable. BC Diamond Tools are not resetaable. 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



NORTON 5SG CERAMIC ALUMINA/ALUMINUM OXIDE BLEND

BEST CHOICE FOR HIGHEST PRODUCTIVITY, LOWEST TOTAL PER-PART GRINDING COST

FEATURES

- Durable Norton SG seeded gel ceramic and aluminum oxide blend
- Self-sharpening abrasive

BENEFITS

- High stock removal rates, excellent productivity, long wheel life, low overall grinding cost
- 3X - 5X more life than aluminum oxide wheels
- Cool cutting; less burn, less dressing; very consistent performing wheel

NORTON 32A ALUMINUM OXIDE

BETTER CHOICE FOR MEDIUM TO HEAVY STOCK REMOVAL

FEATURES

- Sharp monocrystalline aluminum oxide grain – the industry's most versatile abrasive

BENEFITS

- Free cutting on a wide range of applications and materials
- Outstanding form holding

NORTON 86A ALUMINUM OXIDE

BETTER CHOICE FOR LONGER WHEEL LIFE

FEATURES

- Premium abrasive; superior bond system
- Engineered for easy use

BENEFITS

- High grinding G-Ratios (metal removal/wheel wear) increase productivity
- Decrease in dress frequency and/or dress compensation
- Less wheel dressing means lower abrasive costs
- Hold form for better part geometry
- Grind cycles do not need to be altered
- No special operator training is needed

NORTON 64A ALUMINUM OXIDE BLEND

GOOD CHOICE FOR VERSATILE PERFORMANCE AT AN ECONOMICAL PRICE

FEATURES

- Specially blended aluminum oxide abrasive coupled with a superior bond
- Broad availability
- Versatile

BENEFITS

- Will maintain high grinding rates without wheel breakdown
- Quick delivery on popular sizes
- Engineered to grind a variety of materials

NORTON GEMINI ALUMINUM OXIDE

GOOD CHOICE FOR USE ON GENERAL PURPOSE APPLICATIONS; ECONOMICAL

FEATURES

- Durable aluminum oxide abrasive and strong vitrified bond – Blue
- Versatile, economical

BENEFITS

- Consistent stock removing performance on narrow to medium contact areas; cool cutting
- Ideal when numerous small jobs are run in one facility

NORTON GEMINI2 ALUMINUM OXIDE

GOOD CHOICE FOR SMALLEST VOLUME, LOWEST INITIAL PRICE APPLICATIONS

NEW

FEATURES & BENEFITS

- Quality aluminum oxide abrasive blend and a durable bond system deliver an efficient cut rate and grinding wheel life to your low-volume precision operations
- Low-initial-priced, made-in-USA wheels are ideal for small-sized manufacturing facilities that perform a variety of jobs on a few machines
- Carefully chosen, versatile specifications and sizes meet many cylindrical grinding applications
- Easy to spec with little to no technical support.

SIZE (D x T x H)	TIER: BEST ABRASIVE: 5SG Ceramic Alumina / Aluminum Oxide			BETTER 32A, 86A Aluminum Oxide		GOOD 64A, Gemini, or Gemini2 Aluminum Oxide		
	STD. PKG.	SPEC.	PART #	SPEC.	PART #	SPEC.	PART #	
Type 01 Straight 16 x 1 x 5								
	1	5SG60-JVS	66253467007	32A60-J8VBE	66253464836		64A60-K8V127	66253466722
	1			32A60-K5VBE	66253464837		Gemini2 60-I	66243497801
	1						Gemini2 60-K	66243495077
	1						Gemini2 60-M	66243497802
	1						Gemini2 100-I	66243497804
	1						Gemini2 100-K	66243497806
16 x 1 x 8	1			32A60-K5VBE	66253464826	Gemini2 100-M	66243497807	
16 x 1-1/2 x 5	1	5SG60-KVS	66253467010	32A46-H8VBE	66253464925			
16 x 2 x 5	1			32A46-J8VBE	66253464995	64A60-K8V127	66253466721	
	1			32A60-K5VBE	66253464960	Gemini2 60-I	66243497810	
	1					Gemini2 60-K	66243495078	
	1					Gemini2 100-I	66243497812	
16 x 3 x 5	1					Gemini2 100-K	66243497815	
	1					Gemini2 60-I	66243497820	
	1					Gemini2 100-I	66243497821	
18 x 1 x 5	1					Gemini2 60-I	66243483777	
	1					Gemini2 60-K	66243497610	
	1					Gemini2 60-M	66243497611	
	1					Gemini2 100-I	66243497612	
	1					Gemini2 100-K	66243497613	
	1					Gemini2 100-M	66243497615	
	1					64A60-K8V127	66253466719	
18 x 2 x 5	1					Gemini2 60-I	66243483779	
	1					Gemini2 60-K	66243497618	
	1					Gemini2 100-I	66243497619	
	1					Gemini2 100-K	66243497620	
18 x 3 x 5	1					Gemini2 60-I	66243483780	
	1					Gemini2 100-I	66243497621	
20 x 1 x 8	1			86A60-J8V127	69078608982	Gemini2 60-I	66243483782	
	1			86A80-J8V127	69078608983	Gemini2 60-K	66243497840	
	1					Gemini2 60-M	66243497841	
	1					Gemini2 100-I	66243497842	
	1					Gemini2 100-K	66243497843	
	1					Gemini2 100-M	66243497846	
20 x 1 x 10	1					Gemini2 60-I	66243495332	
	1					Gemini2 60-K	66243497789	
	1					Gemini2 60-M	66243497791	
	1					Gemini2 100-I	66243497793	
	1					Gemini2 100-K	66243497796	
	1					Gemini2 100-M	66243497798	
	1					Gemini2 60-I	66243483787	
20 x 1 x 12	1					Gemini2 60-K	66243497827	
	1					Gemini2 60-M	66243497831	
	1					Gemini2 100-I	66243497835	
	1					Gemini2 100-K	66243497837	
	1					Gemini2 100-M	66243497838	
	1							
20 x 1-1/2 x 5	1			32A46-H8VBE	69078665382			
20 x 2 x 5	1					64A60-J8V127	69078666713	
20 x 2 x 8	1			32A46-I8VBE	69078665433	64A60-K8V127	69078666712	
	1			32A60-K5VBE	69078665490	Gemini2 60-I	66243483785	
	1					Gemini2 60-K	66243497855	
	1					Gemini2 100-I	66243497856	
	1					Gemini2 100-K	66243497857	
	1					Gemini 60-J	66253246959	
20 x 2 x 10	1					Gemini2 60-I	66243495334	
	1					Gemini2 60-K	66243497848	
	1					Gemini2 100-I	66243497849	
	1					Gemini2 100-K	66243497850	
20 x 2 x 12	1			32A46-I8VBE	69078665455	Gemini2 60-I	66243483788	
	1					Gemini2 60-K	66243497851	
	1					Gemini2 100-I	66243497852	
	1					Gemini2 100-K	66243497854	

