METALITE F220 ALUMINUM OXIDE FIBER DISCS FOR SOFT METALS

Metal fabrication | **Welding** | **MRO applications** | **Production applications of soft metals**

A Soft Metal Grinding Solution from the Abrasive Right Angle Grinding Leader

Engineered specifically to blend and finish soft metals, the non-loading, unique paraffin wax coating and quality aluminum oxide grain make these discs the first choice for grinding aluminum, bronze, brass, mild steels, etc.

FEATURES	BENEFITS
• Paraffin wax coating	• Minimizes loading, without sacrificing life, while providing excellent cut • Reduces heat at the point of contact, so disc remains free-cutting and lasts longer • Less pressure required for optimum performance on soft metals
• Premium aluminum oxide abrasive grain and resin bond on heavy fiber backing	• Longer life than competitive open coat aluminum oxide fiber discs designed for soft metals

TECH*tip*

To maximize cut and life, use Norton air-cooled back-up pads to draw heat away from work zone.

Use firm density for 24 – 50 grit stock removal – and medium density for 60 – 80 grit for flexibility.

www.nortonabrasives.com

NORTON METALITE F220 ALUMINUM OXIDE FIBER DISCS

Use Norton Metalite F220 fiber discs for freer cut, longer life and overall greater performance on soft metals versus conventional and competitive aluminum oxide open coat fiber discs.

Metalite Fiber Disc
Stock Availability

SIZE	GRIT	QTY/PACK	UPC NUMBER
4-1/2 x 7/8	36	25	66254400694
	50	25	66254400696
	60	25	66254400698
	80	25	66254400700
5 x 7/8	24	25	66254400692
	36	25	66254400683
	50	25	66254400688
	60	25	66254400690
	80	25	66254400691
7 x 7/8	24	25	66254400702
	36	25	66254400701
	50	25	66254400703
	60	25	66254400704
	80	25	66254400705

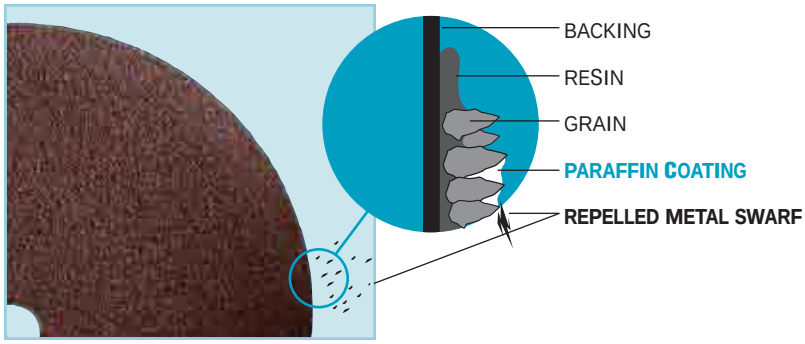
Air-Cooled Rubber Back-up Pads

Slotted hub design and curved ribs draw heat away from the grinding zone, reducing disc loading and increasing life. All have a 5/8"-11 threaded female hub for mounting.

DESCRIPTION	RPM	QTY/PACK	UPC NUMBER
4-1/2" Medium	11,000	5	63642502122
5" Medium	10,000	5	63642543421
7" Firm	8,600	5	63642543425
7" Medium	8,600	5	63642543422
#103 Retainer Nut		10	63642543463
#834 Retainer Nut Spanner Wrench		5	63642543005
66NS Short Retainer Nut		10	63642543461

NOTE: RETAINER NUTS ARE NOT INCLUDED WITH BACK-UP PADS. THESE MUST BE ORDERED SEPARATELY.

Paraffin Wax Coating Repels Swarf to Minimize Loading and Reduce Heat



CASEhistory

Operation: Blending aluminum panels

Product: 7" x 7/8" 60 grit Norton Metalite F220 discs versus competitive open coat aluminum oxide fiber discs

Results: Norton Metalite F220 discs sanded two times the number of panels; customer was taking competitive discs off prematurely due to loading of the disc.

