Prozon®

Increased Production - Increased Efficiency

Resin Product - Depressed Grinding Wheel - Portable Grinding Wheels

Cut-Off Wheels - Coated Abrasive Products - Portable Grinding Wheels

Prozon®

ABRASIVE PRODUCTS CATALOG

2008-2009

ABRASIVE PRODUCTS CATALOG

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Prozon®

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Prozon®

Customer Service And Product Manual

Mission Statement:

Our goal is to increase efficiencies, increase production and decrease the cost per ton that is linked to the current abrasive product program. Our foundry abrasive team is experience in most of the bottlenecks that occur in the foundry environment. We can often make simple suggestions that have a major impact on production. We do this by following the regiment as follows:

- Provide an in depth analysis of current Abrasive usage and compile an analysis. This usually involves taking inventory of and testing the tool practice and RPM being used on the line
- Review analysis with key personnel.
- Suggest a comprehensive but simple program beginning with a weight and measures test to evaluate the amount of steel removed V.S. the amount of abrasive consumed in the process. This is done by weighing the piece of stock and the abrasive before and after operation. Comparative costs of abrasives usually are discussed at this time
- If warranted, we suggest a two week test and analysis period to further test the effectiveness of the change of abrasive type and or use, as applicable. AWS personnel are always present as the beginning of each shift to monitor and answer questions as the occur.
- A longer one month test is then recommended to fully evaluate the impact and cost effectiveness of the new abrasives.

Prozon® abrasives employ is a unique abrasive, characterized by a higher percentage of tetragonal zirconia and reduced titania evenly distributed throughout the individual grains. It is a cast, dense, fused alumina-titania-zirconia abrasive developed for applications where extended life and improved cutting ability is required. It is produced by fusing zirconia, titania, and alumina and chill casting it in a process specially developed to enhance a continuous cutting edge, It cuts more aggressively, lasts longer, and exhibits more uniform wear.

A Quiet Revolution In Foundry Abrasive Technology

ADVANTAGES:

1. Prozon® wheels have exceptionally high rates of material removal and therefore suitable for rough grinding
2. Have extremely long life and consistent stock removal rates as the abrasive is completely worn.
3. In some cases, rough and intermediate finishing can be performed with the same wheel.
4. No loading up, as new sharp abrasive particles are constantly exposed.
5. Prozon® abrasives have a low noise level, which contributes to a quieter working environment.

BACKGROUND:

Since 1984, Prozon® abrasives have represented a different approach in the production Of abrasive media for grinding and cutting applications in Foundry Applications. Prozon® Foundry Grade abrasives are formed using a unique cryogenic refractory process which results in the production of multi-faceted, non-spheroidal, complex particles which are all different in size and shape. This process produces groups and sizes of particles, which are then combined with a Prozon® Resin System in various plugs, cones..etc. This process produces groups of these particles which are then combined with a unique Resin System Matrix to form the various types of grinding wheels and stones designed to maximize cutting speed and longevity.

HISTORY:

The Prozon® story reads much like that of other American inventive phenomena, one born out of a need for a better product to do a better job. This one started with a foundry in Illinois, which needed to decrease the time it took to process B, B+ and E+ castings, while reducing their costs. After 8 months of experimentation and as many failures, a new product was born. These products are now broadly used in the foundry industry throughout the world. This same technology is applied to all our resin bound abrasives, and thus our Prozon® line.

APPLICATIONS:

This combination of unique shapes and sizes of Prozon® Particles, combined with a proprietary Resin System, results in grinding and cutting wheels which continually micro-fracture (Fig.1) to expose new cutting edges as the surface is being ground. This is in stark contrast to typical grinding media (Fig.2), which round off and create heat, "loading up" as a result. Prozon® wheels are highly effective on Brass, Bronze, Cast Iron, Aluminum, Nickel, Stainless and any other metal which has a tendency to bog down other wheels. In addition, the highly heat resistant Prozon® Resin System Matrix used to bond the particles together allows for high heat applications such as cutting semi-molten metal, and hot castings.

MICRO FRACTURES:

Fig.1

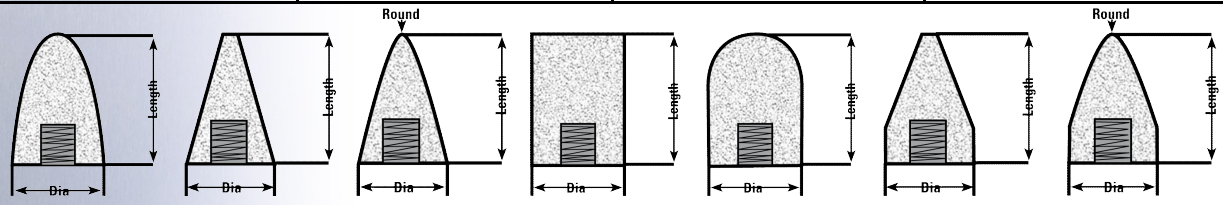
TYPICAL MEDIA:

Fig. 2

PLUG AND CONE WHEELS

Specialty plug and cone sizes for hard-to-reach areas.

Diameter	Length (in.)	Arbor Size	Rec. rpm
1”	2, 2 1/4, 2 1/3, 3	3/8-16, 3/8-24	36,300
1 1/4”	2, 2 1/4, 2 1/2, 3	3/8-16, 3/8-24, 5/8-11, 1/2-13	29,000
1 1/2”	2, 2 1/4, 2 1/2, 3, 4	3/8-16, 3/8-24, 5/8-11, 1/2-13	24,200
1 3/4”	2, 2 1/4, 2 1/2, 3, 4	3/8-16, 3/8-24, 5/8-11, 1/2-13	20,750
2”	2, 2 1/4, 2 1/2, 3, 4	3/8-16, 3/8-24, 5/8-11, 1/2-13	18,100
2 1/2”	3, 3 1/2, 4	5/8-11	14,500
3”	3, 3 1/2, 4	5/8-11	12,000
4”	4	5/8-11	9,070

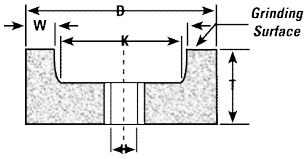


Type 16 | Type 17 | Type 17R | Type 18 | Type 18R | Type 19 | Type 19R

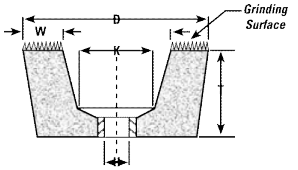
CUP WHEELS

Specialty cup wheel sizes for heavy-duty work.