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. Our revolutionary Norton Quantum and Vitrium³ bond ceramic wheels bring a quantum leap in technology to your operation. See 55A and Quantum Blank Stock FastTrack Service catalog sections for more details.

		TIER: BEST		BETTER		GOOD	
		ABRASIVE: 5SG Ceramic Alumina / Aluminum Oxide		32A, 86A Aluminum Oxide		64A, Gemini, or Gemini2 Aluminum Oxide	
SIZE (D x T x H)	STD. PKG.	SPEC.	PART #	SPEC.	PART #	SPEC.	PART #
Type 01 Straight							
20 x 3 x 8	1					64A46-I8V127	69078666447
	1					64A60-J8V127	69078608140
	1					Gemini2 60-I	66243483786
	1					Gemini2 100-I	66243497862
20 x 3 x 10	1					Gemini2 60-I	66243495333
	1					Gemini2 100-I	66243497859
20 x 3 x 12	1					Gemini2 60-I	66243483789
	1					Gemini2 100-I	66243497860
24 x 1 x 12	1					Gemini2 60-I	66243483790
	1					Gemini2 60-K	66243497863
	1					Gemini2 100-I	66243497866
	1					Gemini2 100-K	66243497868
24 x 2 x 12	1					Gemini2 100-M	66243497870
	1					64A60-K8V127	69083166710
	1					64A80-K8V127	69083166711
	1					Gemini2 60-I	66243483792
	1					Gemini2 60-K	66243497872
	1					Gemini2 100-I	66243497873
	1					Gemini2 100-K	66243497874
24 x 3 x 12	1					Gemini2 60-I	66243483793
	1					Gemini2 100-I	66243497877
30 x 2 x 12	1					64A60-J8V127	69210466704
	1					Gemini2 60-J	66243497878
	1					Gemini2 60-L	66243497986
30 x 3 x 12	1					64A60-J8V127	69210466697
	1					64A60-K8V127	69210466698
	1					Gemini2 60-J	66243497987
	1					Gemini2 60-L	66243497988
30 x 4 x 12	1					64A60-J8V127	69210401774
	1					Gemini2 60-J	66243497989
	1					Gemini2 60-L	66243497990
Type 07 Recessed Two Sides							
18 x 2 x 8	1			32A46-I8VBE	66253465110		
Rec 2/S 10-1/2 x 1/2							
20 x 2 x 8	1			32A46-I8VBE	69078665537		
Rec 2/S 11-1/2 x 1/2							
20 x 3 x 8	1			32A46-I8VBE	69078665686		
Rec 2/S 11-1/4 x 1/2							
20 x 3 x 8	1					Gemini 46-H	66253246969
Rec 2/S 11-1/2 x 1/2							
20 x 3 x 10	1			32A46-I8VBE	69078665575		
Rec 2/S 12-1/4 x 5/8							
20 x 6 x 10	1			32A46-I8VBE	69078665854		
Rec Side A 12-1/4 x 2							
Rec Side B 12-1/4 x 1							

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. Our revolutionary Norton Quantum and Vitrium³ bond ceramic wheels bring a quantum leap in technology to your operation. See 55A and Quantum Blank Stock FastTrack Service catalog sections for more details.

