

SUPERIOR

ABRASIVES

PRODUCT GUIDE & | 26
REFERENCE MANUAL



SUPERIOR





ABRASIVES

PRODUCT GUIDE & REFERENCE MANUAL 26
 Supersedes all previous literature
 Reorder Number 70600

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► Performance Rating Reference Guide		
● Best	◐ Better	○ Good

► RPM Classification Reference Guide	
Max RPM	Optimal RPM
Maximum safe operating speed as determined by product or accessory tolerances and tooling limitations. Exceeding Max RPM may cause property damage or personal injury.	Suggested speed at which products perform best in optimal conditions. Several variables affect performance conditions, and Optimal RPM is only used as a suggestion.

► Tool Operation Reference Guide	
	Airfile Belt Sander
	Portable Belt Sander
	Benchstand Belt Sander
	Backstand/ Wide Belt Sander
	Right Angle Grinder
	Right Angle Die Grinder
	Straight Die Grinder
	Flex Shaft Grinder
	Orbital Sander
	Platen Disc Sander
	Bench Grinder
	Pedestal Grinder
	Drill Press
	Hand Operation

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New Products

CERAMIC PREMIUM QUICK CHANGE DISCS 85

Combining premium and selective backings, coatings and grains, we offer a new, competitive solution to cut rate, heat generation and operator fatigue.



CERAMIC ADVANTAGE QUICK CHANGE DISCS 85

The finer crystalline structure of Ceramic Advantage grains enhances self-sharpening effects, resulting in consistent performance throughout life.



ABRASIVE CAPS 126

The seamless structure of abrasive caps is advantageous for consistency in mold & die repair or fine detail work, maintaining its shape throughout product use.



RED STRIPPING WHEELS & DISCS . . . 74

Premium, heavy duty stripping material with aggressive removal rate, extended life and consistent performance throughout. Available in many forms.



BLAC-KUT HIGH DENSITY ZIRCONIA FLAP DISCS 99

A cost efficient option to high density discs, Blac-Kut Flap Discs are manufactured with larger flaps, providing effective material removal with an extended product life.



MOUNTED SEAMLESS SATIN WHEELS 43

The unique structure of Seamless Satin Wheels is for depolishing and matte finishing without harsh and visible transition lines, avoiding secondary steps.



WHEELS FOR RIGHT ANGLE GRINDERS

Several new products are available exclusively for right angle grinders, taking advantage of the availability, familiarity and ease of use of the tool. Larger areas can be handled with right angle grinders versus smaller tools, and multiple steps can be rendered without changing your operational setup.

Seamless Satin Wheels 42



Satin Wheels 42



Duplex Wheels 41



Flap Wheels 113



Our ambition is to separate ourselves from the common manufacturer. To institute integrity and honor during our relentless pursuit of new and profitable markets. To develop new and innovative products and processes based on our customers' needs. It is our intent to create an enjoyable working environment based solely on our uncompromising commitment to our boss, the customer.

Lynne Henson, *President*

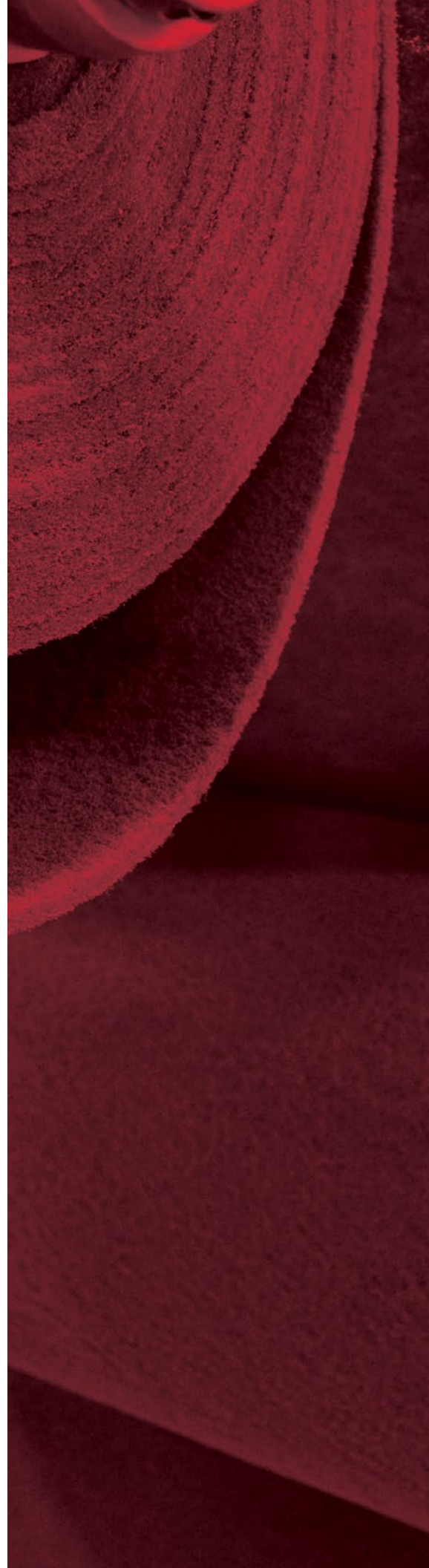




For over 50 years, we have been manufacturing coated and nonwoven abrasive products used in metal fabrication, industrial manufacturing, and specialty equipment production. Our standard product offering tackles the day to day challenges of grinding, finishing, and polishing. For demanding applications such as those found in the Aerospace, Medical, and Power Generation fields, our team of experienced engineers will design an abrasive solution tailored to fit any job.

Since 2007, Superior Abrasives has been participating in Lean Manufacturing. Our relentless pursuit of continual process improvement has enabled us to reduce production costs and eliminate waste while maintaining high quality standards at each stage of the production cycle. This ensures overall product quality and measured repeatable performance for the customer.

Our mission is to provide world-class quality coated and nonwoven abrasive products through a superior customer buying experience.



Markets We Serve

- ▶ Aerospace
- ▶ Automotive & Truck
- ▶ Aviation
- ▶ Food Processing Equipment
- ▶ Machine Shops
- ▶ Medical
- ▶ Metal Fabrication
- ▶ Military Applications
- ▶ Mold & Pattern
- ▶ Pipeline
- ▶ Stainless Steel Finishing
- ▶ Tube Manufacturing



About Us

Training & Conference Facility

Our modern facility features dedicated training resources for our employees and distributor partners. We are able to host large groups for classroom-like training sessions and share our product knowledge and industry application insight with you and your customers.

Please contact your Superior Representative to discuss and arrange an event tailored to your needs.



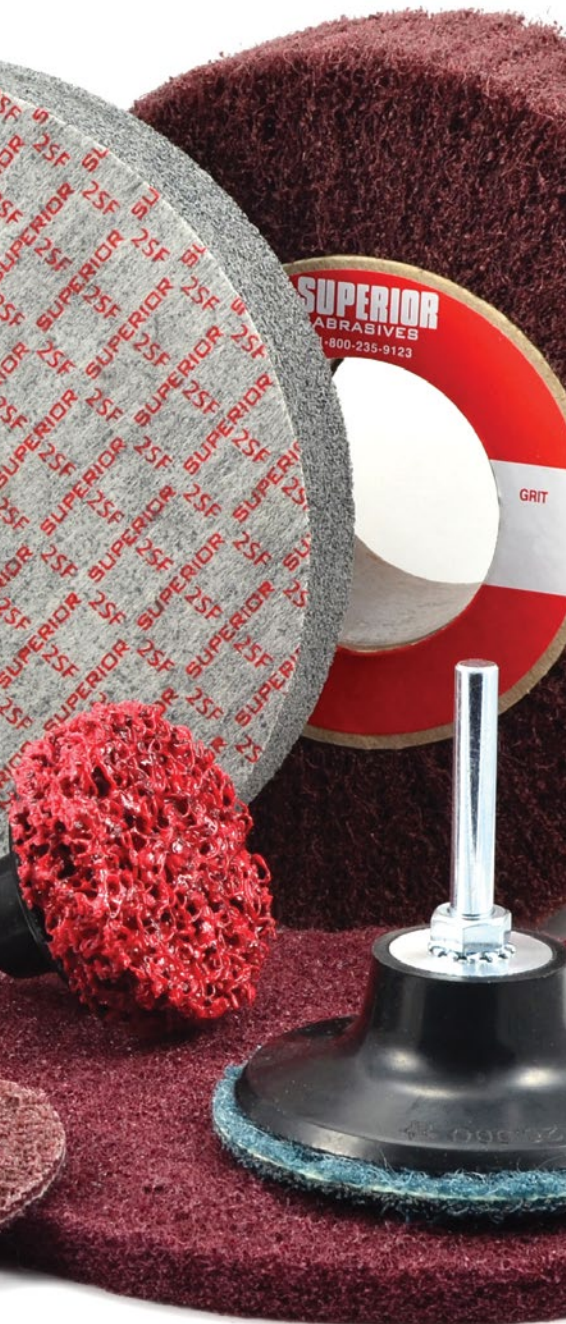
Testing & Development Lab

Firsthand product or material testing and continual training are fundamental to the development of successful solutions. Outfitted with the latest operational and safety standards, our Testing & Development Lab hosts a variety of tooling and application resources. Based on customer discovery and requests, we are able to recreate product and application conditions to reduce response time and streamline sales cycles. To expand on our offering of product and application analysis, we can receive your actual components and workpieces to discover, test and share new and time-saving methods.

We believe in sharing collective industry knowledge to instill confidence in both our employees and distributor partners. Opening communication channels and establishing partnerships allows us to offer the best services for your success.







SHUR-BRITE® Nonwoven Abrasives

SHUR-BRITE®

Nonwoven Features

SHUR-BRITE® offers the full range of nonwoven products for solving pre- or post-process applications. From shaping and deburring to cleaning and polishing, the versatile structure of SHUR-BRITE® Nonwoven Abrasives provides flexibility, conformability, strength and consistency. Complementary to SHUR-KUT® Coated Abrasives, SHUR-BRITE® Nonwoven Abrasives are better able to navigate workpieces without marring or gouging and can enable any final finish requirements.



Nonwoven Characteristics

All SHUR-BRITE® Nonwoven Abrasives consistently feature three components - nylon fibers, abrasive grains and resin. Each component is equally important and cannot perform a proper task without the others. The key to SHUR-BRITE® Nonwoven Abrasives are the nylon fibers, which give products their dimensional, open structure, and control the conformability.

The synthetic fiber structure, or fleece, is impregnated with abrasive grains and resins. The grains attach to the fiber, and the resin bonds these components together, leaving open areas throughout the nonwoven structure. Synthetic nylon fibers are the cushioning foundation which carry the grain media providing the cutting action.