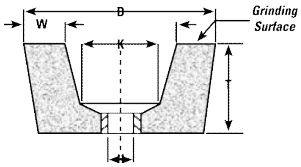
Size	Type	Rec. Max RPM
4 X 2 X 5/8-11	6	9,070
5 X 2 X 1R X 5/8-11	6	7,260
5 X 2 X 1½R X 5/8-11	6	7,260
8 X 2 X 2R X 7/8-9	6	4,500
8 X 3 X 2R X 7/8-9	6	4,500
3 X 2 X 3/8-24	11	12,100
3/2 X 2 X 5/8-11	11	12,000
4 X 2 X 5/8-11	11	9,070
5 X 2 X 5/8-11	11, 11K	7,200
5 X 2½ X 5/8-11	11, 11K	7,200
6 X 2 X 5/8-11	11, 11K	6,000
6 X 2 X 1R X 5/8-11	11, 11K	6,000
6 X 2½ X 5/8-11	11, 11K	6,000
6 X 2½ X 15/8R X 5/8-11	11, 11K	6,000



Type 6



Type 11



Type 11R

Type 27 and 28 depressed center Wheels are generally used on right angle portable grinders.

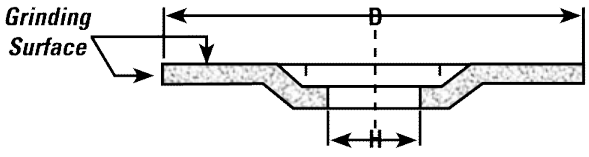
Prozon®

DEPRESSED CENTER WHEELS

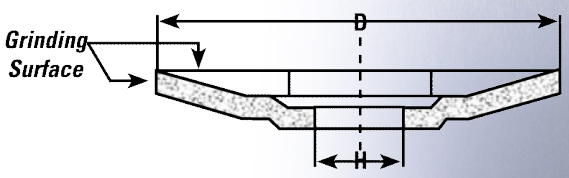
Specialty depressed center wheel sizes and specifications to meet your needs.

Diameter x Thickness	Arbor Size	Adaptors	Rec. & Max RPM
3 X 1/4	3/8, 5/8	N/A	20,400
4 X 1/8	3/8, 7/8	N/A	15,300
4 X 1/4	3/8, 7/8	N/A	15,300
4½ X 1/16	5/8, 7/8	5/8-11	13,200
4½ X 1/8	5/8, 7/8	5/8-11	13,300
4½ X 1/4	5/8, 7/8	5/8-11	13,300
5 X 1/8	7/8	5/8-11	12,200
5 X 1/4	7/8	5/8-11	12,200
6 X 1/8	7/8	5/8-11	10,200
6 X 1/4	7/8	5/8-11	10,200
7 X 1/16	7/8	5/8-11	8,500
7 X 1/8	7/8	5/8-11	8,500
7 X 1/4	7/8	5/8-11	8,500
7 X 3/8	7/8	5/8-11	7,750
7 X 1/2	7/8	5/8-11	7,750
7 X 1	7/8	5/8-11	6,000
9 X 1/16	7/8	5/8-11	6,000
9 X 1/8	7/8	5/8-11	6,000
9 X 1/4	7/8	5/8-11	6,600
9 X 3/8	7/8	5/8-11	6,000
9 X 1/2	7/8	5/8-11	4,600

Type 27



Type 28



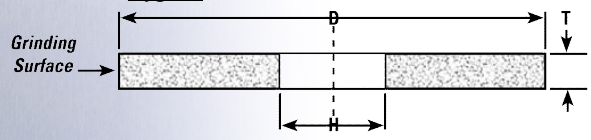
Prozon®

SNAGGING WHEELS

Specialty snagging wheel sizes for a wide range of rough applications.

Diameter	Thickness	Arbor Size	Std Rec. RPM
2½"	1/4, 3/8, 1/2	1/4, 3/8	21,000*
3"	1/4, 3/8, 1/2	1/4, 3/8	18,000*
4"	1/4, 3/8, 1/2	1/4, 3/8	15,300*
6"	1/2, 3/4, 1	5/8	8,000*
8"	1/2, 3/4, 1	5/8	6,000*
10"	1/2, 3/4, 1, 1¼, 2	7/8, 1, 1¼, 2	4,600*
12"	1/2, 3/4, 1, 1¼, 2	1, 1¼, 2, 3½	3,980*
14"	1/2, 3/4, 1, 1¼, 2, 2½	1, 1¼, 1½, 2, 3¼, 5	3,400*
16"	1½, 2, 2½, 3	1¼, 2, 6	2,950*
18"	1½, 2, 2½, 3	3½, 6	2,710*

Type 1



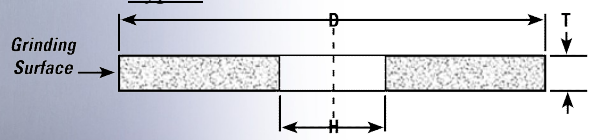
*NOTE: RPMs may vary on diameter, thickness and specifications of Snagging Wheel.

RESINOID WHEELS

Specialty resinoid wheel sizes for economical and efficient abrasive applications.

Diameter	Thickness	Arbor Size	Std Rec. RPM
2"	3/8, 1/2, 3/4, 1	3/8, 1/2, 5/8	18,100*
2½"	3/8, 1/2, 3/4, 1	3/8, 1/2, 5/8	14,500*
3"	3/8, 1/2, 3/4, 1	3/8, 1/2, 5/8	12,000*
4"	1/2, 3/4, 1	3/8, 1/2, 5/8	9,000*
5"	1/2, 3/4, 1	1/2, 5/8	7,200*
6"	5/8, 3/4, 1, 1¼	5/8, 3/4, 1, 1¼	6,000*
8"	1/2, 3/4, 1	5/8, 3/4, 1, 1¼	4,500*
10"	1/2, 3/4, 1, 2, 3	1½, 1¼	3,600*
12"	1, 1½, 2, 2½	1¼, 2, 3, 3½	3,000*
14"	1, 1½, 2, 2½	1¼, 2, 3, 3½	2,600*
16"	1, 1½, 3	1, 1¼, 6	2,270*
18"	1, 1½, 3	1, 1¼, 3½, 6	2,010*

Type 1



*NOTE: RPMs may vary on diameter, thickness and specifications of Non-Reinforced Resinoid Wheel. Wheel.