TECH TIP

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

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:
- High production operations on large volume continuous grinding
 - Parts ranging from miniature roller bearings to train axles and bearings
 - Fastener and tool manufacturing
 - Steel mills
 - Automotive related components
 - Bearing
 - Machine tools
 - Aircraft
 - Turbine blades – land- and air-based

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

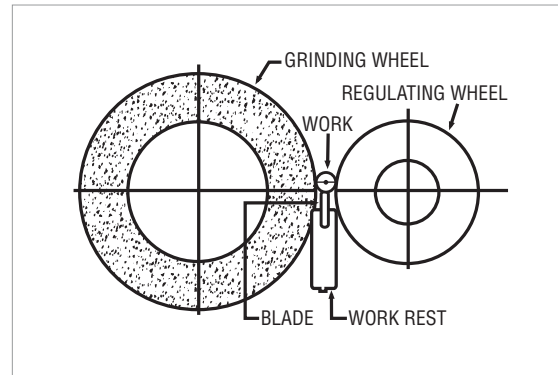
Abrasive Grain: Aluminum Oxide, Aluminum Oxide/Silicon Carbide Blend



MATERIAL-TO-PRODUCT RECOMMENDATION GUIDE

Application	Wheel Specifications
Alnico	55A60-KVS3, 32AC54-QB
Cast Iron	55A60-KVS3, 32AC54-QB
Hastalloy	55A60-KVS3
Inconel	55A60-KVS3
Stainless	55A60-KVS3
Stainless – 300 series	55A60-KVS3
Stainless – 400 series (commercial finish)	55A60-KVS3
Steel – Hard or Soft	
Less than 1/2" diameter	55A80-LVS3
5/8" to 2-1/2" diameter	55A60-KVS3
Over 2-1/2" diameter	55A60-KVS3, 2NQMC54-QB45
High Speed (commercial finish)	55A60-KVS3, 2NQMC54-QB45
High Speed (fine finish)	32AC90-QB

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



STATIONARY DRESSING TOOL RECOMMENDATIONS FOR CENTERLESS WHEELS

Grinding Wheel Diameter	Diamond Carat Weight	Single Point		Indexable Single Point		Multi-point (Grit)	
		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 66260195096		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 66260195046	Rectangle	2A6E7 66260195049	Rectangle
21" +	1	BC10M7 66260195009	N/A	BC61 66260195011	1/4 x 3/4	BC60 66260195010	1/4 x 3/4
		NS10M7 66260195137	NSUD10 66260195165	1A6A7 66260195031	Rectangle	1A6C7 66260195039	Rectangle

STATIONARY DRESSING TOOL RECOMMENDATIONS FOR FEED WHEELS

Feed Wheel Diameter	Tool Carat Weight	Tool Shank Diameter	Indexable Single Point	
			Tool Product #	Tool Part #
Up to 14"	1/2	7/16"	NSUD5	66260195163

NORTON QUANTUM (2NQ) CENTURY45 CERAMIC ALUMINA

BEST CHOICE FOR CAST IRON TO STAINLESS AND HARD-TO-GRIND MATERIALS AND ALLOYS (TITANIUM, INCONEL...)

NEW

FEATURES & BENEFITS

- Proprietary Century45 2NQ ceramic abrasive and resin bond formulation engineered specifically to maximize productivity of centerless applications
- Wheel life increase from 30%–100+% versus standard ceramic wheels
- Over 30% improvement of stock removal
- Up to 50% reduction in cycle time
- Less grinding noise significantly improves operator safety
- More versatility to grind a wide range of materials
- Improved surface finish on the part

55A-VS3 ALUMINUM OXIDE

BETTER CHOICE FOR PERFORMANCE TO PRICE RATIO

FEATURES & BENEFITS

- Advanced combination of monocrystalline 55A aluminum oxide and coolest cutting, high-speed, precise form holding, controlled porosity Norton Vitrium 3 VS3 bond
- Superior performance on throughfeed grinding applications with 2X+ the life of competitive aluminum oxide wheels
- Ideal for simple- to complex-shaped components
- Increased productivity; more quality parts at low cost per part

32AC ALUMINUM OXIDE / SILICON CARBIDE BLEND

BETTER CHOICE WHEN ONE WHEEL IS USED TO GRIND SEVERAL DIFFERENT MATERIALS

FEATURES & BENEFITS

- 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
- Proprietary Century45 32AC aluminum oxide/silicon carbide abrasive blend and resin bond formulation engineered specifically to increase productivity and part quality of medium volume centerless applications

NEW

57A ALUMINUM OXIDE WITH FINE/HARD SIDE

GOOD CHOICE FOR HARD-TO-GRIND FASTENERS

FEATURES & BENEFITS

- Durable, aluminum oxide abrasive with a strong vitrified bond for cool cutting with consistent stock removing performance on narrow-to-medium contact areas
- 3/16" thick fine/hard side provides good form holding while grinding stainless and Inconel fasteners

64A ALUMINUM OXIDE BLEND

GOOD CHOICE FOR GRINDING A VARIETY OF MATERIALS, ECONOMICALLY

FEATURES & BENEFITS

- Specially blended aluminum oxide abrasive coupled with a superior vitrified bond will maintain high grinding rates without wheel breakdown
- Broad availability for quick delivery on popular sizes
- Versatile; engineered to grind a variety of materials

NORTON GEMINI ALUMINUM OXIDE

GOOD CHOICE FOR USE ON GENERAL PURPOSE APPLICATIONS; ECONOMICAL

FEATURES

- Durable aluminum oxide abrasive and strong vitrified bond – Blue
- Versatile, economical

BENEFITS

- Consistent stock removing performance on narrow to medium contact areas; cool cutting
- Ideal when numerous small jobs are run in one facility

NORTON GEMINI2 ALUMINUM OXIDE

GOOD CHOICE FOR SMALLEST VOLUME, LOWEST INITIAL PRICE APPLICATIONS **NEW**

FEATURES & BENEFITS

- Quality aluminum oxide abrasive blend and a durable bond system deliver an efficient cut rate and grinding wheel life to your low-volume precision operations
- Low-initial-priced, made-in-USA wheels are ideal for small-sized manufacturing facilities that perform a variety of jobs on a few machines
- Carefully chosen, versatile specifications and sizes meet many centerless grinding applications
- Easy to spec with little to no technical support.