▶ Components of Nonwoven Abrasives	
Nylon Fiber	<ul style="list-style-type: none"> • Structural foundation of nonwoven abrasives • Synthetic, waterproof and chemical resistant • Controls loft and cushion of product
Abrasive Grains	<ul style="list-style-type: none"> • Responsible for cutting action, as with coated abrasives • Uniformly distributed throughout material • Aluminum Oxide (A/O) is more durable and lasts longer • Silicon Carbide (S/C) is sharper, resulting in a finer cut
Resin	<ul style="list-style-type: none"> • Strongly bonds all components together • Flexible adhesive • Waterproof and resistant to chemicals • Controls material density

Applications

- ▶ Directional finishing of stainless steel
- ▶ Mold & die restoration polishing
- ▶ Blending coated abrasive scratch patterns
- ▶ Surface preparation before painting or coating
- ▶ Architectural & aesthetic finishing
- ▶ Mirror finish polishing
- ▶ Blending parting lines on cast parts
- ▶ Edge breaking or corner radiusing
- ▶ Stock removal & weld blending
- ▶ Corrosion, rust & oxidation removal
- ▶ Cleaning & micro-deburring threads or gears
- ▶ Spatter removal & cleanup
- ▶ Removing flash & runners from cast parts
- ▶ Gasket & adhesives removal
- ▶ Paint, scale or surface coating removal
- ▶ Off-hand finishing & cleaning
- ▶ Cleaning & removing weld discoloration
- ▶ Blending & removing tool or handling blemishes



▶ Performance	Surface Conditioning	Satin Finishing	Convolute	Unitized	Stripping
Grinding	●				
Removal	●	○			●
Shaping	●		○	○	
Deburring	●	○	●	●	
Blending	●	●	●	●	○
Finishing	●	●	●	●	
Cleaning	○	●	●	●	●
Polishing	○	●	●	●	

SHUR-BRITE® Nonwoven Abrasives are each made with variable ratios of nylon fibers, abrasive grains and resins. These unique formulas control the performance and qualities of each product.

<p>Surface Conditioning 17</p>	<p>Fibers, grains and resins are supported by a woven substrate, or scrim reinforcement, adding lateral strength during high-speed mechanical use. Due to the scrim reinforcement, surface conditioning products are one-sided and used with attachments or intermediary tooling for more aggressive applications.</p>
<p>Satin Finishing 35</p>	<p>Made without a scrim reinforcement, satin, or fleece, products are more pliable and omni-directional. Satin products remove less material and are well suited for general cleaning, blending and polishing applications.</p>
<p>Convolute 55</p>	<p>Compressed nonwoven abrasives are wrapped convolutely around a center core, producing a harder, one-directional wheel. Resin ratios and winding tension determine wheel density. Used with stationary machines, due to the larger dimensions of the wheels.</p>
<p>Unitized 61</p>	<p>Layered sheets of nonwoven abrasives are compressed in resins, forming a dense slab, from which smaller diameter wheels are produced. The density of unitized wheels allows controlled cutting, cleaning and polishing action for tighter tolerances.</p>
<p>Stripping 71</p>	<p>Less compressed, yet harder and richer with resins, stripping products remove workpiece layers of the least resistance. The extremely open, less-conformable structure is ideal for fast removal of undesired coatings.</p>

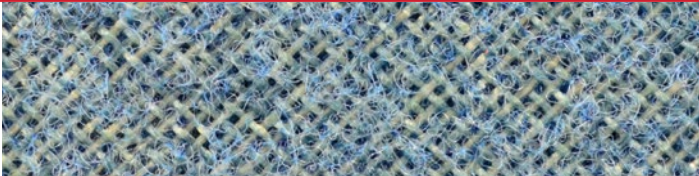
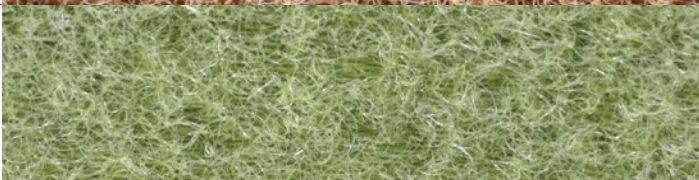




SHUR-BRITE® Surface Conditioning

Surface Conditioning Characteristics

Like other nonwoven abrasives, SHUR-BRITE® Surface Conditioning consists of fibers, grains and resins, but is more aggressive. The unique characteristic is the integrated woven substrate, or scrim reinforcement, which creates strength and one-sided use, similar to SHUR-KUT® Coated Abrasives. Variations of SHUR-BRITE® Surface Conditioning reinforcement include Standard Scrim, Low Stretch (LS) and Flex (XF).

▶ Scrim Woven Reinforcements		
Standard Scrim	<ul style="list-style-type: none"> • Open-weave reinforcement • Provides strength for mechanical use • For discs & specialty products 	
LS (Low Stretch)	<ul style="list-style-type: none"> • Tightly-woven reinforcement • Reduces stretching • Consistency in performance • For larger belts 	
XF (Flex)	<ul style="list-style-type: none"> • Thin, pliable reinforcement • Flexible over contact wheels • Conforms to smaller areas • For file belts & specialty products 	

Surface Conditioning Features

Surface conditioning materials are considered the workhorse of SHUR-BRITE® Nonwoven Abrasives. Consider the same form and function of coated abrasives, with the added benefits of conformability and forgiveness, reduced loading, and consistent performance. SHUR-BRITE® Surface Conditioning products are not as aggressive as most SHUR-KUT® Coated Abrasives but showcase their versatility between heavy grinding and fine finishing with several material grades available.





- ▶ Consistent finishes throughout product life
- ▶ Lower operational heat than coated abrasives
- ▶ Reduced loading, smearing and discoloration
- ▶ Reduced process stages
- ▶ Suitable for wet or dry applications
- ▶ Conformable cutting action better for off-hand finesse

Applications

- ▶ Mold & die restoration polishing
- ▶ Blending coated abrasive scratch patterns
- ▶ Surface preparation before painting or coating
- ▶ Architectural & aesthetic finishing
- ▶ Blending parting lines on cast parts
- ▶ Stock removal & weld blending
- ▶ Corrosion, rust & oxidation removal
- ▶ Spatter removal & cleanup
- ▶ Removing flash & runners from cast parts
- ▶ Gasket & adhesives removal
- ▶ Paint, scale or surface coating removal
- ▶ Off-hand finishing & cleaning

Within the SHUR-BRITE® Surface Conditioning offering, multiple performance factors can be met, depending on the applications.

Most Aggressive

<p>Most Aggressive</p>	 High Performance	<p>Heavy duty action with a unique resin formula. Firm cutting action for aggressive stock removal.</p>
	 Extended Performance	<p>Aggressive cutting action and consistent finishing. Better edge retention for extended life.</p>
	 Grind Duty	<p>Balanced cutting rate and repeatable finishing qualities.</p>
	 Finish Duty	<p>Excellent surface finish control.</p>
<p>Least Aggressive</p>		

▶ Performance	XE	EP	GD	FD
Overall Cut	●	●	◐	○
Finish	○	○	◐	●
Flexibility	○	○	◐	●
Pressure	●	◐	◐	○

● Best ◐ Better ○ Good

SHUR-BRITE® Surface Conditioning

Surface Conditioning Quick Change Discs

The smaller diameters of quick change discs allow easy access to tighter areas of intricate workpieces, while maintaining a higher speed for aggressive material removal or blending. Used on right angle die grinders, quick change discs can be finessed and easily controlled for precision material removal, shaping or blending applications. Worn discs can be replaced without additional tooling, minimizing production downtime, and easing progressive finishing steps.

Features

- ▶ Smaller footprint for intricate parts and hard to reach work areas
- ▶ Fast product changeover with no additional tooling
- ▶ High speed operation for fast results
- ▶ Can be used with oils & lubricants to further reduce heat or smearing
- ▶ Free of metallic ingredients



X^E HIGH PERFORMANCE QUICK CHANGE DISCS

For aggressive applications requiring fast material removal, or lasting performance on harder metals. Exceptional contact pressure in small, flat areas.

- ▶ Aggressive blending & removal
- ▶ Firm cutting action for flat surfaces
- ▶ Heavy deburring
- ▶ Scale removal
- ▶ Rough shaping of soft materials
- ▶ Fastest initial stock removal



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED
Type S	1-1/2"	30,000	8,500	100	40412	40413
	2"	30,000	7,000	50	40414	40415
	3"	20,000	4,500	25	40416	40417
Type R	1-1/2"	30,000	8,500	100	40418	40419
	2"	30,000	7,000	50	40420	40421
	3"	20,000	4,500	25	40422	40423
	4"	12,000	3,500	25	41383	41384

● Ferrous ○ Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

▶ **Superior Support**

Each button type is associated with the corresponding holder and are not interchangeable.



EP^P EXTENDED PERFORMANCE QUICK CHANGE DISCS

Aggressive, consistent finishing on hard, contoured surfaces. Durable edge retention and less smearing when used at tighter angles.

- ▶ Heavy blending & deburring
- ▶ High edge endurance
- ▶ Aggressive action on contours
- ▶ Consistent, heavy finishing
- ▶ Reduced heat on hard metals

Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED
Type S	1-1/2"	30,000	8,500	100	52332	52339
	2"	30,000	7,000	50	50760	50761
	3"	20,000	4,500	25	50762	50763
Type R	1-1/2"	30,000	8,500	100	52338	52340
	2"	30,000	7,000	50	50764	50765
	3"	20,000	4,500	25	50758	50766
	4"	12,000	3,500	25	51811	52290

● Ferrous ○ Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

▶ **Superior Support**

Material grades are determined by the size of abrasive grains, not the density or flexibility of the product. Using the same grain size within higher fiber or resin content will produce different, and sometimes unexpected results.

SHUR-BRITE® Surface Conditioning

GD GRIND DUTY QUICK CHANGE DISCS

A balanced density of grains and resin offer a controlled cut rate on harder metals and less loading on softer materials. Moderate cushion and flexibility reduces gouging or marring on all flat surfaces and contours.

- ▶ Blending coated scratch patterns
- ▶ Equal performance on flat or contoured surfaces
- ▶ Reduced risk of gouging softer materials
- ▶ Consistent performance
- ▶ Several grades available for progressive finishing



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED	VFN	SFN
Type S	1-1/2"	30,000	8,500	100	10541B	10542B	10543B	38456B
	2"	30,000	7,000	50	10544B	10545B	10546B	38457B
	3"	20,000	4,500	25	10547B	10548B	10549B	38458B
Type R	1-1/2"	30,000	8,500	100	10550B	10551B	10552B	38459B
	2"	30,000	7,000	50	10553B	10554B	10555B	38460B
	3"	20,000	4,500	25	10556B	10557B	10558B	38461B
	4"	12,000	3,500	25	32120B	18354B	18353B	41382B

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

FD FINISH DUTY QUICK CHANGE DISCS

Primarily used for surface finishing and preparation, FD quick change discs provide a consistent cutting rate and repeatable finish on stainless steels and non-ferrous metals. Cooler temperatures are maintained, resulting in longer life for uninterrupted application.