APOLLO™

SIZE in.	1-1/2 X 4 X 5/8-11 in.
SIZE MM	25.4-12.7 X 101.6 X 15.875-279.4
PART#	A401780
SPEED	24,200 Max. RPM

- Tapered Fit, square head
- Long Thimble Guards Against Breakage
- High substrate removal rate
- Custom made to fit application
- Long life equals more production time
- Type 17 cone Grade HPNZII

APOLLO™

SIZE in.	7/8 X 3-1/2 X 3/8-24
SIZE MM	22.225 X 76.2-12.7 X 9.525-609.6
PART#	A401781
SPEED	36,300 Max. RPM

- Great small Diameter Boring tool
- Long insert eliminates breakage
- Reaches down into small holes
- Custom made, long reach plug
- Long life equals more production time
- Type 18 plug Grade HPNZII

APOLLO CR™

SIZE in.	1-1/2 X 4 X 5/8-11 in.
SIZE MM	25.4-12.7 X 101.6 X 15.875-279.4
PART#	201788
SPEED	20,200 Max. RPM

- Tapered Fit
- Long Thimble Guards Against Breakage
- High substrate removal rate
- Custom made to fit per application
- Long life equals more production time
- Type 17R cone Grade HPNZII

APOLLO LPCP™

SIZE in.	2 X 4 X 5/8-11
SIZE MM	50.8 X 101.6 X 15.875-279.4
PART#	A401797
SPEED	18,100 Max. RPM

- Tapered radius for LPCP couplers
- Designed for general applications
- High substrate removal rate
- Custom made to fit per application
- Long life equals more production time
- Type 18R plug Grade HPNZII

For maximum performance in foundry applications. Each plug and cone is tailor made for the dimension of the specific application.

FEATURED

CONTINUED

AJAX™

- Large Diameter rounding applications
- X-Treme performance and life
- Aggressive
- Custom made, large mass plug
- Long life equals more production time
- Type 18R plug Grade HPNZ II

SIZE in.	3 X 4 X 5/8-11 in.
SIZE MM	76.2 X 101.6 X 15.875-279.4
PART#	201888
SPEED	12,000 Max. RPM

MESA™

- Boring and ID dressing
- Remove gates, risers and parting lines
- Clean and finish beveling
- Custom made to fit application
- Long life equals more production time
- Type 18 Plug Grade HPNZ II

SIZE in.	1-1/2 X 3 X 5/8-11 in.
SIZE MM	25.4-12.7 X 76.2 X 15.875-279.4
PART#	201901
SPEED	24,200 Max. RPM

MIDAS™

- Use when a large cup is too big
- X-treme metal removal
- Light weight
- Custom made to fit application
- Long life equals more production time
- Type 17 cone Grade HPNZ II

SIZE in.	2 X 3 X 5/8-11
SIZE MM	50.8 X 76.2 X 15.875-279.4
PART#	201904
SPEED	18,100 Max. RPM

PUEBLO™

- Large size plug for large holes
- Extreme removal rate
- Very Aggressive
- Custom made to fit specific application
- Long life equals more production time
- Type 17 plug Grade HPNZI

SIZE in.	2-3/4 X 4 X 5/8-11
SIZE MM	50.8-19.05 X 101.6 X 15.875-279.4
PART#	201903
SPEED	18,100 Max. RPM

SEDONA™

SIZE in.	1 X 3 X 3/8-24
SIZE MM	25.4 X 76.2 X 9.525-609.6
PART#	201900
SPEED	26,300 Max. RPM

- Tapered Boring and ID dressing
- Remove gates, risers and parting lines
- Clean and finish beveling
- Custom made to fit application
- Long life equals more production time
- Type 16 cone Grade HPNZI

TACOMA™

SIZE in.	1½ X 3½ X 5/8-11
SIZE MM	38.1 X 88.9 X 15.875-279.4
PART#	A201777
SPEED	24,200 Max. RPM

- Great small Diameter Boring tool
- Long thimble eliminates breakage
- Reaches down into small holes
- Custom made, long reach plug
- Long life equal more production time
- Type 18R plug Grade HPNZ II

TUSCON™

SIZE in.	2 X 4 X 5/8-11
SIZE MM	50.8 X 101.6 X 15.875-279.4
PART#	201902
SPEED	18,100 Max. RPM

- Tapered Fit, square head
- Long Thimble Guards Against Breakage
- High substrate removal rate
- Custom made to fit application
- Long life equals more production time
- Type 17 plug Grade HPNZII

XIX™

SIZE in.	2 X 4 X 5/8-11
SIZE MM	50.8 X 101.6 X 15.875-279.4
PART#	201819G
SPEED	18,100 Max. RPM

- Large size plug for large holes
- Extreme removal rate using high RPM
- Does Not Flake Or Break
- Exceeding Fine Crystal With Shark Edges
- Tough abrasive with Max. impact resistance
- Type 17 plug Grade HPNZII

For maximum performance in foundry applications. Each plug and cone is tailor made for the dimension of the specific application.