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.
3. 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

- 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: 6500 SFPM max. operating speed
 - » All other vitrified centerless stock products: 8500 SFPM max. operating speed
 - » Always check wheel speed markings on wheels before running wheel



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

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)



Centerless Wheels

TIER: BEST NEW				TIER: BETTER EXPANDED OFFERING		TIER: BETTER		TIER: GOOD EXPANDED OFFERING	
TRADENAME: QUANTUM CENTURY45 CENTERLESS RESINOID WHEELS				TRADENAME: 32AC / 32AC CENTURY 45 CENTERLESS RESINOID WHEELS		TRADENAME: 55A CENTERLESS VITRIFIED WHEELS		TRADENAME: 53A, 57A, 64A, GEMINI, GEMINI2 CENTERLESS VITRIFIED WHEELS	
ABRASIVE: Ceramic Alumina				ABRASIVE: Aluminum Oxide/Silicon Carbide		ABRASIVE: Aluminum Oxide		ABRASIVE: Aluminum Oxide	
SIZE (D x T x H)	STD. PKG.	SPEC.	PART #	SPEC.	PART #	SPEC.	PART #	SPEC.	PART #
Type 01 Straight									
16 x 4 x 10	1							57A80-L8VCN	66253465001
20 x 2 x 12	1							53A60-K8VCN	69078665347
20 x 4 x 12	1							64A60-KVCE	69078666723
	1							64A80-LVCE	69078666727
20 x 6 x 12	1	2NQMC46-QB45	66243496406	32AC80-NB45	66243496398	55A60-KVS3	66253387817	64A60-KVCE	69078666729
	1			32AC54-QB	69078666545	55A80-LVS3	66253387815	Gemini 60-L	66253246994
	1							Gemini2 60-K	66253451854
	1							Gemini2 100-L	66253451855
20 x 8 x 12	1	2NQMC46-QB45	66243496407	32AC80-NB45	66243496400	55A60-KVS3	66253387819	64A60-KVCE	69078666748
	1			32AC54-QB	69078666546	55A80-LVS3	66253387818	64A60-LVCE	69078666749
	1							64A80-KVCE	69078666751
	1							Gemini 54-J	66253247001
	1							Gemini2 60-K	66253451857
	1							Gemini2 100-L	66253451858
24 x 1-1/2 x 12	1							57A 80/120 O/Q	66253193575
w/ 3/16" fine/hard layer	1							57A 80/120 P/R	66253354449
24 x 2-1/2 x 12	1							57A 80/120 O/Q	66253285629
w/ 3/16" fine/hard layer	1							57A 80/120 P/R	66253340540
24 x 3 x 12	1							64A60-K8V127	69083166708
24 x 4 x 12	1							Gemini2 60-K	66253451860
	1							Gemini2 100-L	66253451861
24 x 6 x 12	1	2NQMC46-QB45	66243496408	32AC80-NB45	66243496401	55A80-LVS3	66253387821	Gemini 60-K	66253247047
	1			32AC54-QB	69083166547			Gemini2 60-K	66253451862
	1							Gemini2 100-L	66253451863
24 x 8 x 12	1	2NQMC46-QB45	66243496409	32AC80-NB45	66243496403	55A60-KVS3	66253387827	Gemini2 60-K	66253451864
	1			32AC54-QB	69083166548	55A80-LVS3	66253387825	Gemini2 100-L	66253451865
24 x 10 x 12	1	2NQMC46-QB45	66243496410	32AC80-NB45	66243496404	55A60-KVS3	66253387830	Gemini2 60-K	66253451866
	1			32AC54-QB	69083166549	55A80-LVS3	66253387828	Gemini2 100-L	66253451867
24 x 20 x 12	1			32AC54-QB	69083166552				
Composed of 2 Wheels	1			32AC54-SB	69083166553				
10" Thick (ME90362)									

Rubber Bond Feed Wheels

TIER: BETTER			
ABRASIVE: Aluminum Oxide			
SIZE (D x T x H)	STD. PKG.	SPEC.	PART #
Type 01 Straight			
12 x 2 x 5	1	57A80-RR51	66253222840
Type 07 Recessed Two Sides			
12 x 4 x 5	1	57A80-RR51	66253222844
Rec 2 Sides 7-1/2 x 1/2			
12 x 6 x 5	1	57A80-RR51	66253222846
Rec Side A 7-1/2 x 1-1/2			
Rec Side B 7-1/2 x 1/2			
12 x 6 x 5	1	57A80-RR51	66253222847
Rec 2 Sides 7-1/2 x 1-1/2			
12 x 8 x 5	1	57A80-RR51	66253222850
Rec Side A 7-1/2 x 2-1/2			
Rec Side B 7-1/2 x 1-1/2			
14 x 8 x 5	1	57A80-RR51	66253322859
Rec Side A 8 x 2			
Rec Side B 8 x 1-1/2			
14 x 20 x 6	1	57A80-RR51	66253322196
Rec 2 Sides 8-1/2 x 1-1/2			
Butted Feed Wheels			
Composed of 2 Wheels			
10" Thick (ME91512)			

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	1	57A80-RP4	6625322199
Rec Side A 7-1/2 x 2-1/2			
Rec Side B 7-1/2 x 1-1/2			

There are many more sizes and specifications available made-to-your-order, including wheels made from our blank stock FastTrack Service for rush orders. Contact your Norton representative with your custom centerless requirements.