- ▶ Achieve required surface finishes
- ▶ Progressive scratch removal
- ▶ Surface treatment & preparation
- ▶ Added flexibility



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED	VFN	SFN
Type S	1-1/2"	30,000	8,500	100	10541	10542	10543	38456
	2"	30,000	7,000	50	10544	10545	10546	38457
	3"	20,000	4,500	25	10547	10548	10549	38458
Type R	1-1/2"	30,000	8,500	100	10550	10551	10552	38459
	2"	30,000	7,000	50	10553	10554	10555	38460
	3"	20,000	4,500	25	10556	10557	10558	38461
	4"	12,000	3,500	25	32120	18354	18353	41382

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ● Composites



QUICK CHANGE DISC HOLDERS

Type	Diameter	Shank	Max RPM	Std. Pkg.	SOFT	MEDIUM	FIRM
Type S	3/4"	1/4"	40,000	1	-	11169	-
	1"	1/4"	40,000	1	-	11170	-
	1-1/2"	1/4"	30,000	1	50257	11171	46310
	2"	1/4"	30,000	1	11172	11173	11174
	3"	1/4"	20,000	1	11175	11176	11177
	4"	1/4"	12,000	1	-	11178	-
Type R	3/4"	1/4"	40,000	1	-	40564	-
	1"	1/4"	40,000	1	-	11273	-
	1-1/2"	1/4"	30,000	1	50258	11274	51082
	2"	1/4"	30,000	1	50254	11275	40821
	3"	1/4"	20,000	1	50420	11276	38308
	4"	1/4"	12,000	1	-	34992	-

► Superior Support

For added flexibility on inside contours, try using an undersized holder. Pressure and aggression will be compromised, but you may reach tighter areas.



SHUR-BRITE® Surface Conditioning

Surface Conditioning Hook & Loop Discs

For removal, blending, surface preparation and finishing of larger areas, the hook and loop attachment system safely secures larger diameter discs to multiple tools. Compared to smaller quick change discs, full surface treatments of larger workpieces can be completed with less changeover, and product or operator fatigue. Best for flat and moderately contoured surfaces, materials available are well suited for a variety of industrial applications.

Features

- ▶ Fastening system secures discs in place without tooling
- ▶ Ideal for large, flat or accessible areas
- ▶ Refine surface patterns with orbital sanders
- ▶ Larger diameter material coverage easily blends in fewer steps for faster results
- ▶ Can be used with oils & lubricants to further reduce heat or smearing
- ▶ Free of metallic ingredients



X^E HIGH PERFORMANCE HOOK & LOOP DISCS



For aggressive, larger scale applications requiring fast material removal, or lasting performance on harder metals. Best for smoothing or shaping harsh angles or surface imperfections.

- ▶ Heavy blending & spatter removal
- ▶ Exceptional contact pressure for harder metals
- ▶ Large scale rust & oxide removal
- ▶ Heavy deburring & shaping

Diameter	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED
4"	8,000	3,300	20	40402	40403
4-1/2"	8,000	3,000	20	40404	40405
5"	7,000	2,600	20	40406	40407
7"	6,000	1,800	20	40408	40409

● Ferrous ○ Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

E^P EXTENDED PERFORMANCE HOOK & LOOP DISCS



Consistent surface refinement and finishing on harder metals. Durable edge retention for heavy, inside diameter deburring or weld removal.

Diameter	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED
4"	8,000	3,300	20	52375	52376
4-1/2"	8,000	3,000	20	50843	52378
5"	7,000	2,600	20	51543	51544
7"	6,000	1,800	20	50844	51408

● Ferrous ○ Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

- ▶ Heavy blending & removal
- ▶ High edge endurance
- ▶ Aggressive action on contours & inside corners
- ▶ Consistent finishing with long life
- ▶ Reduced heat on hard metals

SHUR-BRITE® Surface Conditioning


GD GRIND DUTY HOOK & LOOP DISCS

Controlled cut rate and surface finishing range on harder metals. Balanced density of grains and resin reduce heat generation, loading and smearing on both hard or soft materials.


- ▶ Blending or refining scratch patterns
- ▶ Moderate cushion and flexibility
- ▶ Reduced risk of gouging soft materials
- ▶ Consistent performance
- ▶ Several grades available for progressive finishing

▶ Superior Support

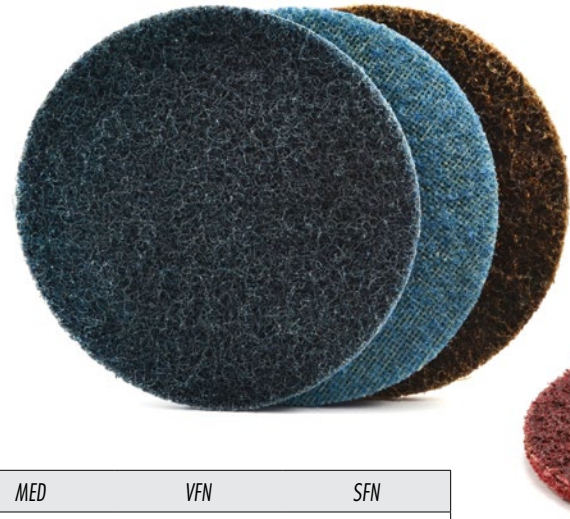
Super Fine (SFN) materials contain Silicon Carbide (S/C) abrasives, which produce sharper, finer cuts, resulting in brighter finishes.



CRS (A/O)



SFN (S/C)



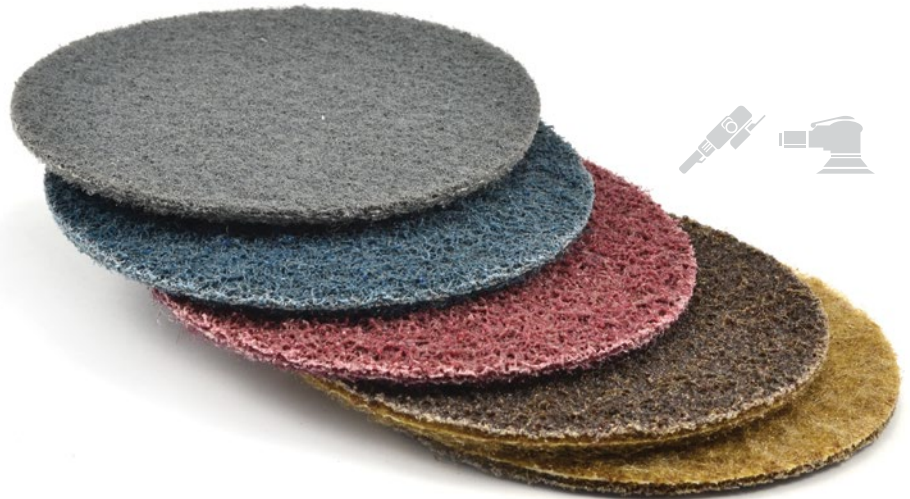
Diameter	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED	VFN	SFN
4"	8,000	3,300	20	10577B	10578B	10579B	38799B
4-1/2"	8,000	3,000	20	10580B	10581B	10582B	38800B
5"	7,000	2,600	20	10583B	10584B	10585B	38801B
7"	6,000	1,800	20	10589B	10590B	10591B	38802B

- Ferrous
 Non-Ferrous
 Stainless
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FD FINISH DUTY HOOK & LOOP DISCS

For surface preparation or finishing with measured, repeatable results on stainless steels and non-ferrous metals. Cooler temperatures are maintained, resulting in longer life for larger surface areas.

- ▶ Achieve required surface finishes
- ▶ Progressive scratch removal
- ▶ Fine blending & smoothing
- ▶ Surface treatment & preparation



Diameter	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED	VFN	SFN
4"	8,000	3,300	20	10577	10578	10579	38799
4-1/2"	8,000	3,000	20	10580	10581	10582	38800
5"	7,000	2,600	20	10583	10584	10585	38801
7"	6,000	1,800	20	10589	10590	10591	38802

- Ferrous
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▶ Superior Support

The "hooks" of the pad grab the fibers, or "loops" of the disc.



HOOK & LOOP DISC HOLDERS



Diameter	Arbor/Shank	Connector	Max RPM	Std. Pkg.	Part #
4"	1/4"	Male	6,000	1	10598
4"	5/8"-11	Female	4,800	1	10599
4-1/2"	5/8"-11	Female	4,800	1	10600
5"	5/8"-11	Female	4,800	1	10601
5"	5/16"-24	Male	10,000	1	10602
7"	5/8"-11	Female	4,800	1	10605



SHUR-BRITE® Surface Conditioning

GD GRIND DUTY HOOK & LOOP CENTER HOLE DISCS



An assisted-centering arbor hole ensures consistent disc alignment every change-over. Use on right angle grinders with rubber backing pad and retainer nut, for higher rotational speed.

Controlled cut rate and surface finishing range on harder metals. Balanced density of grains and resin reduce heat generation, loading and smearing on both hard or soft materials.

- ▶ Blending or refining scratch patterns
- ▶ Moderate cushion and flexibility
- ▶ Reduced risk of gouging soft materials
- ▶ Consistent performance



▶ Superior Support

Utilizing the same hardware as Resin Fiber Discs, the transition to finishing coated scratch patterns is even easier with Center Hole Discs.

Diameter	Arbor	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED
4-1/2"	7/8"	8,000	3,000	20	41323B	42774B
5"	7/8"	7,000	2,600	20	27147B	35599B

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

FD FINISH DUTY HOOK & LOOP CENTER HOLE DISCS



For surface preparation or finishing with measured, repeatable results on stainless steels and non-ferrous metals. Cooler temperatures are maintained, resulting in longer life for larger surface areas.

An assisted-centering arbor hole ensures consistent disc alignment every change-over. Use on right angle grinders with rubber backing pad and retainer nut, for higher rotational speed.

- ▶ Achieve required surface finishes
- ▶ Progressive scratch removal
- ▶ Fine blending & smoothing
- ▶ Surface treatment & preparation



Diameter	Arbor	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED
4-1/2"	7/8"	8,000	3,000	20	41323	42774
5"	7/8"	7,000	2,600	20	27147	35599

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ● Composites

▶ Superior Support

Solid rubber backing pads reduce the amount of available cushion, but increase in flexibility, sometimes allowing for easier blending finesse and better transitions.



HOOK & LOOP CENTER HOLE DISC HOLDERS



Diameter	Arbor	Max RPM	Std. Pkg.	Part #
4-1/2"	5/8"-11	13,500	1	11847
5"	5/8"-11	13,000	1	11850
Retainer Nut			1	11858
Spanner Wrench			1	11859

*Nut and wrench not supplied with disc holder.

STOCK ITEMS IN **RED** | Additional Items Available

● Best ● Better ○ Good

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SHUR-BRITE® Surface Conditioning

Surface Conditioning Flap Discs

Designed to utilize the added leverage and increased contact pressure of right angle grinders. Manufactured with a fiberglass plate, no backing pad is necessary, and a threaded hub option provides fast changeover without additional tooling. Surface conditioning flaps overlap radially, increasing airflow and reducing loading or burning during operation.