GOOD

For most abrasive applications, Norton offers up to three product performance levels – GOOD, BETTER and BEST. Norton Metalite F220 fiber discs are in the GOOD category and represent a value for the user who wants Norton quality products with consistent performance and a very competitive price.

To put Norton abrasives to work for you, call your local Norton distributor or visit our website at **www.nortonabrasives.com** to view our online catalog and learn about our latest products and applications.

NORTON®

HEADQUARTERS:
Saint-Gobain Abrasives, Inc.
Industrial Sales
PO Box 15008, 1 New Bond Street
Worcester, MA 01615-0008
www.nortonabrasives.com

U.S. CUSTOMER SERVICE:
Phone Toll Free: 1 800 551-4413
Fax Toll Free: 1 800 551-4416
Local Phone: (254) 918-2313
Local Fax: (254) 918-2314

CANADA CUSTOMER SERVICE:
Phone Toll Free: 1 800 268-2262
Fax Toll Free: 1 800 561-9490

engineering for gold

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FORM #8115

SAINT-GOBAIN ABRASIVES

FIBER AND AVOS DISCS

The industry's most complete fiber disc offering: premium performance Norton SG ceramic, aggressive zirconia and long lasting aluminum oxide as well as quality Merit ceramic, zirconia and aluminum oxide for the initial-price-conscious user. Our fiber discs feature a full resin bond system with heavy-duty fiber backing for increased strength, durability and tear resistance.

Typical Applications

- Material removal
- Weld grinding and blending
- Light deburring and finishing

BEST Norton SG Blaze F980 Discs – Greatest productivity and lowest total cost

FEATURES	BENEFITS
• Ultimate performing, next-generation SG ceramic grain	• Coolest cut; significantly faster cut rate • Longest life on alloy metals and stainless steel
• Self-lubricating, advanced supersize treatment	• Better finish and part integrity
• Heavier fiber backing	• Greater durability and longest life on tough applications

BEST GreenLyte SG F968 Discs – Exceptional productivity

FEATURES	BENEFITS
• Premium, dense, self-sharpening SG ceramic abrasive grain with a unique coating design	• Faster initial cut rate, longer life and improved finishes versus competitive ceramic • Great productivity versus any fiber disc and lower total costs • Greater chip clearance; minimal loading
• Versatile	• The choice for grinding and finishing carbon steel, mild steel, cast iron and welds
• 7" and 9-1/8" discs have doming design	• Ideal for edges and corners • Better shape control; resists curling
• New 40 grit new!	• Quick, efficient stock removal

BETTER NorZon Plus F826 Discs – Ideal on stainless, alloy, and high pressure applications

FEATURES	BENEFITS
• Premium self-sharpening zirconia aluminum abrasive	• Fast, aggressive cutting • Self-sharpens with use
• Advanced resin bond technology with enhanced grain adhesion	• Grind more parts per hour to lower grinding costs

BETTER Merit Ceramic Discs – The economical choice for heavy stock removal

FEATURES	BENEFITS
• High performance ceramic alumina abrasive on a heavy fiber backing	• Engineered for heavy stock removal
• Economically priced	• The choice when initial price is a main purchasing consideration

BETTER Merit Zirconia Discs – The economical choice for stainless steel applications

FEATURES	BENEFITS
• Durable zirconia alumina abrasive on a heavy fiber backing	• Great performance on stainless steel at an economical initial price

GOOD Gemini Metalite F226 Discs – Versatile performance for all MRO applications

FEATURES	BENEFITS
• Tough, versatile aluminum oxide abrasive	• Fast initial cut • Ideal for general purpose applications
• New availability: 10 packs containing discs individually backprinted with bar-code new!	• Ideal for small unit sales and jobs

GOOD Merit Aluminum Oxide Discs – Priced right for general purpose applications

FEATURES	BENEFITS
• Quality aluminum oxide grain on a heavy fiber backing	• Economically prices, good for small job shops and general purpose applications