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: Heat-sensitive, porous grinding of difficult-to-grind alloys
 Typical Industries: Aerospace, automotive, toolroom, gear, energy
 Size Range: Blank Stock: 16" – 25" diameter
 Finished Wheel: 14" – 25" diameter
 Grade/Porosity: C28 – F26
 Abrasive Grain: Ceramic Alumina, Fused Aluminum Oxide

NORTON QUANTUM X CERAMIC ALUMINA AND VORTEX ALUMINUM OXIDE BLEND

BEST CHOICE FOR VERSATILITY, MAXIMUM PERFORMANCE, AND HIGHEST PRODUCTIVITY

FEATURES

- 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: Vitrium3

BENEFITS

- 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
- Exceptional form and corner-holding; 20+% less power draw
- Best MRR vs. all other ceramic creepfeed wheels
- Reduce grinding cycle times up to 50%

NORTON VORTEX ENGINEERED ALUMINUM OXIDE

BETTER CHOICE FOR HEAT-SENSITIVE, POROUS GRINDING OF DIFFICULT-TO-GRIND ALLOYS

FEATURES

- High-performance, engineered, fused aluminum oxide abrasive, optimally spaced
- Highly porous and permeable

BENEFITS

- High metal removal rates; able to grind large areas of contact
- Exceptional part integrity and quality; 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
 - » Thickness may be altered to 1/2 the original blank stock thickness
 - » Bore may be altered to these parameters 5" altered up to 8" max. 8" altered up to 12" max.

TIER: BEST		EXPANDED OFFERING		TIER: BETTER	
TRADENAME: NORTON QUANTUM X 3NQ CERAMIC UNFINISHED BLANK STOCK				NORTON VORTEX A/O UNFINISHED BLANK STOCK	
SIZE (D x T x H)	SPEC.	UF BLANK PART #	SPEC.	UF BLANK PART #	
Type 01 Straight					
16 x 1 x 5	3NQX60-C28VTX2	00310438575			
	3NQX60-D28VTX2	00310425238			
	3NQX60-D+28VTX2	00310479157			
	3NQX60-E24VTX2	00310425239			
	3NQX80-E+28VTX2	00310479160			
16 x 3 x 5	3NQX60-C28VTX2	00310438656			
	3NQX60-D28VTX2	00310425240			
	3NQX60-D+28VTX2	00310479158			
	3NQX60-E24VTX2	00310425241			
	3NQX80-D+28VTX2	00310479163			
	3NQX80-E+28VTX2	00310479161			
				IPA60-D29VTX	00310312485
			IPA60-E26VTX	00310312486	
16 x 5 x 5	3NQX60-D28VTX2	00310425242			
	3NQX60-E24VTX2	00310425243			
16 x 6 x 5	3NQX60-C28VTX2	00310438657			
	3NQX80-D+28VTX2	00310479164			
	3NQX80-E+28VTX2	00310479162			
20 x 1 x 8	3NQX60-C28VTX2	00310438658			
	3NQX60-D28VTX2	00310425244			
	3NQX60-E24VTX2	00310425245			
20 x 2-1/2 x 8			IPA60-E26VTX	00310303130	
			IPA60-F17VTX	00310303131	
			IPA80-D29VTX	00310303132	
20 x 3 x 8	3NQX60-C28VTX2	00310438659			
	3NQX60-D28VTX2	00310425256			
	3NQX60-E24VTX2	00310425257			
20 x 4 x 8			IPA60-D29VTX	00310303133	
			IPA60-E26VTX	00310303134	
20 x 5 x 8	3NQX60-D28VTX2	00310425258			
	3NQX60-E24VTX2	00310425259			
20 x 6 x 8	3NQX60-C28VTX2	00310438660			
24 x 4 x 8			IPA60-C29VTX	03103925091	
			IPA60-D29VTX	00310406547	
			IPA60-F26VTX	00310303135	
			IPA60-E26VTX	00310404613	
25 x 2-1/2 x 8			IPA60-E26VTX	00310404613	
25 x 3-1/2 x 8			IPA60-E26VTX	00310404678	



The newest-generation ceramic 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 Cylindrical grinding
Size Range:	Blank Stock: 18" – 30" diameter Finished Wheel: 16" – 30" diameter
Grit Range:	60, 80, and 120
Grade Range:	I – M
Abrasive Grain:	Ceramic Alumina

NORTON QUANTUM CERAMIC ALUMINA

BEST CHOICE FOR VERSATILITY, MAXIMUM PERFORMANCE, AND COST SAVINGS

FEATURES

- Revolutionary, sharp, durable, engineered ceramic alumina grain shape and chemistry; highly-porous