FEATURED

CONTINUED

HOG II™

- Used to remove large amounts of metal
- X-treme metal removal
- Steel rim insures safety
- Impressive ratio of metal to substrate
- Long life equals more production time
- Type 11 cup Grade HPNZII

SIZE in.	5 X 2 X 5/8-11
SIZE MM	127 X 50.8 X 15.875-279.4
PART#	201821
SPEED	7,500 Max. RPM

HOG NZX™

- A fusion product blending Zirconia and Alumina
- Designed For maximum Durability
- Reinforced to reduce breakage
- Exceedingly fine crystals with shark edges
- Remarkably tough abrasive with Maximum
- Impact Resistance.
- Type 11 Cup Grade HPNZIV

SIZE in.	6 X 2 X 5/8-11
SIZE MM	152.4 X 50.8 X 15.875-279.4
PART#	201924
SPEED	6,000 Max. RPM

HOG II NZX + ™

- The worlds finest HS type 1 wheels
- A fusion product of coated zirconia and alumina
- Our longest lasting most aggressive wheels
- Runs at 10,800 RPM
- Outlast the competition 4 to 1
- Type 1 Wheel Grade HPNZ III

SIZE in.	6 X 1 X 1
SIZE MM	152.4 X 25.4 X 25.4
PART#	201234
SPEED	10,800 Max. RPM

METALMASTER™

- Very aggressive stock removal
- Outlasts the competition
- Balanced to 2 grams
- Used for grinding, cutting and slicing
- Long life equals more production time
- Type 27 depressed center Grade HPNZ II

SIZE in.	9 X 1/4 X 7/8
SIZE MM	228.6 X 6.35 X 22.225
PART#	S47797Z
SPEED	6,600 Max. RPM

MINICUP™

SIZE in.	3 X 2 X 5/8-11
SIZE MM	76.2 X 50.8 X 15.875-279.4
PART#	201721
SPEED	12,000 Max. RPM

- Use when a large cup is too big
- X-treme metal removal
- Light weight
- Custom made to fit per application
- Long life equals more production time
- Type 11 cup Grade HPNZ I

MINI HOG™

SIZE in.	6 X 1 X 1
SIZE MM	152.4 X 25.4 X 25.4
PART#	201231G
SPEED	10,800 Max. RPM

- One of the worlds finest HS wheels
- High RPM
- Excellent Longevity
- Runs at 10,800 RPM
- Long life equals more production time
- Type 1 wheel Grade HPNZII

SEATTLE-1™

SIZE in.	3 X 1/2 X 3/8
SIZE MM	76.2 X 12.7 X 9.525
PART#	201948
SPEED	12,0000 Max. RPM

- A modified type 1 for maximum durability
- High speed rating ensures high performance
- Resin reinforced to reduce breakage
- Used for hard to access areas
- Uses fused Zirconia/Alumina for toughness
- Type 1 Grade HPNZ-IH

SWINGMASTER 24E™

SIZE in.	8 X 3 X 7/8
SIZE MM	203.2 X 76.2 X 22.225
PART#	201498
SPEED	4,500 Max. RPM

- Use In Swing Arm Applications
- Heavy Duty Metal Removal
- Removes And Dresses large Areas
- Custom made to fit per application Per Swing
- Reduces Finish Time 85%
- Type 1 Grade HPNZ I

FEATURED

CONTINUED

SWINGMASTER 24E™

- Contains 4 Different Grain Sizes
- Most Aggressive Swing Arm
- Removes And Dresses large Areas
- Custom made to fit per application Per Arm
- Reduces Finish Time 85%
- Type 1 Grade HPNZ I

SIZE in.	8 X 3 X 7/8-9
SIZE MM	203.2 X 76.2 X 22.225-228.6
PART#	201498-5
SPEED	4,500 Max. RPM

WHEELHORSE XL™

- Specifically designed for SS wheel dressing
- Aggressive but does not gouge
- Our most economical 6" cup wheel for props
- Contains Ziconia and alumina
- Does not load up
- Type 11 Grade PNZ II

SIZE in.	6 X 2 X 5/8-11
SIZE MM	152.4 X 50.8 X 15.875-279.4
PART#	A5A267
SPEED	6,000 Max. RPM

WHEELHORSE XL ULTRA™

- A fusion product on coated zirconia and alumina
- Designed specifically for stainless steel props
- Our most durable 6" cup wheel for SS Props
- Exceedingly fine crystals with sharp edges
- Remarkably huge abrasive with Maximum
- Impact Resistance
- Type 11 Grade PNZIV

SIZE in.	6 X 2 X 5/8-11
SIZE MM	152.4 X 50.8 X 15.875-279.4
PART#	A5A307
SPEED	6,000 Max. RPM

- Wear approved eye protection & respirator!
- Do not use without all guards in place!
- Speed not to exceed marked RPM!
- Read Safety Pamphlet in box!

SAFETY FIRST

Always allow wheel to run at operating speed for one full minute before using. Stand to the side while wait-ing with guard in place.

THE MAKING OF A GRINDING WHEEL

BONDED ABRASIVES:

A resin bonded wheel is a grinding or cutting tool which is composed of abrasive grain held tightly together by a bonding agent and typically reinforced with a woven material. The bonded abrasives categories are grinding and cutting wheels, as well as, cups – cones – plugs that come in a variety of shapes and sizes.

Three Main Components of Resinoid Bonded Abrasives:

1. *ABRASIVE GRAINS:*

Abrasive grain is an important component of raw materials. Prozon® uses only high quality, virgin grain, we never use recycled abrasive. The physical properties (i.e., shape, sharpness, hardness, friability) of the grain is determined by the chemical structure. Common grain types used in making bonded abrasives include:

Aluminum Oxide
A general purpose abrasive generally used on all ferrous metals.

Silicon Carbide
A very hard abrasive used on non-metallic materials, soft metals and sandy castings.

Alumina Zirconium (also referred to as Zirconium)
A very tough premium abrasive for high pressure grinding of ferrous and exotic materials. Provides extended life.

Ceramic
The premium aluminum oxide, typically blended with other abrasives. Used on high tensile and high alloy metals where superior cut rate is critical.

2. *BONDING AGENT:*

The resistance of the wheel is determined by the bonding agent. Prozon® uses a resinoid bond that is formulated to meet the unique specifications of each product.

3. *REINFORCEMENT:*

The reinforcement material provides extra strength to use the wheel at maximum RPMs and withstand lateral pressure that is applied during use. Prozon® uses multiple layers of fiberglass which are woven to form an exceptionally strong reinforcement layer specific to the application.

Combining the 3 Components:

During the manufacturing process these three components are combined to form a grinding wheel. The grain and bonding agents are measured, combined and pressed in a hydraulic press. When applicable Prozon® labels are also incorporated into the manufacturing process and therefore remain intact throughout the life of the wheel.

Prozon®

SAFETY GUIDE

IMPORTANT!!!