AVOS – Allows View Of Surface – Fiber Discs

FEATURES	BENEFITS
• Patented hole design	• Allows interrupted cut which reduces heat up to 30% over standard round discs • Cool cutting resulting in longer disc life • Provides complete vision into the grinding zone • Operators can grind more accurately with less re-work
• Scooped holes	• Create air flow to pull loose abrasive and swarf away from work surface grinding zone – resulting in extended disc life
• 5 degree angle back-up pad	• Grinding at 5°-15° angle allows greater utilization of disc surface • Eliminates gouging of workpiece

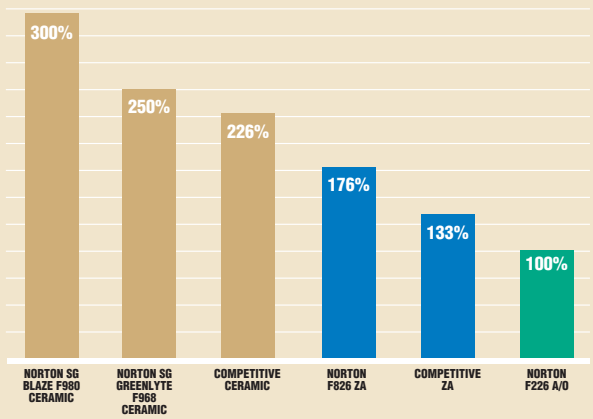
SPECcheck

Starting Recommendations by Material

MATERIAL	HEAVY-DUTY BEST PERFORMANCE	GENERAL-DUTY INITIAL VALUE
Carbon Steel	GreenLyte SG F968 Norton SG Blaze F980	NorZon Plus F826
Stainless Steel/ Alloys	Norton SG Blaze F980	NorZon Plus F826
Cast Iron	GreenLyte SG F968	NorZon Plus F826
Welds	GreenLyte SG F968	NorZon Plus F826
Brass/Bronze	NorZon Plus F826	Gemini Metalite F226
Aluminum	NorZon Plus F826	
Fiberglass	GreenLyte SG F968	NorZon Plus F826
Paint Removal	GreenLyte SG F968, NorZon Plus F826	Gemini Metalite F226

Relative Metal Removal Rate

50 Grit on Low Pressure Carbon Steel



Fiber Discs

25 standard package

SIZE D X H	GRIT	MIN./STD. PKG.**	BEST SG BLAZE F980 BOXED	BEST SG GREENLYTE F968 BOXED	BEST SG GREENLYTE F968 BALED**	BETTER NORZON PLUS F826 BOXED
4 x 5/8	24	25/25				
	36					
	50					
	60					
	80					
	100					
	120					
4-1/2 x 7/8	24	25/25	69957398000	66261141313		66261138457
	36		69957398001	66261141312		66261138456
	40			66261058701 new!		
	50		69957398002	66261141311		66261138454
	60		69957398003	66261141310		66261138453
	80		69957398004	66261141309		66261138452
	100			66261141308		
	120			66261141307		
5 x 7/8	16	25/25				
	24		69957398005	66261141320		66261138563
	36		69957398006	66261141319		66261138562
	40			66261058702 new!		
	50		69957398007	66261141318		66261138561
	60		69957398008	66261141317		66261138601
	80		69957398009	66261141316		66261138600
	100			66261141315		
	120			66261141314		
7 x 7/8	16	25/25				
	24		69957398010	66261141327*	66261141334*+	66261138594
	36		69957398011	66261141326*	66261141335*	66261138593
	40			66261058703* new!		
	50		69957398012	66261141325*	66261141336*	66261138592
	60		69957398013	66261141324*	66261141337*	66261138591
	80		69957398014	66261141323*	66261141338*	66261138590
	100			66261141322*		
	120			66261141321*		
9-1/8 x 7/8	16	25/25				
	24		69957398015	66261141344*		66261138584
	36		69957398016	66261141343*		66261138583
	50		69957398017	66261141342*		66261138582
	60			66261141341*		
	80			66261141340*		
	100			66261141339*		
	120					

* ALL 7 X 7/8" AND 9-1/8 X 7/8" GREENLYTE F968 DISCS FEATURE OUR DOMING DESIGN.
** BALED ITEMS: MIN./STD. PKG. = 100/100
\+ MIN./STD. PKG = 50/50

The Norton Baling System for F968 7 x 7/8 Discs

7" GreenLyte SG F968 products are available with the Norton threaded baling units, allowing the discs to remain under pressure even after being opened.