BENEFITS

- Versatile; for all low-, medium- and high-force applications ranging from cast iron, to stainless steel and hard-to-grind Inconel and titanium
- Perform well on old and new machines
- 30%+ higher metal removal rate
- 15%+ lower threshold power
- Highest productivity; lowest total grinding cost

TIER: **BEST**

TRADENAME: **NORTON QUANTUM CERAMIC UNFINISHED BLANK STOCK**

SIZE (D x T x H)	SPECIFICATION	UNFINISHED BLANK PART #
Type 01 Straight		
18 x 1 x 5	3NQ80-K10VS	00310405993
18 x 2 x 5	3NQ80-K10VS	00310405994
18 x 3 x 5	3NQ80-K10VS	00310405995
20 x 1 x 8	3NQ80-K10VS	00310405985
20 x 1 x 12	3NQ80-K10VS	00310406017
	3NQ120-MVS	00310405924
20 x 2 x 8	3NQ80-K10VS	00310406036
20 x 3 x 8	3NQ80-K10VS	00310406037
20 x 6 x 12	3NQ80-L10VS	00310406018
20 x 8 x 12	3NQ80-L10VS	00310406026
24 x 1 x 8	3NQ80-K10VS	00310406034
24 x 1 x 12	3NQ80-K10VS	00310406038
24 x 2 x 8	3NQ80-K10VS	00310406035
24 x 2 x 12	3NQ80-K10VS	00310406029
24 x 3 x 8	3NQ60-J10VS	00310425121
	3NQ80-K10VS	00310406046
24 x 3 x 12	3NQ60-J10VS	00310425120
	3NQ80-K10VS	00310406030
24 x 6 x 12	3NQ80-L10VS	00310406031
24 x 8 x 12	3NQ80-L10VS	00310406032
24 x 10 x 12	3NQ80-L10VS	00310406033
30 x 2 x 12	3NQ80-I10VS	00310427211
	3NQ80-J10VS	00310406047
	3NQ80-K10VS	00310406048
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:	Centerless plunge and throughfeed grinding Surface grinding Cylindrical grinding
Size Range:	Blank Stock: 18" – 42" diameter Finished Wheel: 16" – 42" diameter
Grit Range:	60 – 120
Grade Range:	I – M
Abrasive Grain:	Aluminum Oxide

55A-VH ALUMINUM OXIDE

BETTER CHOICE FOR PRECISION GRINDING OF CARBON STEEL AND CAST IRON

FEATURES & BENEFITS

- 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
- Increased productivity; more quality parts at 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	K	00310404552
18 x 2 x 5	80	K	00310404554
18 x 3 x 5	80	K	00310404555
20 x 1 x 8	60	K	00310020910
20 x 1 x 12	100	K	00310302177
	120	K	00310302220
	120	M	00310064512
20 x 1-1/2 x 12	80	K	00310302221
	100	K	00310302222
20 x 2 x 8	80	K	00310020918
	100	K	00310020920
	120	M	00310064252
20 x 3 x 8	80	K	00310425116
20 x 3 x 12	80	K	00310425117
20 x 6 x 12	80	K	00310020965
24 x 1 x 8	80	K	00310021884
24 x 1 x 12	60	K	00310020921
	80	M	00310020923
24 x 1-1/4 x 12	60	M	00310302224
24 x 1-1/2 x 8	80	K	00310302223
24 x 1-1/2 x 12	80	K	00310302225
	80	M	00310302226
24 x 2 x 8	80	K	00310021885
24 x 2 x 12	60	K	00310020924
	80	I	00310020926
24 x 3 x 8	80	K	00310021757
24 x 5 x 12	60	L	00310302227
24 x 6 x 12	60	K	00310020968
24 x 8 x 12	100	K	00310302228
24 x 10 x 12	80	K	00310020972
30 x 2 x 12	60	L	00310020929
30 x 3 x 12	60	L	00310020930
42 x 1-1/2 x 12	60	M	00310020931

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.



Norton quality non-stock gear wheels are designed to produce high metal removal rates with less power draw. The blank stock wheels below comprise our FastTrack alteration service. All Norton FastTrack wheels are altered on state-of-the-art CNC controlled machines and are finished using Saint-Gobain dressing wheels. The Saint-Gobain dressing wheels and machines give these wheels excellent accuracy and repeatability.

Vitrium 3 VS3G bond wheels

Our revolutionary, exclusive bond platform provides unprecedented wheel performance and finished part accuracy across many precision grinding applications – while lowering process time and cost in three ways:

1. Coolest cutting with maximum chip clearance
2. Optimized precision profile delivers ultra radius accuracy
3. Able to run at higher operating speeds (maximizing your older and newer machines' performances)

Size Range:	Blank Stock: 120mm – 450mm diameter
	Finished Wheel: 115mm – 450mm diameter
Grit Range:	60 – 120
Abrasive Grain:	Ceramic Alumina and Aluminum Oxide

KEY PROGRAM FEATURES

- Standard lead time:
 - » 2 weeks
- Alteration Parameters:
 - » 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

NORTON QUANTUM X CERAMIC ALUMINA AND VORTEX ALUMINUM OXIDE BLEND

BEST CHOICE FOR VERSATILITY, HIGHEST PRODUCTIVITY, AND LOWEST TOTAL COST



FEATURES & BENEFITS

- Best MRR (metal removal rate) versus all other ceramic gear wheels; reduce grinding cycle times up to 50%
- Best choice for grinding from solid
- 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
- 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