The following information about safety should be used only as a guide. All products listed in this catalog shall be used in accordance with safety regulations set by OSHA and by the directive described by the American National Safety Institute B7.1, 2000, covering: Speed, Safety Guards. Flanges, Mounting Procedures, General Operating Rules, Handling, Storage, and Inspection of General Machine Conditions.

OPERATE WHEELS AT RECOMMENDED SPEEDS:

Abrasive wheels must be operated at recommended safe speeds. For safety reasons, abrasive wheels should never be operated at a speed greater than that which is indicated on the blotter or wheel.

The information below is designed as a guide for the individual user of abrasive wheels, whether he is employed by a large corporation or is in the confines of his home work shop. It is based on the premise that grinding/ cutting is a safe operation when a few basic rules are followed. These rules are based on material contained in the American National Standards Institute Safety Requirements B7.1 - "Use, Care & Protection of Abrasive Wheels."

Do:

- Do always handle and store wheels in a careful manner.
- Do visually inspect all wheels before mounting for possible damage.
- Do make sure operating speed of machine does not exceed speed marked on wheel, its blotter or container.
- Do check mounting flanges for equal size, relieved as required and correct diameter.
- Do use mounting blotters as required by ANSI standards.
- Do be sure work rest is properly adjusted on bench, pedestal and floor stand grinders.
- Do always use safety guard that covers a minimum of one-half (1/2) the abrasive wheel.
- Do allow newly mounted wheels to run at operating speed, with guard in place, for at least one minuet before grinding.
- Do always wear safety glasses or some type of approved eye protection while grinding or cutting. (Read Warning Above)
- Do turn off coolant before stopping wheel to avoid creating an out-of-balance condition.
- Do follow federal, state and local laws and regulations.

Don't Do:

- Don't use a wheel that has been chopped or appears to have been abused.
- Don't force a wheel onto the machine or alter the size of the mounting hole. If the wheel wont fit the machine, get one that will..
- Don't ever exceed the maximum operating speed established for the wheel.
- Don't use mounting flanges on which the bearing surfaces are not clean, flat and smooth.
- Don't tighten the mounting not excessively.
- Don't grind on the side of conventional, straight or type 1 wheels.
- Don't use a wheel on any machine that is not properly designed for specific application of the wheel.
- Don't start the machine until the safety guard is properly and securely in place.
- Don't jam work into the wheel.
- Don't stand directly in front of a grinding/cutting wheel whenever a machine is in operation.
- Don't grind or cut material for which the wheel is not designed.

A pamphlet including these do's and Don'ts And other safety information is included in each box of wheels.

Revolutions per minuet for various diameters of abrasive wheels to give surface speed in feet per minuet as indicated

Dia. of Wheel in Inches	Surface Speed in Feet per Minute																		Dia. of Wheel in Inches
	4,000	4,500	5,000	5,500	6,000	6,500	7,000	7,500	8,000	8,500	9,000	9,500	10,000	12,000	12,500	14,200	16,000	16,500	17,000	
	Revolutions per Minute																			
1	15,279	17,189	19,099	21,008	22,918	24,826	26,737	28,648	30,558	32,467	34,377	36,287	38,197	45,837	47,746	54,240	61,115	63,025	64,935	1
1 ½	10,186	11,459	12,732	14,006	15,279	16,552	17,825	19,099	20,372	21,645	22,918	24,192	25,465	30,558	31,831	36,160	40,744	42,017	43,290	1 ½
2	7,639	8,594	9,549	10,504	11,459	12,414	13,369	14,324	15,279	16,234	17,189	18,144	19,099	22,918	23,873	27,120	30,558	31,513	32,468	2
2 ½	6,112	6,875	7,639	8,403	9,167	9,931	10,695	11,459	12,223	12,987	13,751	14,515	15,279	18,335	19,099	21,696	24,446	25,210	25,974	2 ½
3	5,093	5,730	6,366	7,003	7,639	8,276	8,913	9,549	10,186	10,823	11,459	12,096	12,732	15,279	15,915	18,080	20,372	21,008	21,645	3
3 ½	4,365	4,911	5,457	6,002	6,548	7,094	7,639	8,185	8,731	9,276	9,822	10,368	10,913	13,096	13,642	15,497	17,462	18,007	18,553	3 ½
4	3,820	4,297	4,775	5,252	5,730	6,207	6,685	7,162	7,640	8,117	8,594	9,072	9,549	11,459	11,937	13,560	15,279	15,756	16,234	4
5	3,056	3,438	3,820	4,202	4,584	4,966	5,348	5,730	6,112	6,494	6,875	7,257	7,639	9,167	9,549	10,848	12,223	12,605	12,987	5
6	2,546	2,865	3,183	3,501	3,820	4,138	4,465	4,775	5,093	5,411	5,730	6,048	6,366	7,639	7,958	9,040	10,186	10,504	10,823	6
7	2,183	2,456	2,728	3,001	3,274	3,547	3,820	4,093	4,365	4,638	4,911	5,184	5,457	6,548	6,821	7,749	8,731	9,004	9,276	7
8	1,910	2,149	2,387	2,626	2,865	3,104	3,342	3,581	3,820	4,058	4,297	4,536	4,775	5,730	5,968	6,780	7,639	7,878	8,117	8
9	1,699	1,910	2,122	2,334	2,546	2,759	2,971	3,183	3,395	3,608	3,820	4,032	4,244	5,093	5,305	6,027	6,791	7,003	7,215	9
10	1,528	1,719	1,910	2,101	2,292	2,483	2,674	2,865	3,056	3,247	3,438	3,629	3,820	4,584	4,775	5,424	6,112	6,303	6,494	10
12	1,273	1,432	1,592	1,751	1,910	2,069	2,228	2,387	2,546	2,706	2,865	3,024	3,180	3,820	3,979	4,520	5,093	5,252	5,411	12
14	1,091	1,228	1,364	1,501	1,637	1,773	1,910	2,046	2,183	2,319	2,456	2,592	2,728	3,274	3,410	3,874	4,365	4,502	4,638	14
16	955	1,074	1,194	1,313	1,432	1,552	1,671	1,790	1,910	2,029	2,149	2,268	2,387	2,865	2,984	3,390	3,820	3,939	4,058	16
18	849	955	1,061	1,167	1,273	1,379	1,485	1,592	1,698	1,804	1,910	2,016	2,122	2,546	2,653	3,013	3,395	3,501	3,608	18
20	764	859	955	1,050	1,146	1,241	1,337	1,432	1,528	1,623	1,719	1,814	1,910	2,292	2,387	2,712	3,056	3,151	3,247	20
22	694	781	868	955	1,042	1,129	1,215	1,302	1,389	1,476	1,593	1,649	1,736	2,083	2,170	2,465	2,778	2,865	2,952	22
24	637	716	796	875	955	1,035	1,114	1,194	1,273	1,353	1,432	1,512	1,592	1,910	1,989	2,260	2,546	2,625	2,706	24
26	588	661	735	808	881	955	1,028	1,022	1,175	1,249	1,322	1,396	1,469	1,763	1,836	2,086	2,351	2,424	2,498	26
28	546	614	682	750	819	887	955	1,023	1,091	1,160	1,228	1,290	1,364	1,637	1,705	1,937	2,183	2,251	2,319	28
30	509	573	637	700	764	828	891	955	1,019	1,082	1,146	1,210	1,273	1,528	1,592	1,808	2,037	2,101	2,165	30
32	477	537	597	657	716	776	836	895	955	1,015	1,074	1,134	1,194	1,432	1,492	1,695	1,910	1,970	2,029	32
34	449	506	562	618	674	780	786	843	899	955	1,011	1,067	1,123	1,348	1,404	1,595	1,798	1,854	1,910	34
36	424	477	531	584	637	690	743	796	849	902	955	1,008	1,061	1,273	1,326	1,507	1,698	1,751	1,804	36
38	402	452	503	553	603	653	704	754	804	854	905	955	1,005	1,206	1,256	1,427	1,608	1,659	1,709	38
40	382	430	477	525	573	621	668	716	764	812	859	907	956	1,146	1,194	1,356	1,528	1,576	1,623	40
42	354	409	455	500	546	591	637	682	728	773	819	864	909	1,091	1,137	1,291	1,455	1,500	1,546	42
44	347	391	434	477	521	564	608	651	694	738	781	825	868	1,042	1,085	1,233	1,389	1,432	1,476	44
46	332	374	415	457	498	540	581	623	664	706	747	789	830	996	1,038	1,179	1,329	1,370	1,412	46
48	318	358	398	438	477	517	557	597	637	676	716	756	796	955	995	1,130	1,273	1,313	1,353	48
53	288	324	360	396	432	468	504	540	577	613	649	685	721	865	901	1,023	1,153	1,189	1,225	53
60	255	286	318	350	382	414	446	477	509	541	573	605	637	764	796	904	1,019	1,050	1,082	60
72	212	239	265	292	318	345	371	398	424	461	477	504	531	637	663	753	849	875	902	72