- Places 100 discs on a spindle between two plates
- Locks down with a pinch screw
- Maintains the shape of the discs by minimizing curl
- User-friendly and reusable

SPECcheck

Fiber Disc Competitive Cross Reference

NORTON	GEMTEX	HERMES	KLINGSPOR	SAIT	3M	VSM	WALTER
Norton SG F980 (Supersized)					985C, 785C, 987C	SF840, SF750	
Norton SG F968		CB444X	CS665		988C, 984C	SF750	
Merit Ceramic	Ceramix "X"			7S			KF710
NorZon Plus F826		RB414X	CS565		501C	ZF715	
Merit Zirconia Alumina	G Type ZEE Type			Z			TOPCUT STAINLESS
Gemini F226		RB314X	CS561	AO	281C, 381C	KF708	
Merit Aluminum Oxide	A Type C Type			2A, 3A			COOLCUT

25 standard package

new!

SIZE D X H	GRIT	MIN./STD. PKG.**	BETTER MERIT CERAMIC BOXED	BETTER MERIT ZA BOXED	GOOD MERIT AO BOXED	GOOD METALITE F226 BOXED	MIN/STD PKG.	GOOD METALITE F226 INDIVIDUALLY BAR-CODED
4 x 5/8	24	25/25				66261133434	10/10	07660704709
	36					66261133433		07660704710
	50					66261133432		07660704711
	60					66261133431		
	80					66261133430		
	100					66261133429		
	120					66261133428		
4-1/2 x 7/8	24	25/25	66623355601	66623353315	66623353309	66261133519	10/10	07660704712
	36		66623355602	66623353316	66623353306	66261133517		07660704713
	40							
	50		66623355603	66623353318	66623353310	66261133515		07660704714
	60		66623355604	66623353319	66623353311	66261133513		
	80		66623365598	66623353320	66623353312	66261133511		
	100				66623353313	66261133509		
	120				66623353314	66261133507		
5 x 7/8	16	25/25				66261133617	10/10	
	24		66623355597	66623357290	66623357276	66261133615		07660704706
	36		66623355598	66623357291	66623357277	66261133610		07660704707
	40							
	50		66623355599	66623357292	66623357278	66261133605		07660704708
	60		66623355600	66623357293	66623357279	66261133600		
	80		66623366015	66623357294	66623357280	66261133595		
	100				66623357281	66261133590		
	120				66623357282	66261133585		
7 x 7/8	16	25/25				66261133760	10/10	
	24		66623355578	66623357295	66623357283	66261133755		07660704703
	36		66623355594	66623357296	66623357284	66261133750		07660704704
	40							
	50		66623355595	66623357297	66623357285	66261133745		07660704705
	60		66623355596	66623357298	66623357286	66261133740		
	80		66623365600	66623357299	66623357287	66261133735		
	100				66623357288	66261133730		
	120				66623357289	66261133725		
9-1/8 x 7/8	16	25/25				66261133890	10/10	
	24					66261133885		
	36					66261133880		
	50					66261133875		
	60					66261133870		
	80					66261133865		
	100					66261133860		
	120					66261133855		

Air-Cooled Rubber Back-up Pads

- Designed for medium- to heavy-grinding applications.
- Slotted aluminum hub design draws cool air behind the disc.
- Curved ribs on the rubber face force heat away from the disc and back-up pad.
- Cooler cutting action reduces disc loading and increases grinding life.
- All pads have a 5/8"-11 threaded female hub for mounting.
- Firm pads provide more aggressive cut; medium pads offer greater flexibility.
- Use with Norton and Merit fiber discs to maximize cut and life.