NORTON TARGA TG, 3GT, STG CERAMIC ALUMINA

EXCELLENT CHOICE FOR THE MOST DEMANDING OPERATIONS



FEATURES & BENEFITS

- 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 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

NORTON SG CERAMIC ALUMINA

EXCELLENT CHOICE FOR HIGH PRODUCTIVITY, LOW TOTAL PER-PART GRINDING COST



FEATURES & BENEFITS

- 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
- Versatile, high-performance VS and VSP bonds provide exceptional form holding
- 5SG – durable Norton SG and aluminum oxide blend – blue, for high stock removal rates, excellent productivity, long wheel life, low overall grinding cost

NORTON 86A ALUMINUM OXIDE

BETTER CHOICE FOR VERSATILE, CONSISTENT PERFORMANCE



FEATURES & BENEFITS

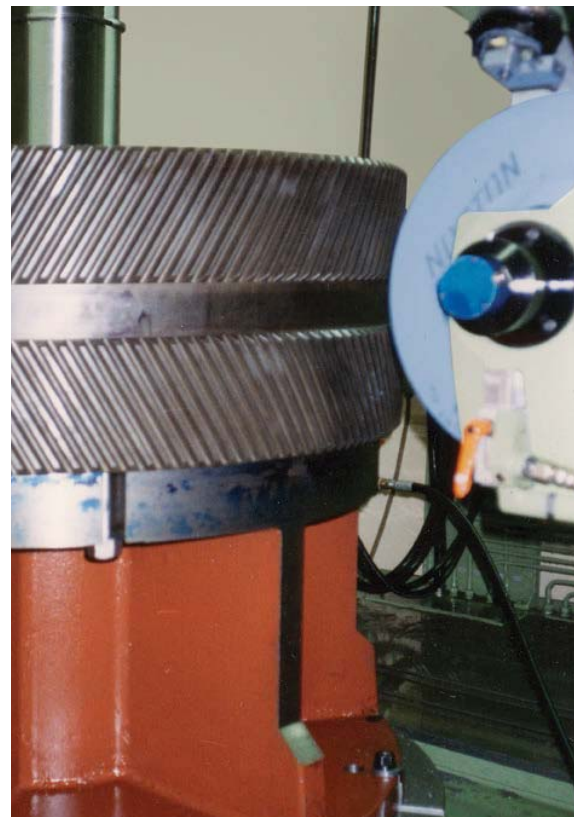
- Sharper aluminum oxide abrasive for cooler cutting
- VS3G Vitrium3 bond is the newest, strongest bond in the Norton portfolio: patented pore-induced construction; for all low-, medium- and high-force applications; excels on hard-to-grind aerospace alloys and large areas of contact; exceptional form and corner-holding

SIZE (D x T x H)	SPECIFICATION	BLANK PART #	SPECIFICATION	BLANK PART #	SPECIFICATION	BLANK PART #
TIER: BEST BEST EXPANDED OFFERING BETTER EXPANDED OFFERING BETTER EXPANDED OFFERING						
TRADENAME: NORTON QUANTUM X: 5NQX NORTON SEEDED GEL: 3TGP, 5G, 5SG BRGL VS3G = VITRIUM 3 BOND 86A, 25A, X25A VS3G = VITRIUM 3 BOND NORTON QUANTUM: NQ, 3NQ, 5NQ VS3G = VITRIUM3 BOND VS3G = VITRIUM3 BOND						
ABRASIVE: Ceramic Alumina Unfinished Blank Stock Ceramic Alumina Unfinished Blank Stock BRGL – Ceramic Alumina Unfinished Blank Stock 86A, 25A, X25A – Aluminum Oxide Unfinished Blank Stock						
Type 01 Straight						
Worm Profile Wheels						
220mm x 180mm x 76.2mm					BRGL80-GVPHS	00310048274
275mm x 125mm x 160mm						
275mm x 160mm x 160mm	5NQM90-J10VS3G	00310491163				
280mm x 160mm x 115mm	NQ80-H8VS3G	00310448492	SG80-HVX	00310419856		
300mm x 125mm x 160mm	3NQ90-J10VH	00310394338				
300mm x 160mm x 160mm						
320 x 125 x 115	NQ80-H8VS3G	00310472371				
350mm x 104mm x 160mm					BRGL80-GVPHS	00310066976
					BRGL100-GVPLS	00310066991
350mm x 125mm x 160mm	3NQ90-H10VS3G	00310448495				25A90-H10VS3G 00310448496
Single Rib Wheels						
120mm x 30mm x 20mm	5NQX100-G20VTX2	00310490920	3TGP80/3-G12VS3G	00310448502		
300mm x 30mm x 50.8mm	5NQX60-G20VTX2	00310490863	3TGP80/3-G12VS3G	00310448501		
300mm x 60mm x 50.8mm	5NQX60-G20VTX2	00310490864	3TGP80/3-G12VS3G	00310448500		
400mm x 50mm x 127mm			3TGP60-G20VSPF	00310404596		
400mm x 60mm x 127mm	5NQX60-G20VTX2	00310490865				
400mm x 75mm x 127mm			3TGP60-G20VSPF	00310404597		
400mm x 100mm x 127mm	5NQX60-G20VTX2	00310490916	3TGP60-G20VSPF	00310404598		
400mm x 150mm x 127mm	5NQX60-G20VTX2	00310490917				
450mm x 50mm x 127mm			3TGP80/3-G12VS3G	00310448499		
450mm x 60mm x 127mm	5NQX60-G20VTX2	00310490918				
450mm x 100mm x 127mm	5NQX60-G20VTX2	00310490921	3TGP80/3-G12VS3G	00310448498		
450mm x 150mm x 127mm	5NQX60-G20VTX2	00310490919	3TGP80/3-G12VS3G	00310448497		