Note: "Centrifugal Force", which is the force that tends to rupture a given wheel when overspeeding, increases as the square of the velocity of that wheel. For example, the centrifugal force in a wheel running 5,500 surface feet per minuet is 49 percent greater than in the same wheel running 4,500 surface feet per minuet, although the speed is actually only 22 percent greater. For intermediate diameters not listed use the formula listed in section 1.2.10 page 3 of ANSI B7.1 (SFPM) = .262 x wheel diam. In inches x r.p.m.) Note: SFPM ÷ 196.85 ÷ M/S (meters per second).

ROTOFILE C - CYLINDRICAL (PLAIN END)

DESCRIPTION	SHANK	LENGTH	ALU	COAR.	STD	ADC	DIA	FINE
1/8 X 1/2	1/4	-			401358	401359	401700	
3/16 X 5/8	1/4	-			401360	401361	401362	
1/4 X 5/8	1/4	-			401363	401364	401365	
5/16 X 3/4	1/4	-			401366	401367	401368	
3/8 X 3/4	1/4	-	401810		401369	401370	401371	
7/16 X 1	1/4	-			401372	401373	401374	
1/2 X 1	1/4	-	401811		401375	401376	401377	
5/8 X 1	1/4	-			401378	401379	401380	
3/4 X 3/4	1/4	-			401381	401382	401701	
3/4 X 1	1/4	-			401383	401384	401702	
1 X 1	1/4	-			401385	401386	401703	
EXTENDED SHANK								
1/4 X 5/8	1/4	6-5/8			401800	401801	401704	
3/8 X 3/4	1/4	6-3/4			401802	401803	401705	
1/2 X 1	1/4	7			401804	401805	401706	

ROTOFILE CE - CYLINDRICAL (RADUIS END)

DESCRIPTION	SHANK	LENGTH	ALU	COAR.	STD	ADC	DIA	FINE
1/8 X 1/2	1/4	-			401387	401388	402389	
3/16 X 5/8	1/4	-			401390	401391	401707	
1/4 X 5/8	1/4	-			401392	401393	401708	
5/16 X 3/4	1/4	-			401394	401395	401396	
3/8 X 3/4	1/4	-			401397	401398	401709	
7/16 X 1	1/4	-			401399	401400	401401	
1/2 X 1	1/4	-			401402	401403	401404	
5/8 X 1	1/4	-			401405	401406	401407	
3/4 X 3/4	1/4	-			401408	401409	401410	
3/4 X 1	1/4	-			401411	401412	401413	
1 X 1	1/4	-			401414	401415	401416	

ROTOFILE CR - CYLINDRICAL (RADUIS END)

DESCRIPTION	SHANK	LENGTH	ALU	COAR.	STD	ADC	DIA	FINE
1/8 X 1/2	1/4	-			401017	401418	401710	
3/16 X 5/8	1/4	-			401419	401420	401711	
1/4 X 5/8	1/4	-			401421	401422	401423	
5/16 X 3/4	1/4	-			401424	401425	401712	
3/8 X 3/4	1/4	-	401830		401426	401427	401428	
7/16 X 1	1/4	-			401429	401430	401431	
1/2 X 1	1/4	-	401831		401432	401433	401434	
5/8 X 1	1/4	-			401435	401436	401437	
3/4 X 1	1/4	-			401438	401439	401440	
1 X 1	1/4	-			401441	401422	401443	
		-						
EXTENDED SHANK								
1/4 X 5/8	1/4	6-5/8			401820	401821	401720	
3/8 X 3/4	1/4	6-3/4			401822	401823	401721	
1/2 X 1	1/4	7			401824	401825	401722	