Features

- ▶ Use on angle grinder without backing pad
- ▶ Designed for focused contact pressure
- ▶ Firm cutting action for flat surfaces
- ▶ Blend coated abrasive scratch patterns
- ▶ Weld and seam blending or cleaning

▶ Superior Support

Surface conditioning flap discs are only available as Type 27 - Flat Face, ideal for up to 15° working angle on flat surfaces.



G^D GRIND DUTY FLAP DISCS



Diameter	Arbor	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED	VFN
4-1/2"	7/8"	13,300	5,800	5	46582	46583	46584
4-1/2"	5/8"-11	13,300	5,800	5	46640	46641	46642

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● Best ● Better ○ Good

Additional Items Available | STOCK ITEMS IN RED

Surface Conditioning Stars

Applying the flexibility of FD Surface Conditioning materials, mandrel mounted stars easily conform to hard-to-reach tube, pipe or other inside diameter cylindrical parts. The light weight and flexibility prevents gouging, marring, or unintentionally changing the dimensions of the workpiece.

Features

- ▶ Deburring cut tube or drilled holes
- ▶ Inside diameter smoothing, cleaning & polishing
- ▶ Cleaning or chamfering recessed areas

▶ Superior Support



Flex shaft tools are used for extended depths or routing stars through curved tubing or pipe. Mandrel extensions are used well for boring & shaping, cleaning or deburring of tubes, drilled holes or cylindrical parts of moderate depth or slightly out of reach.



FD FINISH DUTY MANDREL MOUNTED STARS

Diameter	Eyelet	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED	VFN
1-1/2"	1/4"-20	23,000	8,500	50	28832	28833	28834
2"	1/4"-20	23,000	7,000	50	28835	28836	28837
3"	1/4"-20	20,000	4,500	25	28838	28839	28840
4"	1/4"-20	12,000	3,500	25	28841	28842	28843

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ● Composites



EYELET MANDRELS

Rust proof black oxide finish. Quickly secures to stars.

Overall Length	Shank Diameter	Fits Thread	Std. Pkg.	Part #
3"	1/4"	1/4"-20	1	12219
6"	1/4"	1/4"-20	1	42815



MANDREL EXTENSIONS

Overall Length	Shank Diameter	Fits Thread	Std. Pkg.	Part #
4"	1/4"	1/4"-20	1	39207
6"	1/4"	1/4"-20	1	39208
8"	1/4"	1/4"-20	1	39209

SHUR-BRITE® Surface Conditioning

Surface Conditioning Belts

The open structure of surface conditioning belts resists overheating, part discoloration or loading, ensuring consistent quality throughout life - important factors when decorating or finishing large surface areas.

In narrow or short form, like file belts, the surface conditioning material is manufactured with additional flex, easily conforming to small contact wheels and narrow areas of the workpiece. Wide belts utilize a low stretch reinforcement, providing stability and reduced changeover on large, robotic equipment.

Features

- ▶ High edge durability and flexibility without chunking
- ▶ Create linear scratch patterns on stainless food equipment
- ▶ Smear-free removal of oxidation, paint or adhesives
- ▶ Blend or reorient surface scratch patterns after repair
- ▶ Repeatable finishes for large scale robotic applications



X^F FLEX BELTS



A variety of sizes available for use with small contact wheels to access intricate areas. Exceptional flexibility and edge durability for detail work over contours and corners.

- ▶ Thin, pliable reinforcement
- ▶ Flexible over small contact wheels
- ▶ Conforms to smaller areas

Width	Length	Std. Pkg.	CRS	MED	VFN
1/2"	12"	24	33791	32352	32361
1/2"	18"	24	10607	10608	10609
1/2"	24"	24	10610	10611	10612
3/4"	18"	16	10613	10614	10615
3/4"	20-1/2"	16	10616	10617	10618
3"	21"	8	21341	21342	24603
3"	24"	8	10646	10647	10648
3-1/2"	15-1/2"	10	10622	10623	10624

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ● Composites

***Also available in FINE**

L_S LOW STRETCH BELTS



Reduced stretching and high edge retention ensures durability and consistent performance throughout use. Reduced heat generation provides long life.

- ▶ Tightly-woven reinforcement reduces stretching
- ▶ Consistency in operational performance

Width	Length	Std. Pkg.	CRS	MED	VFN
1"	42"	12	10625	10626	10627
1"	72"	12	44383	43883	27457
1"	132"	12	18434	18435	44125
2"	48"	6	10628	10629	10630
2"	60"	6	10631	10632	10633
2"	72"	6	10634	10635	10636
2"	132"	6	10637	10638	10639
2-1/2"	60"	4	10643	10644	10645
3"	132"	4	10649	10650	10651
4"	54"	6	10658	10659	10660
4"	132"	3	10661	10662	10663
4"	168"	3	40627	38894	40628
6"	48"	4	10664	10665	10666

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ● Composites

***Also available in FINE**





SHUR-BRITE® Satin Finishing

Satin Finishing Characteristics

Made without a scrim reinforcement, SHUR-BRITE® Satin Finishing, or fleece, materials are lighter, more pliable and conformable than other nonwoven materials. Satin materials contain stronger nylon fibers and additional resin content in place of a reinforced weave. On their own, fleece materials can be used flat or on edge. With added manufacture, satin finishing products can be made for directional use only, matching the benefits of the product form to the application of fleece materials.

Satin Finishing Features

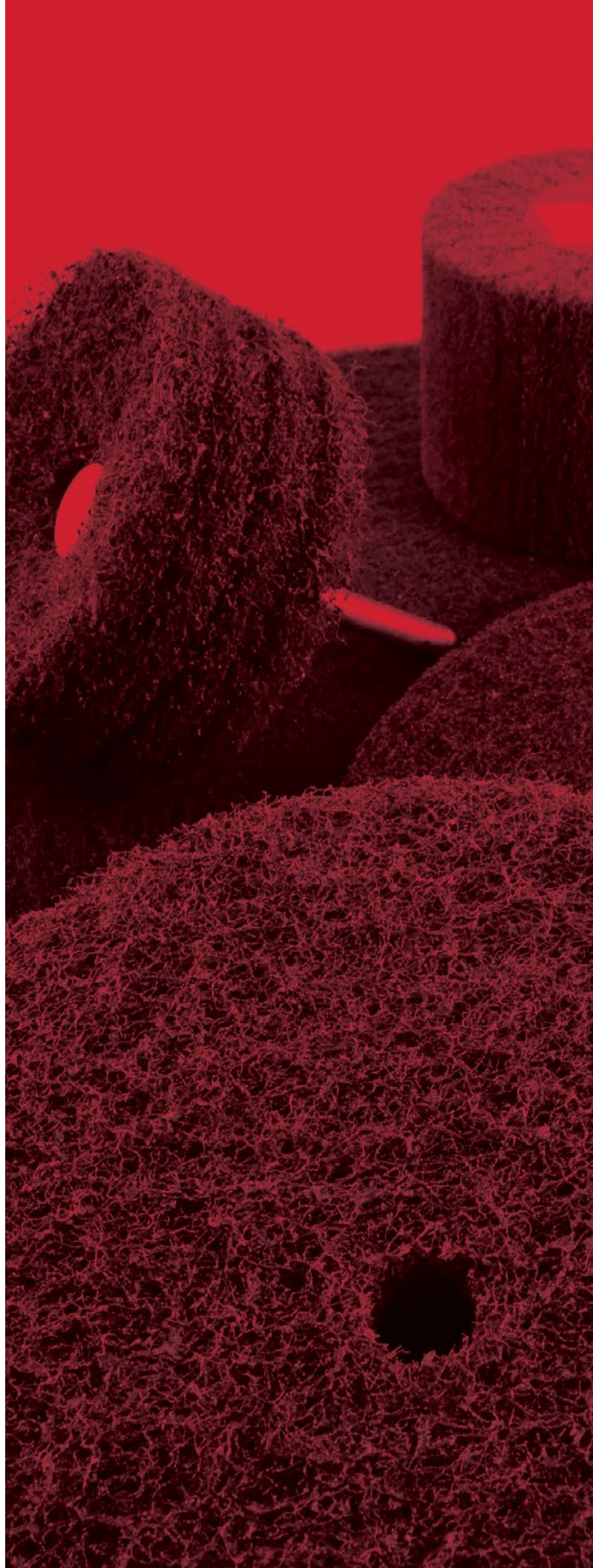
Satin products are softer and more conformable than surface conditioning products and well suited for general cleaning, blending or finishing. Also used to achieve a desired or required finish, many product forms are available to service flat, contoured, concave or cylindrical parts.

Available with both Aluminum Oxide (A/O) or Silicon Carbide (S/C) grains, final finishes can range from matte to high luster. Each grain offers unique characteristics, expanding the versatility of satin finishing materials and their products.

- ▶ Conformability to the workpiece
- ▶ Consistent performance throughout extended life
- ▶ Resistance to loading
- ▶ Suitable for wet or dry applications

Applications

- ▶ Light deburring of intricately cast parts
- ▶ Blemish removal caused by tooling or handling
- ▶ Removal of light surface oxidation & corrosion
- ▶ Reducing or blending fine scratch patterns
- ▶ Flash removal from non-metallic composites
- ▶ Gear & thread cleaning or micro-deburring
- ▶ Stainless steel cleaning & grain finishing
- ▶ Low polish or low luster decorative finishing



The versatility of satin finishing materials can be utilized in more forms than other nonwovens, including discs, goblets, flap brushes, stars, hand pads, flap, and duplex wheels, with alternating flaps of coated abrasives.

Durability	HS High Strength	Resin reinforced nylon fibers provide durability and strength for high speed operation.	
	HP Heavy Duty	Flexible resin and high grain content promote conformability and cushion for fine tolerances.	
		Auminum Oxide (A/O)	Silicon Carbide (S/C)
Conformability	CF Clean & Finish	<ul style="list-style-type: none"> • Long life • Durable, general purpose • Withstands high pressure 	<ul style="list-style-type: none"> • Fast cut, uniform finish • Sharper, finer cut • Achieve required finishes
		Auminum Oxide (A/O)	Silicon Carbide (S/C)
	Balanced resin and grain content for flexibility and conformability in flat applications.		<ul style="list-style-type: none"> • Long life • Durable, general purpose • Reduced loading

▶ Performance	HS	HD	CF
Cut	●	◐	○
Life	●	◐	○
Finish	◐	●	◐
Flexibility	○	◐	●
Pressure	●	◐	○
Density	●	◐	○

● Best ◐ Better ○ Good

SHUR-BRITE® Satin Finishing

Satin Finishing Discs

Due to the high strength nylon fibers and resin content, satin finishing discs can withstand higher rotational speed in both stationary or portable use, for flat or on-edge application. Both quick change and arbor mounted options are available for use with small or intricate parts to larger contours.