SIZE (D x T x RIM)	PLATE #	SPECIFICATION	BLANK PART #
TIER: BEST NEW TRADENAME: NORTON SEEDED GEL: TG, 5TG, 5SG ABRASIVE: Ceramic Alumina Unfinished Blank Stock			
Type 02 Plate-Mounted Cylinder			
3.000 x 3.000 x .600	A311220	5SG80-JVS	310485211
3.350 x 3.000 x .650	A311220	5SG80-JVS	310485212
3.750 x 3.000 x .650	A311220	5SG80-JVS	310485213
4.100 x 3.000 x .700	A311220	5SG80-JVS	310485214
5.200 x 3.500 x .800	A311250	5SG80-JVS	310485215
5.700 x 3.500 x .800	A311250	5SG80-JVS	310485226
7.000 x 3.500 x 1.050	A311251	5SG80-JVS	310485227
8.400 x 3.500 x 1.050	A311384	5SG80-JVS	310485228
		TG280-H12V-X575	310485229
8.346 x 3.500 x 1.043	A311384	5TG80-3-J8VH	310480245

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



How to Read an Abrasive Product Specification

Conventional Grinding Wheels

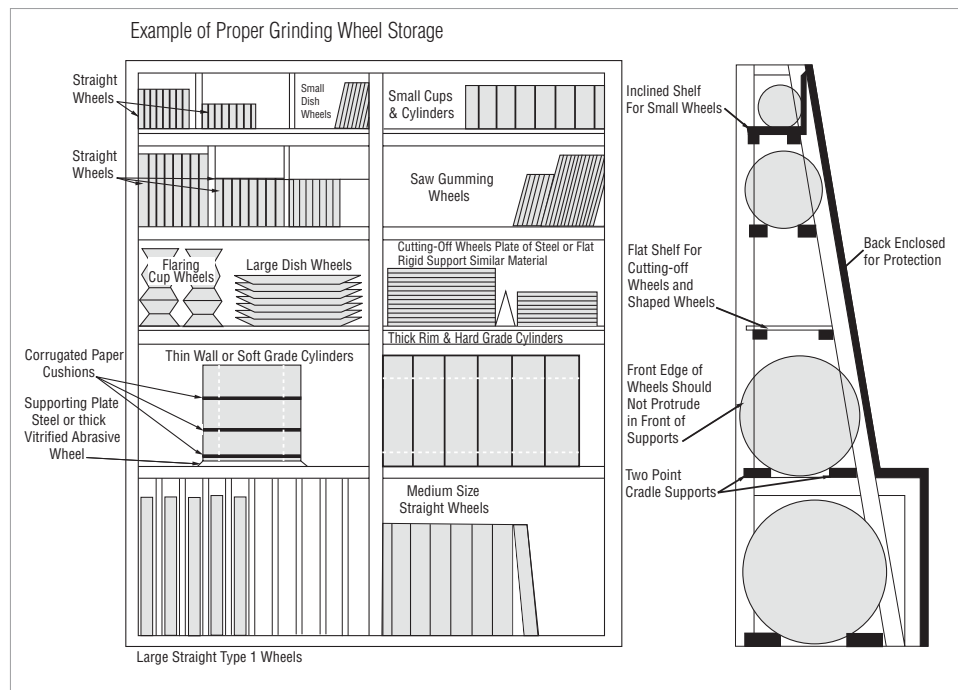
32A 46 I 8 V BE

Abrasive				Grit Size			Grade			Structure	Bond Type	Norton Symbol
Aluminum Oxide	Ceramic	Silicon Carbide	Zirconia Alumina	Coarse	Medium	Fine	Soft	Medium	Hard	Relative grain spacing	Resin = B	Designates a variation or modification to bond.
23A	Oxide	37C	4NZ	12	30	80	D	I	Q	Dense	Shellac = E	
25A	3SGP	39C	4ZF	14	36	90	E	J	R		Plastic = P	
32A	3SGR	Crystolon	5ZF	16	46	100	F	K	S		Rubber = R	
32AC (blend)	5SG	Masonry	AZ (blend)	20	54	120	G	L	T	↑ 2	Vitrified = V	
38A	BRG		BlueFire	24	60	150	H	M	u	4		
48A	SG		Charger (blend)		70	220		N	v	6		
53A	SXG							O	Y	8		
55A	NorZon Plus (blend)		NZ					P	Z	12		
57A	NQ		NZC (blend)							16		
U57A	Quantum		NZIII							19		
64A	Targa		NZIV							25		
86A			NorZon							28		
90A			ZI							Open		
Alundum												
FabCut												
India												
Gemini												
Metal												
Vortex												

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.