ROTOFILE B - BALL

DESCRIPTION	SHANK	LENGTH	ALU	COAR.	STD	ADC	DIA	FINE
1/8 X 3/32	1/4	-			401444	401445	401713	
3/16 X 1/8	1/4	-			401446	401447	401714	
1/4 X 3/16	1/4	-			401448	401449	401450	
5/16 X 1/4	1/4	-			401451	401452	401715	
3/8 X 5/16	1/4	-	401840		401453	401454	401455	
7/16 X 3/8	1/4	-			401456	401457	401458	
1/2 X 7/16	1/4	-	401841		401459	401460	401461	
5/8 X 9/16	1/4	-			402462	401463	401716	
3/4 X 11/16	1/4	-			401464	401465	401466	
1 X 15/16	1/4	-			401467	401468	401469	
EXTENDED SHANK								
1/4 X 3/16	1/4	6-3/16			401842	401853	401717	
3/8 X 5/16	1/4	6-5/16			401844	401845	401718	
1/2 X 7/16	1/4	6-7/16			401846	401847	401719	

ROTOFILE C - OVAL

DESCRIPTION	SHANK	LENGTH	ALU	COAR.	STD	ADC	DIA	FINE
1/4 X 3/8	1/4	-			401470	401471	401723	
3/8 X 5/8	1/4	-	401850		401472	401473	401474	
1/2 X 7/8	1/4	-	401851		401475	401476	401477	
5/8 X 1	1/4	-			401478	401479	401724	
3/4 X 1	1/4	-			401480	401481	401725	
EXTENDED SHANK								
1/4 X 3/8	1/4	6-3/16			401852	401853	401726	
3/8 X 5/8	1/4	6-5/16			401854	401855	401727	
1/2 x 7/8	1/4	6-7/16			401856	401857	401728	

ROTOFILE TR - TREE (RADIUS END)

DESCRIPTION	SHANK	LENGTH	ALU	COAR.	STD	ADC	DIA	FINE
1/4 X 5/8	1/4	-			401482	401483	401484	
3/8 X 3/4	1/4	-	401860		401485	401486	401487	
7/16 X 1	1/4	-			401488	401489	401490	
1/2 X 3/4	1/4	-			401491	401492	401493	
1/2 X 1	1/4	-	401861		401494	401495	401496	
5/8 X 1	1/4	-			401497	401498	401729	
3/4 X 1	1/4	-			401499	401500	401900	
3/4 X 1-1/4	1/4	-			401501	401502	401901	
EXTENDED SHANK								
1/4 x 5/8	1/4	6-3/16			401862	401863	401730	
3/8 x 3/4	1/4	6-5/16			401864	401865	401731	
1/2 x 1	1/4	6-7/16			401866	401867	401732	

ROTOFILE TP - TREE (POINTED END)

DESCRIPTION	SHANK	LENGTH	ALU	COAR.	STD	ADC	DIA	FINE
1/4 X 5/8	1/4	-			401503	401504	401505	
5/16 X 3/4	1/4	-			401506	401507	401508	
3/8 X 3/4	1/4	-			401509	401510	401511	
1/2 X 3/4	1/4	-			401512	401513	401903	
1/2 X 1	1/4	-			401514	401515	401516	
5/8 X 1	1/4	-			401517	401518	401733	
3/4 X 1	1/4	-			401519	401520	401734	
EXTENDED SHANK								
1/4 x 5/8	1/4	6-5/8			401870	401871	401735	
3/8 x 3/4	1/4	6-3/4			401872	401873	401736	
1/2 x 1	1/4	7			401874	401875	401737	

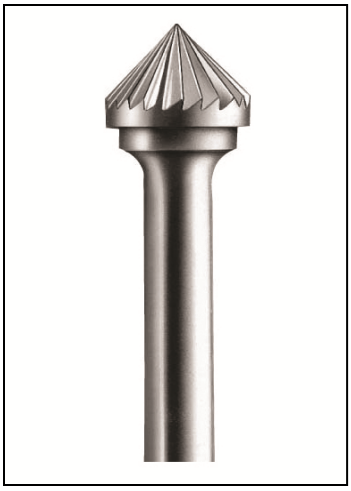
ROTOFILE F - FLAME

DESCRIPTION	SHANK	LENGTH	ALU	COAR.	STD	ADC	DIA	FINE
5/16 X 3/4	1/4	-			401524	401525	401738	
1/2 X 1-1/4	1/4	-			401526	401527	401739	
5/8 X 1-7/16	1/4	-			401528	401529	401740	
3/4 X 1-5/8	1/4	-			401530	401531	401741	
EXTENDED SHANK								
5/16 X 3/4	1/4	6-3/4			401880	401881	401742	
1/2 X 1-1/4	1/4	7-1/4			401882	401883	401743	

ROTOFILE C-60 - 60° CONE

DESCRIPTION	SHANK	LENGTH	ALU	COAR.	STD	ADC	DIA	FINE
1/4	1/4	-			401535	401536	401744	
3/8	1/4	-			401537	401538	401745	
1/2	1/4	-			401539	401540	401746	
5/8	1/4	-			401541	401542	401747	
3/4	1/4	-			401543	401544	401748	
1	1/4	-			401546	401547	401749	

ROTOFILE C-90 - 90° CONE



DESCRIPTION	SHANK	LENGTH	ALU	COAR.	STD	ADC	DIA	FINE
1/4	1/4	-			401550	401551	401750	
3/8	1/4	-			401552	401553	401751	
1/2	1/4	-			401554	401555	401752	
5/8	1/4	-			401556	401557	401753	
3/4	1/4	-			401558	401559	401754	
1	1/4	-			401560	401561	401755	

ROTOFILE R-14 - 14° TAPER (RADIUS END)