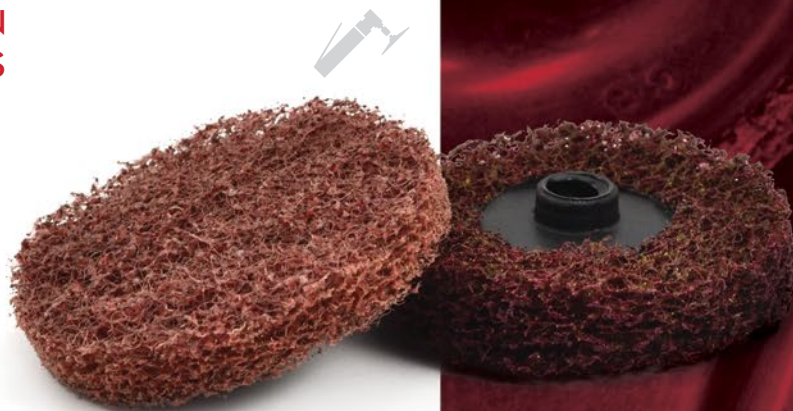
Features

- ▶ Easily conforms to acute or inaccessible areas
- ▶ Cushion and control for critical tolerance and finesse
- ▶ Protection from gouging or marring workpieces
- ▶ Varying grades and densities for a wide range of applications

HS HIGH STRENGTH SATIN QUICK CHANGE DISCS

Durable and long-lasting finishing when a higher cut rate is necessary. Strong fibers resist snagging or tearing on intricate parts and can handle higher applied pressure. The quick change holder provides directional pressure from the tool for better control and off-hand finesse.

- ▶ Edge deburring on extrusions
- ▶ Finishing brass or steel stampings
- ▶ Final finishing of intricate aerospace parts



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	MED	FINE	VFN
Type S	2"	12,000	7,000	50	46588	46589	46590
	3"	8,000	4,500	25	46591	46592	46593
Type R	2"	12,000	7,000	50	38857	38858	38859
	3"	8,000	4,500	25	38860	38861	38862

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Additional Items Available | STOCK ITEMS IN RED

HPD HEAVY DUTY SATIN QUICK CHANGE DISCS

Less dense and aggressive than HS quick change discs, finer grades are reinforced with a cloth backing. For light cleaning or finishing, suitable for soft materials.

- ▶ Decorative blending or finishing
- ▶ Oxidation removal from small areas
- ▶ Micro-deburring or seam cleaning
- ▶ From matte finish to low polish



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED	FINE	VFN
Type S	2"	12,000	7,000	50	10511	10512	10513	10514
	3"	8,000	4,500	25	10515	10516	10517	10518
Type R	2"	12,000	7,000	50	38213	40170	46649	38214
	3"	8,000	4,500	25	40508	39911	46585	39931

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ● Composites



QUICK CHANGE DISC HOLDERS

Type	Diameter	Shank	Max RPM	Std. Pkg.	Part #
Type S	2"	1/4"	30,000	1	11173
	3"	1/4"	20,000	1	11176
Type R	2"	1/4"	30,000	1	11275
	3"	1/4"	20,000	1	11276



STOCK ITEMS IN **RED** | Additional Items Available

● Best ● Better ○ Good

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SHUR-BRITE® Satin Finishing

HS HIGH STRENGTH SATIN ARBOR MOUNTED DISCS

Durable and long-lasting deburring, cleaning and finishing. Strong fibers resist snagging or tearing on intricate parts and can handle higher applied pressure. Can be stacked on mounting spindle to increase surface area for larger areas.

- ▶ Edge breaking or deburring
- ▶ Light rust & oxidation removal
- ▶ Decorative or final finishing



Diameter	Arbor	Max RPM	Optimal RPM	Std. Pkg.	MED	FINE	VFN
6"	1/2"	3,600	2,000	25	34470	40610	40611
8"	1/2"	2,700	1,500	25	21554	40612	40613

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ● Composites

▶ Superior Support

Arbor mounted discs can be stacked on stationary spindles to increase active surface area.

HD HEAVY DUTY SATIN ARBOR MOUNTED DISCS

Less dense and aggressive than HS discs, best for light deburring, cleaning or finishing. Lower density provides flexibility and contouring of intricate parts. Suitable for softer materials.

- ▶ Light oxidation removal
- ▶ Pipe thread or gear deburring
- ▶ Decorative finishing & blending
- ▶ From matte finish to low polish



Diameter	Arbor	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED	FINE	VFN
6"	1/2"	3,600	2,000	25	46586	25913	16120	17124
8"	1/2"	2,700	1,500	25	46587	10531	10532	10533

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ● Composites

Wheels for Angle Grinders

Several wheels are available exclusively for right angle and variable speed angle grinders, taking advantage of the familiarity and ease of use of the tool. Larger areas can be cleaned, prepped or finished faster, and multiple operations can be achieved without changing tools. Wheels specifically made for angle grinders are a convenient alternative to flap drums and their required linear finishing tools.

Features

- ▶ Linear finishing without specialized tools
- ▶ Prepare larger areas without frequent changeover
- ▶ Convenient alternative to flap drums



HP^D DUPLEX WHEELS FOR ANGLE GRINDERS



Alternating coated and satin flaps for controlled balance of aggressive finishing and cushioned finesse. Can be used on larger parts with right angle grinders.



- ▶ Coated flaps remove and clean surface imperfections
- ▶ Satin flaps blend and finish parts
- ▶ Remove & blend parting lines or small welds in one operation
- ▶ Blend or repair scratch patterns

Diameter	Width	Arbor	Max RPM	Optimal RPM	Std. Pkg.	100	180
4"	2"	5/8"-11	6,000	3,000	5	54817	54818

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites

SHUR-BRITE® Satin Finishing

HPD SEAMLESS SATIN WHEELS FOR ANGLE GRINDERS

De-polishing and matte finishing without undesired transition lines, utilizing the operational comfort of right angle grinders. For larger, flatter surfaces, or those accessible with angle grinders.

- ▶ Prevents seams, lines and transitions
- ▶ Conformable to outside corners
- ▶ Continuous matte finishing
- ▶ De-polish non-ferrous surfaces
- ▶ Tough, aluminum oxide grains



Diameter	Width	Arbor	Max RPM	Optimal RPM	Std. Pkg.	MED	FINE	VFN
4"	2"	5/8"-11	6,000	3,000	5	54819	54820	54821

- Ferrous
 Non-Ferrous
 Stainless
 Exotic Alloys
 Plastics
 Composites

HPD SATIN WHEELS FOR ANGLE GRINDERS

Satin flaps conform to surfaces without altering part geometry or damaging intricate features. Easily used on larger parts without frequent changeover. Made with a quick change hub for use with right angle grinders, no extra tooling necessary.

- ▶ Repair transitions or grain finishes
- ▶ Flexible and forgiving on contoured and intricate parts
- ▶ Finish or deburr larger extrusions
- ▶ Safely remove burrs on gears or coarse threads
- ▶ Produce fine scratch patterns

▶ Superior Support

Feed rate is more critical to surface roughness than grain size.

Diameter	Width	Arbor	Max RPM	Optimal RPM	Std. Pkg.	MED	FINE	VFN
4"	2"	5/8"-11	6,000	3,000	5	54822	54823	54824

- Ferrous
 Non-Ferrous
 Stainless
 Exotic Alloys
 Plastics
 Composites





HD MOUNTED SEAMLESS SATIN WHEELS



Unique, seamless structure for de-polishing and matte finishing without harsh and visible transition lines, sometimes seen with traditional flap brushes. Used with die grinders on flat or slightly contoured parts.

- ▶ Prevents seams, lines and transitions
- ▶ Continuous matte finishing
- ▶ De-polish non-ferrous surfaces
- ▶ Silicon carbide available for finer finishing

Grain	Diameter	Width	Shank	Max RPM	Optimal RPM	Std. Pkg.	MED	FINE	VFN
A/O	3"	2"	1/4"	7,500	4,000	5	54811	54812	54813
	4"	2"	1/4"	6,000	3,000	5	54805	54806	54807
S/C	3"	2"	1/4"	7,500	4,000	5	54814	54815	54816
	4"	2"	1/4"	6,000	3,000	5	54808	54809	54810

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites



STOCK ITEMS IN **RED** | Additional Items Available

● Best ● Better ○ Good

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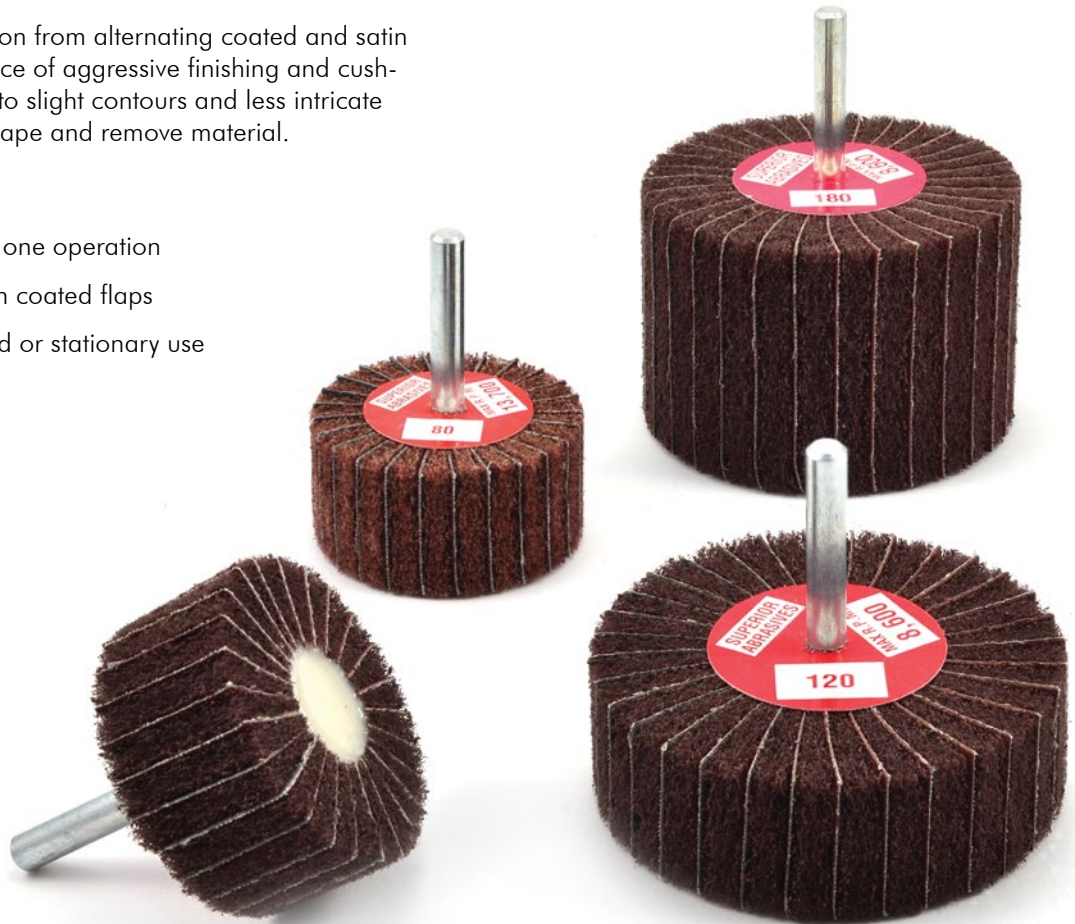
SHUR-BRITE® Satin Finishing

Duplex Wheels

Simultaneous cutting action from alternating coated and satin flaps for controlled balance of aggressive finishing and cushioned finesse. Conforms to slight contours and less intricate parts while still able to shape and remove material.