DESCRIPTION	MAX. RPM	STD. PKG.	UPC NO.
RUBBER BACK-UP PADS			
4" Medium	12,000	5	63642504918
4-1/2" Medium	11,000	5	63642502122
5" Medium	10,000	5	63642543421
7" Firm	8,600	5	63642543425
7" Medium	8,600	5	63642543422
9" Firm	6,600	5	63642543426
9" Medium	6,600	5	63642543423
#103 Retainer Nut	—	10	63642543463
#834 Retainer Nut Spanner Wrench	—	5	63642543005
66NS Short Retainer Nut	—	10	63642543461

NOTE: RETAINER NUTS ARE NOT INCLUDED WITH BACK-UP PADS. THESE MUST BE ORDERED SEPARATELY.

Air-Cooled Back-up Pads

For 5/8-11 arbor, these threaded "no nose" pads are designed for shorter-shafted right-angle grinders.

DESCRIPTION	MAX. RPM	STD. PKG.	UPC NO.
AIR COOLED BACK-UP PADS			
4-1/2" Medium Spiralcool Pad	11,000	5	63642504872
5" Medium Spiralcool Pad	10,000	5	63642503000

NORTON

Speed-Lok Fiber Discs

Speed-Lok Fiber Discs

These discs feature Norton quick, tool-free, twist-on and off Speed-Lok fasteners. Discs lock to back-up pads – but are easily removed – increasing your grinding time and productivity.

See new Norton SG Blaze F980 II - 3" Fiber Speed-Lok discs on page 57.

SIZE	GRIT	MIN./STD. PKG.	BETTER NORZON PLUS F826 BOXED UPC NO.	GOOD METALITE F226 BOXED UPC NO.
SPEED-LOK FIBER DISCS				
5 x 7/8 Speed-Lok	24	25/25	66261138797	
	36		66261138796	66261137522
	60			66261137515
7 x 7/8 Speed-Lok	24	25/25	66261138819	66261137625
	36		66261138818	66261137620
	50		66261138817	66261137615
	60		66261138816	
	80			66261137605
	100			66261137600
	120			66261137595
AVOS EDGER SPEED-LOK DISCS				
4-1/2" AVOS Edger Speed-Lok	24	10/40	66261129718	
	36		66261129719	
	50		66261129720	
	60		66261129721	
	80		66261129722	
5" AVOS Edger Speed-Lok	24	10/40	66261126556	
	36		66261126557	
	50		66261126558	
	60		66261126559	
	80		66261126560	
7" AVOS Edger Speed-Lok	24	10/40	66261137454	
	36		66261137455	
	50		66261137456	
	60		66261137457	
	80		66261137458	

FastCut Abrasive Fiber Discs

Type 27 (flat-faced), heavy fiber-backed discs with extra sharp, 16 grit silicon carbide abrasive, are engineered specifically with cooling ridges for an interrupted cut to efficiently grind softer materials (marble, granite, concrete, etc.) where loading is a problem.

SIZE	GRIT	MIN./STD. PKG.	GOOD FASTCUT TYPE 27 UPC NO.
4 1/2	S/C 16	25/25	66261199054
7	S/C 16	25/25	66261199052

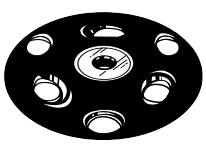
PACKED IN 5 INNER PACKS OF 5.

Speed-Lok Back-up Pads

- Molded rubber back-up pads provide quick-change convenience.
- Hard density pads are for aggressive cutting action.
- Medium density pads are for all-purpose applications.
- Soft density pads are used for contours and fine finishing work.
- All pads have a 5/8"-11 threaded female hub. These pads can be adapted for use on conventional 7/8" center hole fiber discs by using a 66NS Retainer Nut to mount the disc to the Speed-Lok pad.