DESCRIPTION	SHANK	LENGTH	ALU	COAR.	STD	ADC	DIA	FINE
1/4 X 5/8	1/4	-			401565	401566	401567	
5/16 X 7/8	1/4	-			401568	401569	401570	
3/8 X 1-1/16	1/4	-			401571	401572	401573	
1/2 X 1-1/8	1/4	-			401574	401575	401567	
5/8 X 1-1/16	1/4	-			401577	401578	401579	
3/4 X 1-1/2	1/4	-			401580	401581	401756	
EXTENDED SHANK								
1/4 X 5/8	1/4	-			401890	401891	401757	
3/8 X 1-1/16	1/4	-			401892	401893	401758	
1/2 X 1-1/8	1/4	-			401894	401895	401759	

ROTOFILE CP - CONE (POINTED)

DESCRIPTION	SHANK	LENGTH	ALU	COAR.	STD	ADC	DIA	FINE
1/4 X 1/2	1/4	-			401585	401586	401760	
1/4 X 3/4	1/4	-			401587	401588	401761	
1/4 X 1	1/4	-			401589	401590	401762	
3/8 X 3/4	1/4	-			401591	401592	401902	
1/2 X 1	1/4	-			401594	401595	401763	
5/8 X 1-1/8	1/4	-			401596	401597	401764	

Prozon®

PRO-LINE REINFORCED CUT-OFF WHEELS

TYPE 1 REINFORCED METAL CUT-OFF WHEELS STATIONARY MACHINES

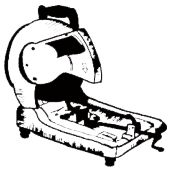
Premium Aluminum Oxide

Use on:
- Stationary Saws

Use for:
- Metal Cutting

SIZE	SPEC.	MAX RPM	PART #	BOX Qty.
7 X .035 X ⅝	A60-TBF9	8,500	A0059S	25
7 X .035 X 1¼	A60-TBF9	8,500	A0061S	25
1 X 1/16 X ⅝	11A46-TBF9	8,500	A0064S	25
7 X 1/16 X 1¼	11A46-TBF9	8,500	A0066S	25
7 X ⅛ X ⅝	A30-VBF2	8,500	A0067S	25
8 X ⅛ X ⅝	A24-TBF2	7,650	A0078S	25
9 X 1/16 X ⅝	A30-SBF2	6,650	A0082S	25
10 X ⅛ X ⅝	A24-RSBF2	6,150	A0094S	25
10 X ⅛ X 1	A30-SBF2	6,150	A0126S	25
12 X ⅛ X 1	22A242-RSBF2	5,100	A0097S	10
14 X ⅛ X 1	22A242-RSBF1	4,400	A0104S	10
14 X ⅛ X 1	22A242-RSBF2	4,400	A0355S	10
16 X ⅛ X 1	22A242-RSBF2	3,850	A0356S	10
16 X ⅛ X 1	55A242-RSBF1	3,850	A0109S	10
16 X ⅛ X 1	55A24-RSBF1	3,850	A0107S	10
16 X ⅛ X 1	55A242-VBF2	3,850	A0108S	10
18 X ⅛ X 1	22A242-RSBF2	3,400	A0110S	10
20 X ⅛ X 1	55A24-RSBF1	3,100	A0113S	10
20 X ⅛ X 1	22A242-VBF2	3,100	A0114S	10
20 X 3/16 X 1	22A46-SBF1 (TUBE CUT)	3,100	A0112S	10
20 X 3/16 X 1	22A242-RSBF3	3,100	A0118S	10

Premium bonds available in all sizes upon request



TYPE 1 REINFORCED METAL CUT-OFF WHEELS CHOP SAW

Metal Cut-Off Wheels A36

Use on:
- Chop Saws

Use for:
- Rebar
- Angle Iron
- Tubing
- Steels

SIZE	SPEC.	MAX RPM	PART #	BOX Qty.
10 X 3/32 X 1	A36	6,150	A009S2	10
12 X 3/32 X 1	A36	5,100	A0096S	10
14 X 3/32 X 1	A36	4,400	A0134S	10
16 X 3/32 X 1	A36	3,850	A0106S	10

Premium bonds available in all sizes upon request

SERGO FAST CUT

Chop Saw Wheel A24P

SIZE	SPEC.	MAX RPM	PART #	BOX Qty.
14 X 3/32 X 1	A24P	4,400	A0295S	10

TYPE 1 REINFORCED METAL CUT-OFF WHEELS STATIONARY MACHINES

Masonry Cut-Off Wheels C24R

Use on:
- Stationary Saws

Use for:
- Brick
- Non-Ferrous Metals
- Aluminum
- Brass

SIZE	SPEC.	MAX RPM	PART #	BOX Qty.
10 X ⅛ X 1	C24R	6,150	A0468S	10
12 X ⅛ X 1	C24R	5,100	A0132S	10
14 X ⅛ X 1	C24R	4,400	A0103S	10
16 X 5/32 X 1	C24R	3,850	A0138S	10
18 X ⅛ X 1	C24R	3,400	A0469S	10
20 X 3/16 X 1	C24R	3,100	A0470S	10

Premium bonds available in all sizes upon request

TYPE 1 REINFORCED METAL CUT-OFF WHEELS STATIONARY MACHINES

Premium Zirconia X12

Use on:
- Stationary Saws

Use for <u>longer</u> Life on:
- Stainless
- Carbon Steels
- Nickel Alloys

SIZE	SPEC.	MAX RPM	PART #	BOX Qty.
16 X ⅛ X 1	72A203-VBF	3,850	A0242S	10
20 X ⅛ X 1	62A242-Y9BF2	3,100	A0197S	10

TYPE 1 REINFORCED METAL CUT-OFF WHEELS SWING FRAME MACHINES

Metal Cut-Off Wheels Aluminum Oxide

Use on:
- Swing Frame Saws

Use for:
- Stainless
- Carbon Steels
- Nickel Alloys

SIZE	SPEC.	MAX RPM	PART #	BOX Qty.
20 X 3/16 X 1	22A242-VBF3	3,100	A0119S	10
20 X 3/16 X 1¾	22A242-VBF3	3,100	A0120S	10
24 X ¼ X 1¾	22A242-VBF3	2,550	A0122S	5
26 X 3/16 X 1½	55A24-SBF3	2,050	A0124S	5

Regulation Safety Glasses should *always* be worn when using cutting and grinding products.

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