Features

- ▶ Remove and blend in one operation
- ▶ Satin cushion between coated flaps
- ▶ Available for handheld or stationary use



HPD HEAVY DUTY MOUNTED DUPLEX WHEELS



Tough but conformable wheels able to reach smaller areas and inner diameters and contours. Ideal for consolidating removal and blending steps into one operation.

- ▶ Coated flaps remove and clean surface imperfections
- ▶ Satin flaps blend and finish parts
- ▶ Easily remove and blend seams, parting lines or small welds in one operation
- ▶ Blend or repair flat or contoured scratch patterns

▶ Superior Support

Flap wheels are a great tool for edge breaking in hard to reach areas, which softens a sharp edge to increase the surface area for paint or coating adhesion.

Diameter	Width	Shank	Max RPM	Optimal RPM	Std. Pkg.	80	120	180
3/4"	3/4"	1/4"	15,000	10,500	5	52400	52466	52401
1"	1"	1/4"	15,000	10,500	5	46050	41861	44615
2"	1"	1/4"	13,700	9,600	5	35644	35804	35795
3"	1"	1/4"	8,600	6,000	5	10467	10468	10469
3"	2"	1/4"	8,600	6,000	5	10470	10471	10472

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Additional Items Available | STOCK ITEMS IN RED



HD HEAVY DUTY UNMOUNTED DUPLEX WHEELS

Conformable, yet sturdy action for stationary equipment and smaller, hand-held parts. Easily remove surface coatings or oxidation, blend or repair finishes on which slight material removal may be necessary.

- ▶ Coated flaps remove and clean surface imperfections
- ▶ Satin flaps blend and finish parts
- ▶ Remove & blend parting lines or small welds in one operation
- ▶ Blend or repair scratch patterns



Diameter	Width	Arbor	Max RPM	Optimal RPM	Std. Pkg.	80	120	180
6"	1"	1"	3,400	2,000	5	10426	10427	10428
6"	2"	1"	3,400	2,000	5	10429	10430	10431

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites

ARBOR REDUCER BUSHINGS



Arbor Diameter	Reduced Diameter	Std. Pkg.	Part #
1"	3/4"	1 Pair	10391
1"	5/8"	1 Pair	10392
1"	1/2"	1 Pair	10393



STOCK ITEMS IN **RED** | Additional Items Available

● Best ● Better ○ Good

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SHUR-BRITE® Satin Finishing

Disc Wheels

Due to the material profile running parallel to the work-piece, Mounted Disc Wheels are less aggressive than Flap Brushes, but produce a consistent satin finish. Disc Wheels are conformable and will not alter part geometry, ideal for removing light surface coatings or contaminants.

Features

- ▶ Available in Heavy Duty and High Strength grades
- ▶ Conformable to contours and intricate parts
- ▶ Will not alter workpiece tolerances
- ▶ Portable, cushioned finishing and surface prep



MOUNTED SATIN DISC WHEELS

Diameter	Width	Shank	Max RPM	Optimal RPM	Std. Pkg.	HD CRS	HS MED	HS FINE
1"	3/8"	1/8"	20,000	7,500	10	46630	40433	40435
1"	1/2"	1/8"	20,000	7,500	10	46631	40434	40436
1-1/2"	7/8"	1/8"	13,000	6,000	10	46632	40437	40439
1-1/2"	1"	1/8"	13,000	6,000	10	46633	40438	40440
2-3/8"	1/2"	1/4"	12,000	5,000	5	-	38182	38181
2-3/8"	1"	1/4"	12,000	5,000	5	-	10459	10460
2-3/8"	2"	1/4"	12,000	5,000	5	-	10461	10462
3"	1/2"	1/4"	8,000	4,000	5	-	38178	38179
3"	1"	1/4"	8,000	4,000	5	-	10463	10464
3"	2"	1/4"	8,000	4,000	5	-	10465	10466

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites

Goblet Wheels

Unique shape allows access to concave areas commonly found in molds, tanks or vats and extrusions, otherwise unreachable by discs or traditional wheels. Heavy Duty material is ideal for cleaning and preparation of seams and inside corners which may risk contamination. Large surface area for various shapes and sizes.

Features

- ▶ Heavy Duty material easily removes oxidation or residue
- ▶ Conformable to inner contours and concave areas
- ▶ Clean and prep tank and vat seams, lips or corners
- ▶ Great for food and dairy industries



HPD HEAVY DUTY MOUNTED SATIN GOBLET WHEELS

Diameter	Width	Shank	Max RPM	Optimal RPM	Std. Pkg.	With Spindle		Refills	
						MED	FINE	MED	FINE
2"	2"	1/4"	12,000	5,000	5	30608	30607	30612	30611
3"	2"	1/4"	8,000	4,000	5	30610	30609	30614	30613

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites

▶ Superior Support

Spindle hardware is supplied, unless only the consumable abrasives need to be replaced - order the Goblet Refills.



Flap Brushes

Flexible satin flaps conform to contoured surfaces without altering part geometry or damaging intricate features. Densely arranged flaps provide continuous cutting action throughout life, while resisting heat and loading. Shank and arbor mounted wheels are available depending on size and shape of workpieces or surface area.

Features

- ▶ Heavy Duty material easily conforms to inner and outer contours
- ▶ Cushioned control when working with critical tolerances
- ▶ Versatility in form and application
- ▶ Dense layering of materials provides extended life



HP HEAVY DUTY MOUNTED SATIN FLAP BRUSHES



Easily access smaller diameters or tight contours with hand-held die grinders or flex shaft tools. Optimal for cleaning or micro-deburring inner or outer tube, pipe or fitting.

- ▶ Smaller diameters for intricate access
- ▶ Clean and finish inside diameters and through holes
- ▶ Conformable to flat, or inner and outer contours
- ▶ Flaps wear evenly for consistent finishing
- ▶ Clean or deburr threads without damage

▶ Superior Support

Flap Brush	Duplex Wheel	Flap Wheel
Least Aggressive		Most Aggressive

Diameter	Width	Shank	Max RPM	Optimal RPM	Std. Pkg.	CRS	MED	FINE
2"	1"	1/4"	13,000	6,000	10	43850	26877	35564
3"	1"	1/4"	8,600	4,000	10	43851	26881	35565
3"	2"	1/4"	8,600	4,000	10	43852	26883	35126

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites

HD HEAVY DUTY UNMOUNTED SATIN FLAP BRUSHES

Used for stationary operations, larger diameter wheels have longer flaps, resulting in flexibility and conformability. The larger surface area of unmounted wheels is also ideal for large or flat surfaces, reducing finishing time.

- ▶ Clean, finish or deburr extruded or machined parts
- ▶ Quickly deburr large pipe threads
- ▶ Repair or blend linear finishes on stainless steel
- ▶ Conformability for intricate parts



Grain	Diameter	Width	Arbor	Max RPM	Optimal RPM	Std. Pkg.	MED	FINE
A/O	6"	1"	2"	3,400	2,000	5	28854	28855
	6"	2"	2"	3,400	2,000	5	28857	28858
	8"	1"	3"	3,200	1,500	3	28863	28864
	8"	2"	3"	3,200	1,500	3	28866	28867
S/C	6"	1"	2"	3,400	2,000	5	45066	45065
	6"	2"	2"	3,400	2,000	5	46614	46615
	8"	1"	3"	3,200	1,500	3	46204	37348
	8"	2"	3"	3,200	1,500	3	46618	46619

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites



ARBOR REDUCER BUSHINGS

Arbor Diameter	Reduced Diameter	Std. Pkg.	Part #
2"	1"	1 Pair	28873
2"	5/8"	1 Pair	28872

SHUR-BRITE® Satin Finishing

Satin Finishing Stars

The structure of Satin Finishing materials provides cutting action from all directions, allowing stars to work well in tubes, concave areas or around tight angles. Multiple plies create more surface area to conform and flex while pushed or pulled through inside diameters.

Features

- ▶ Clean or polish tube, pipe or cylindrical parts
- ▶ Easily reach around or under flanges
- ▶ Deburr cut tube or drilled holes
- ▶ Lightly chamfer recessed areas

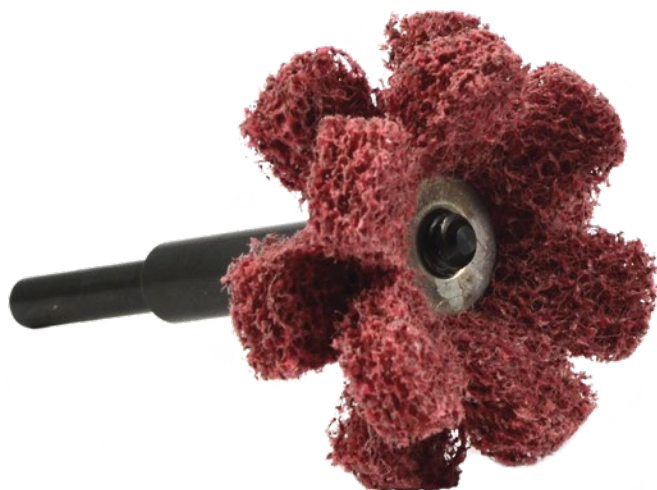


H^S HIGH STRENGTH MANDREL MOUNTED STARS



Diameter	Eyelet	Ply	Max RPM	Optimal RPM	Std. Pkg.	MED	FINE	VFN
1-1/2"	1/4"-20	2	12,000	7,000	50	42806	43847	42807
2"	1/4"-20	2	12,000	7,000	50	42808	43848	42809
3"	1/4"-20	2	8,000	4,500	25	42810	43849	42811

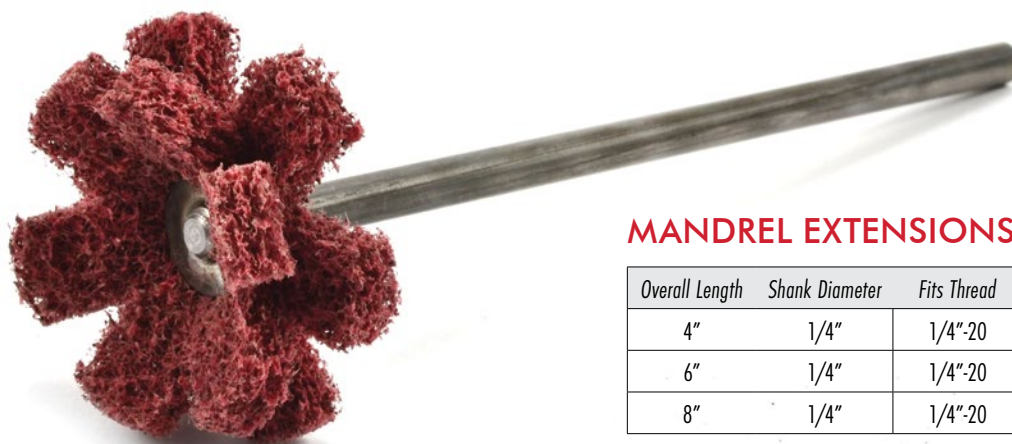
● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites



EYELET MANDRELS



Overall Length	Shank Diameter	Fits Thread	Std. pkg.	Part #
3"	1/4"	1/4"-20	1	12219
6"	1/4"	1/4"-20	1	42815



MANDREL EXTENSIONS



Overall Length	Shank Diameter	Fits Thread	Std. Pkg.	Part #
4"	1/4"	1/4"-20	1	39207
6"	1/4"	1/4"-20	1	39208
8"	1/4"	1/4"-20	1	39209

SHUR-BRITE® Satin Finishing

CF CLEAN & FINISH HAND PADS

Sheets of Satin Finishing material can be used by hand or with a holder for multiple applications and surfaces, small to large. Non-loading material can be used with compounds for cleaning, polishing or buffing for extra versatility. General Purpose also available in special packaging.