DESCRIPTION	MAX. RPM	STD. PKG.	UPC NO.
5" Medium	12,000	5	63642543235
7" Hard	8,600	5	63642543240
7" Medium	8,600	5	63642543245
7" Soft	8,600	5	63642543250
9" Medium	7,000	5	63642543270
66NS Short Retainer Nut	—	10	63642543461

AVOS Edger Speed-Lok Back-up Pads



Fiberglass-reinforced, plastic Speed-Lok back-up pads for use with AVOS discs.

DESCRIPTION	MAX. RPM	STD. PKG.	UPC NO.
AVOS Speed-Lok Back-up Pads			
4-1/2" x 5/8-11 (Sawtooth)	13,000	5	63642502985
5 x 3/8-24 Pistol Grip (Sawtooth)	20,000	5	63642503029
5 x 5/8-11 (Sawtooth)	13,000	5	63642502517
5 x 7/16-20 Pistol Grip (Sawtooth)	20,000	5	63642503030
7 x 5/8-11 Round, Hard, Thicker	8,600	5	63642504873
7 x 5/8-11 Round, Medium,Thicker	8,600	5	63642504874
7 x 5/8-11 Round, Soft, Thicker	8,600	5	63642504875

improved!

How to boost productivity of Portable Grinding with "See Through" AVOS Technology..

Portable grinders are among the most popular tools in the metal fabricating shop. From grinding down welds to preparing the work surface for painting, these lightweight, versatile machines save the manufacturer valuable time and labor.

As the use of portable grinders continues to increase, abrasive manufacturers are keeping pace by developing new technologies to enhance the productivity of these tools. One of the most important recent innovations in this area is the development of "see through" abrasive designs, which give a complete view of the work surface during the grinding operation. Once available only in coated abrasive products, this technological breakthrough, called AVOS (for "Allows View of Surface"), has now been transferred to bonded abrasives – more commonly called grinding wheels. The availability of standard grinding wheels offering the benefits of the AVOS design – view of the work surface while grinding, cooler cut, longer product life – gives the manufacturer an important new weapon in the fight for greater productivity and higher quality finishes.

Portable Grinders -- Versatile and Efficient

Portable grinding is the term used for any operation where the grinding machine is actually held in the hands of the operator. It is a highly effective method of achieving desired metal removal and surface finish in a wide range of common applications, such as: grinding down and smoothing weld seams, cleaning metal before welding, removing imperfections, and smoothing rough surfaces on castings.

Portable grinders are available in a number of designs. Among the most popular is the right-angle grinder. A highly versatile product, the right-angle grinder can be used in locations ranging from automotive and aerospace plants to welding shops. In large production applications (for example, grinding fabricated metal parts on an auto assembly line), a typical plant may employ from 30 to 50 operators using electric or pneumatic hand-held grinders.

These products are easy to use and handle. Manufacturers have introduced lighter weight versions, some as light as 5 lb. And with a relatively small cutting area compared to large machine tools, portable grinders disturb less surface area on the workpiece. This results in less re-work and higher productivity for the operator.

In addition, portable grinders are becoming more affordable. Manufacturers can use more of them — and more often — on a wider variety of jobs while keeping their tool costs lower.

Abrasive Technology Boosts Portable Grinding Results

As the actual cutting tool on the grinder, abrasive products must keep pace in terms of performance. Manufacturers face several key challenges. Productivity of grinding wheels can suffer if the abrasives products either wear down too quickly or become clogged with ground metal chips or swarf. The reduced grinding ability requires the tool to draw more power, eventually leading to burn-out of the electric motor. This lack of productivity makes it difficult for users to lower their total grinding costs, and harms the final quality of the workpiece, while the excess heat causes the wheel to wear faster. What's been needed is a new approach to grinding, one that results in longer abrasive product life and improved productivity for the user. Norton Company looked at this challenge by taking a "systems approach," completely re-thinking the way grinding is done in these applications. The company developed an entirely new concept — the Norton AVOS System — featuring a product design with a unique silhouette and holes cut into the cutting surface. It is unlike anything previously seen on the market.

continued

Introduced in 1997, the AVOS design enables the operator to view the workpiece while grinding, allowing faster, more controlled stock removal. When it spins, the product offers complete vision of the grinding surface.