- ▶ Used wet or dry, with most solvents
- ▶ Specialized grades for multiple applications
- ▶ Conformable to hand or workpiece



Width	Length	Std. Pkg.	General Purpose	General Purpose XS	Heavy Duty	Ultra Fine	Industrial Scouring	Stainless Steel	Non-Abrasive
6"	9"	60*	10473	49366	10474	10475	10476	40754	34961

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ● Composites *3 boxes of 20 each. No internal shrink.

A/O General Purpose/XS	
	<ul style="list-style-type: none"> ▶ Blending ▶ Light deburring ▶ Cleaning ▶ XS provides extended life
S/C Ultra Fine	
	<ul style="list-style-type: none"> ▶ Decorative finishing ▶ Jewelry ▶ Stone polishing
S/C Stainless Steel	
	<ul style="list-style-type: none"> ▶ Grain finish ▶ Discoloration ▶ Residue ▶ Scratch patterns ▶ Blending

A/O Heavy Duty	
	<ul style="list-style-type: none"> ▶ Rust & oxidation removal ▶ Powder coating removal ▶ Remove sharp burrs
A/O Industrial Scouring	
	<ul style="list-style-type: none"> ▶ Aluminum ▶ Stainless cleanup ▶ Paint overspray ▶ Oil & grime ▶ Corrosion
Non-Abrasive	
	<ul style="list-style-type: none"> ▶ Cleaning ▶ Buffing ▶ Polishing compounds



SHUR-PAK HAND PADS



Width	Length	Std. Pkg.	General Purpose
6"	9"	60**	34569

**1 bulk box. Shrink in 10's.



HAND PAD HOLDER



Face Width	Face Length	Std. Pkg.	Part #
2-5/8"	5-3/8"	1	43934

CF CLEAN & FINISH SATIN FINISHING ROLLS

Available in extended rolls and can be cut to any size for necessary applications. Ideal for use on rotating drill or lathe operations for radial cleaning, finishing or polishing.

- ▶ Universal, cut-to-size roll lengths
- ▶ Used wet or dry, with most solvents
- ▶ Great for rotating and lathe applications
- ▶ Micro-deburring on critical parts
- ▶ General cleaning, blending or polishing

Width	Length	Std. Pkg.	A/O MED	A/O FINE	A/O VFN	S/C UFN
4"	30'	1	30537	30538	30539	30540
6"	30'	1	30541	30542	30543	30544

● Ferrous ● Non-Ferrous ● Stainless ● Composites







SHUR-BRITE® Convolute

SHUR-BRITE® Convolute

Convolute Characteristics

Used for deburring, cleaning, blending and polishing SHUR-BRITE® Convolute Deburring Wheels utilize their compressed nonwoven structure as a three-dimensional cutting tool. Fresh abrasive grains are continually exposed, providing a consistent, uniform finish on various materials, including ferrous, non-ferrous, stainless and exotic alloys.

Nylon fibers, abrasive grains and resins are bonded together in thin layers, then convolutely wrapped around a center core. The tension of the wrap controls the density of the wheel. Due to the convolutely wrapped design, deburring wheels are one-directional and used with stationary machines.

► Understanding Material Grades		
Wheel Density	Wheel density also translates to flexibility and conformity. Lower densities will not alter workpiece geometry, whereas higher densities will work and remove material faster.	
Grain Type	Aluminum oxide grains are denser, allowing higher pressure, and recommended for softer ferrous or non-ferrous materials. Silicon carbide grains are harder and sharper, yet brittle and used with lighter pressure on harder materials, like stainless or titanium.	
Grain Size	The abrasive grain size used in each wheel controls the depth and refinement of the scratch. Due to the nonwoven construction, convolute wheels will usually finish 2-3 grits finer than the grain size.	

Convolute Features

- ▶ Continual exposure of cutting grains & consistent finishing ability throughout extended product life
- ▶ Quality nylon fiber with high (+500°F) melting point
- ▶ Smear & heat resistant to reduce risk of discoloration
- ▶ Can be used with oils & lubricants to further reduce heat or smearing
- ▶ Free of contaminants and metallic ingredients

Applications

- ▶ Edge breaking or radiusing
- ▶ Light corrosion, rust or oxidation removal
- ▶ Surface polishing
- ▶ Grinding of junctions on turbine blades
- ▶ Mold & die polishing
- ▶ Removal of processing traces on medical instruments

Compressed nonwoven abrasives are wrapped convolutely around a center core, producing a harder, one-directional wheel. Resin ratios and winding tension determine wheel density.



2SC

5AM

8SF

9SF

▶ Performance	2	5	7	8	9
Cut	○	○	◐	◐	●
Life	○	○	◐	◐	●
Finish	●	◐	◐	○	○
Flexibility	●	◐	◐	○	○
Pressure	○	○	○	◐	●
Density	○	○	◐	◐	●

● Best ◐ Better ○ Good



CLEANING & DEBURRING WHEELS

Results of convolute wheels range from high luster polishing to moderate deburring, with each combination of density, grain type and size specialized in its function. The conformability of softer densities will not disrupt workpiece tolerances, while harder densities easily remove burrs or parting lines.

- ▶ Consistent, long lasting performance throughout life
- ▶ Soft densities for finishing and polishing
- ▶ Hard densities accurately remove material
- ▶ Easily access, clean and prep channels or extrusions

▶ Superior Support

'-R' represents added rigidity, due to the additional resin content, making 9SF-R better for heavier deburring and other operations on less intricate parts.

Diameter	Width	Arbor	Max RPM	Optimal RPM	Std. Pkg.	2SM	2SC	5AM	7SF	8SF	8AM	9SF	9SF-R
6"	1/2"	1"	6,000	2,500	4	-	-	-	-	54680	55343	54681	55350
6"	1"	1"	6,000	2,500	2	54682	55344	54683	54684	54686	54685	54687	55351
6"	2"	1"	6,000	2,500	1	54688	55345	55346	-	-	-	-	-
8"	1/2"	3"	4,500	1,900	4	-	-	-	55356	54689	55347	54690	55348
8"	1"	3"	4,500	1,900	2	-	-	55349	54691	54693	54692	54694	55352
8"	2"	3"	4,500	1,900	1	-	-	-	-	54695	-	54696	55357
12"	1/2"	5"	3,000	1,500	4	-	-	-	-	-	-	55380	55381
12"	1"	5"	3,000	1,500	2	55359	55358	55360	55361	55362	-	55363	55364

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ○ Composites

FINAL POLISHING CONVOLUTE WHEELS



Specifically designed to produce a high luster on stainless steel and mirror finishes on a variety of metals.

- ▶ Sharp silicon grains produce very fine scratch patterns
- ▶ Extra conformable for intricate parts or channels
- ▶ Consistent results throughout life
- ▶ Can be used with compounds for fine polishing



Diameter	Width	Arbor	Max RPM	Optimal RPM	Std. Pkg.	2SVF
6"	1/2"	1"	6,000	2,500	1	45108
6"	1"	1"	6,000	2,500	1	45109

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ○ Plastics ○ Composites

▶ Superior Support

Reduce wheel speed for higher luster or mirror polishing.

ARBOR REDUCER BUSHINGS



Arbor Diameter	Reduced Diameter	Std. Pkg.	Part #
1"	3/4"	1 Pair	10391
1"	5/8"	1 Pair	10392
1"	1/2"	1 Pair	10393







SHUR-BRITE® Unitized

SHUR-BRITE®

Unitized Characteristics

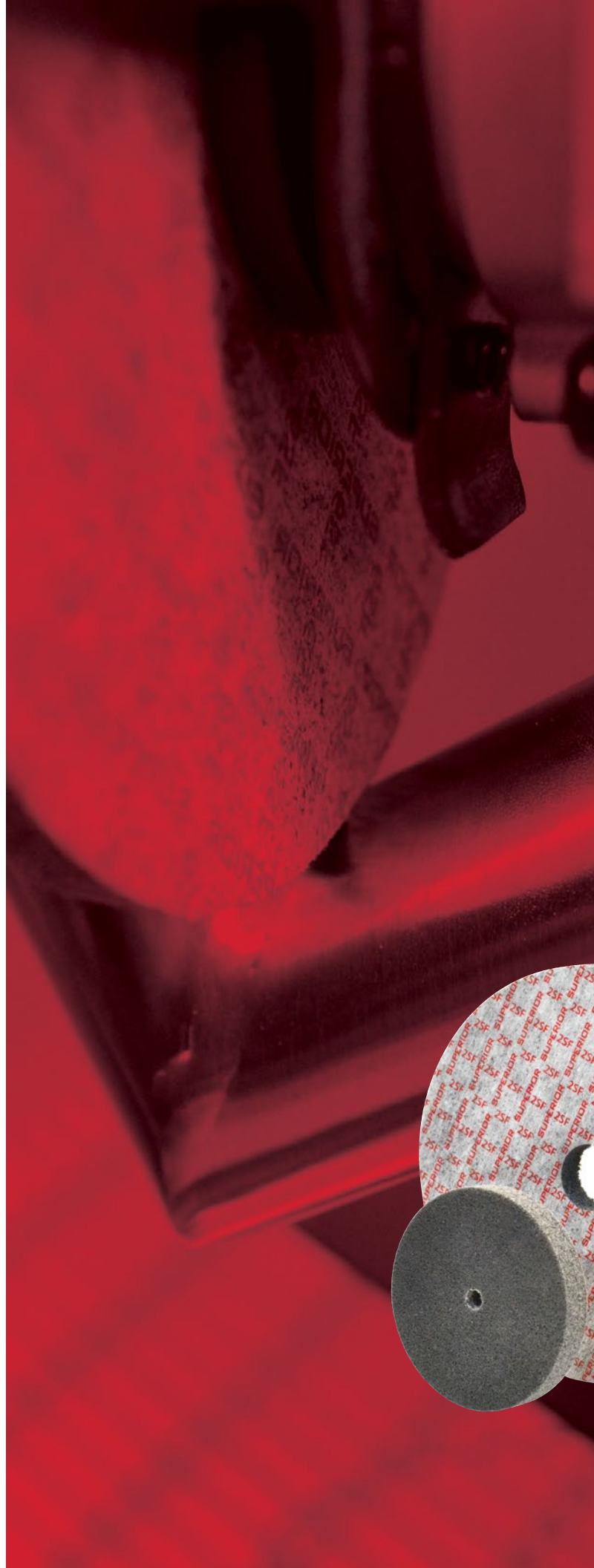
The layered, non-directional construction of SHUR-BRITE® Unitized Wheels and Discs ensures continual exposure of abrasive grains during surface preparation, cleaning, blending and polishing operations. A variety of sizes and grades are available for use with intricate components to larger workpieces. Due to the conforming nature of unitized materials, surface requirements can be achieved without affecting workpiece tolerances, and with minimal heat buildup.