Surface finish is enhanced because AVOS technology allows the operator to monitor the work more closely. Because he can see what he is grinding, the operator can hold the grinder at a 5 – 15° angle, much less severe than the 30° angle commonly used with traditional products. By using more of the cutting surface in this way, the operator gets a more aggressive cut for increased stock removal as well as a smoother surface with less gouging.

The Engineering Behind AVOS

In addition, the holes located in AVOS products provide up to 25 percent cooler cutting with less power draw. There are two reasons for this. First, the holes engineered into the grinding surface allow for abrasive "rest time," the period when no cutting takes place on the surface of the workpiece.

Second, the airflow caused by the rotation of the wheel, combined with the "notched" design, enhances the flow of air, along with loose abrasive and swarf, away from the grinding zone. With traditional products, these waste materials would remain in the grinding zone, forcing the operator to re-grind loose material that can, in fact, be more abrasive than the surface of the workpiece itself.

The cooler grinding zone results in less heat build-up and less surface burn. The result is significantly better surface finish, better product appearance and greater output from each wheel. Because each wheel lasts longer, it grinds more surface feet and there is less down time for wheel changes.

Transferring AVOS Technology to a Bonded Abrasive

The first AVOS products, introduced by Norton in 1997, were a line of coated abrasive discs. They featured the now-familiar triangular silhouette and holes cut into the grinding face. This design was made possible by the basic structure of coated abrasives, in which an abrasive mineral is applied to a flexible backing using an adhesive bond. Once a large roll of this basic material is made, it can be cut into virtually any shape desired.

Applying the AVOS concept to bonded abrasives presented a new challenge. A grinding wheel has abrasive grains distributed uniformly throughout the wheel. Thousands of these hard, tough abrasive grains move against the workpiece and cut away tiny chips of material. While this makes for a long-lasting cutting tool, it is essentially impossible to transfer the original AVOS design, with its “cut-out” shape, to bonded abrasives.

Norton engineers, intent on creating a bonded abrasives version of AVOS, tested a number of designs and prototypes before selecting the most effective – the three-notch design seen in the new series of wheels. Unlike the coated abrasives version, in which the holes and profile are cut after the basic shape is manufactured, Type 29 AVOS wheels are molded and manufactured to their final “notched” shape.

Design Adds Productivity to Popular Wheel Type

The first product type in the AVOS family of bonded abrasives is the depressed center wheel (also commonly known as a raised hub wheel). In this wheel shape, or “type,” the area near the arbor hole is offset to accommodate the mounting nut and flange.

Depressed center wheels are highly versatile tools used for light to medium portable grinding jobs. They can be found in welding shops, pipe shops, fabrication shops, shipyards, pipeline construction, foundries, and railroad “maintenance of way” operations.

The new line of AVOS wheels features durable, tough aluminum oxide abrasive. They will be available initially in two types: 36 and 60 grit sizes for grinding ferrous materials, and a 46 grit product for use with aluminum and other non-ferrous materials. The wheels feature a resin bond reinforced with fiberglass for added strength.

AVOS depressed center wheels are available in two sizes: 4-1/2 x 1/8 x 7/8 in. and 5 x 1/8 x 7/8 in.

Guidelines for Best Performance

- The AVOS depressed center wheel series is a versatile and hard-working tool for a range of portable grinding applications. A few operator guidelines and “tech tips” will help the user extend the benefits of the AVOS design to its maximum:
- ALWAYS use the AVOS depressed center wheels on right-angle grinders
- Bring the grinder to full RPM before contacting the workpiece
- Grind at a flat angle – 5° to 15° is optimal
- Maintain full RPM until the grinder is off the work piece
- Do not over-tighten the wheel
- Do not start the equipment with any object protruding through the slots in the wheel
- Take caution when grinding near an edge, corner or projection that can snag the edge of the wheel.