Unitized Features

- ▶ Continual exposure of cutting grains & consistent finishing ability throughout extended product life
- ▶ Quality nylon fiber with high (+500°F) melting point
- ▶ Smear & heat resistant to reduce risk of discoloration
- ▶ Can be used with oils & lubricants to further reduce heat or smearing
- ▶ Free of contaminants and metallic ingredients

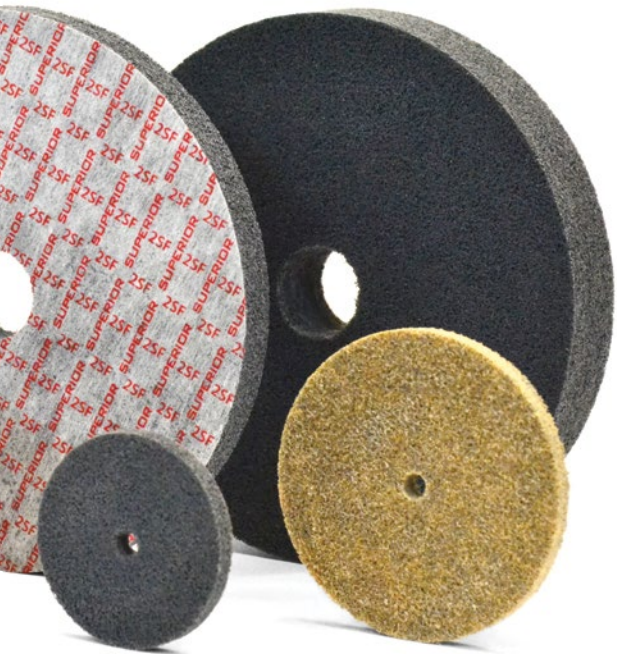
Applications

- ▶ General purpose cleaning prior to painting
- ▶ Rust, coating, scale & oxidation removal
- ▶ Edge breaking or radiusing
- ▶ Restoration polishing of molds & dies
- ▶ Deburring gears, wing spars or edge of turbine blades
- ▶ Surface refinement of airfoils, turbines & vanes
- ▶ Polishing fillet areas on turbines & aircraft parts
- ▶ Cleaning or removing micro-burrs on gears & threads
- ▶ Polishing or finishing surgical instruments or implants



Layered sheets of nonwoven abrasives are compressed in resins, forming a dense slab, from which smaller diameter wheels are produced. The density of unitized wheels allows controlled cutting, cleaning and polishing action for tighter tolerances.

► Understanding Material Grades		
Wheel Density	Wheel density also translates to flexibility and conformity. Lower densities will not alter workpiece geometry, whereas higher densities will work and remove material faster.	<p>2 ————— 8</p> <p>Softer, more conformable Harder, more durable</p> <p>Masking/Finishing Light Deburring/Cleaning/Finishing Heavy Deburring</p>
Grain Type	Aluminum oxide grains are denser, allowing higher pressure, and recommended for softer ferrous or non-ferrous materials. Silicon carbide grains are harder and sharper, yet brittle and used with lighter pressure on harder materials, like stainless or titanium.	<p>A ————— S</p> <p>Durable, long lasting Sharper, finer scratch pattern</p> <p>Aluminum Oxide Silicon Carbide</p>
Grain Size	The abrasive grain size used in each wheel controls the depth and refinement of the scratch. Due to the nonwoven construction, unitized products will usually finish 2-3 grits finer than the grain size.	<p>Coarse (60-80) ————— Medium (100-150) ————— Fine (180-220)</p> <p>Faster cut, rougher finish Reduced cut rate, finer finish</p>



► Performance	2	4	6	8
Cut	○	○	◐	●
Life	○	○	◐	●
Finish	●	●	◐	○
Flexibility	●	●	◐	○
Pressure	○	○	◐	●
Density	○	○	◐	●

● Best ◐ Better ○ Good

SHUR-BRITE® Unitized

SHANK MOUNTED UNITIZED WHEELS

Reach small and intricate areas to safely deburr, clean or polish without damaging parts. Compressed nonwoven material will conform to contours and acute angles and not alter part geometry.

- ▶ Easily navigate intricate parts
- ▶ Light deburring in narrow areas
- ▶ Clean or finish small, TIG welded parts or seams
- ▶ No mandrels or adapters required



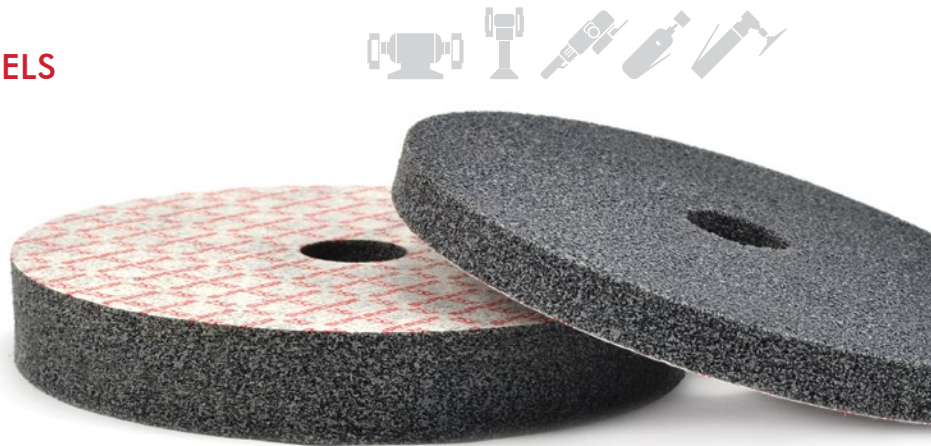
Diameter	Thickness	Shank	Max RPM by Density		Optimal RPM	Std. Pkg.	2SF	4SF	6AM	8AC
			2	4-8						
1"	1/8"	1/8"	30,100	35,100	10,500	10	54697	54826	54698	54699
1"	1/4"	1/8"	30,100	35,100	10,500	10	54700	54785	54701	54702
1-1/2"	1/4"	1/4"	30,100	35,100	7,200	10	54703	54835	54704	54705
2"	1/4"	1/4"	16,100	22,100	6,400	10	54710	54831	54714	54716
3"	1/4"	1/4"	15,100	18,100	6,400	10	54718	54829	54725	54727

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ○ Composites

ARBOR MOUNTED UNITIZED WHEELS

Conforming structure cuts consistently throughout wheel life without heat buildup, extending life on soft and exotic alloys. Nonwoven structure will not disrupt critical part tolerances while cleaning or removing residue, finishing or polishing.

- ▶ Consistent cut life and heat tolerance
- ▶ Finish turbine blades and aerospace parts
- ▶ Remove machining marks or process traces



Diameter	Thickness	Arbor	Max RPM by Density		Optimal RPM	Std. Pkg.	2SF	2AM	4SF	6SF	6AM	8AM	8AC
			2	4-8									
1"	1/8"	1/8"	30,100	35,100	10,500	10	54652	-	54825	-	54653	-	54654
1"	1/4"	1/8"	30,100	35,100	10,500	10	54655	-	54784	-	54656	-	54657
1"	1"	3/16"	35,100		10,500	10	-	-	-	54658	54659	-	54660
1-1/2"	1/4"	1/4"	20,100	30,100	7,200	10	54661	-	54836	-	54662	-	54663
2"	1/4"	1/4"	16,100	22,100	6,400	10	54664	-	54832	-	54665	-	54666
3"	1/4"	1/4"	15,100	18,100	6,400	10	54667	54668	54830	-	54670	54669	54671
3"	1/2"	1/4"	15,100	18,100	6,400	10	54672	-	-	-	54673	-	-
4"	1/4"	1/4"	8,500		4,800	10	54674	-	-	-	-	-	-
6"	1/2"	1"	5,000		3,200	4	54675	-	-	-	-	-	-
6"	1"	1"	5,000		3,200	2	54676	-	-	-	-	-	-

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ○ Composites



QUICK CHANGE UNITIZED DISCS

Quick change button allows fast changeover between grades and applies additional pressure and support. Non-directional structure allows discs to be used flat or on edge, for multiple contours or part geometries.

- ▶ Finish contoured orthoses and surgical devices
- ▶ Small parts deburring or flash removal
- ▶ Remove overspray or adhesives without damage
- ▶ Finish aerospace parts and turbine blades



Type	Diameter	Thickness	Max RPM by Density		Optimal RPM	Std. Pkg.	2SF	4SF	6AM	8AC
			2	4-8						
Type R	2"	1/4"	16,100	22,100	9,500	10	54709	54872	54713	54715
	3"	1/4"	15,100	18,100	6,400	10	54717	54873	54723	54726

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ○ Composites



SHUR-BRITE® Unitized

FINAL POLISHING UNITIZED WHEELS

A soft density and very fine abrasive grain are used to produce a high luster on stainless steel and mirror finishes on a variety of metals. Able to conform easily, multiple shapes and contours can be finished or polished to final requirements.

- ▶ Soft density will not alter surface tolerances
- ▶ Easily conforms to multiple dimensions
- ▶ Very fine grains produce sharp, reflective cuts
- ▶ Can be used with compounds for fine polishing



Diameter	Thickness	Arbor	Max RPM	Optimal RPM	Std. Pkg.	2SVF
1"	1"	3/16"	30,100	10,500	10	45102
2"	1/4"	1/4"	16,100	6,400	10	45103
2"	1/2"	1/4"	15,100	6,400	10	45104
3"	1/4"	1/4"	15,100	6,400	10	45105
3"	1/2"	1/4"	15,100	6,400	10	45106

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ○ Plastics ○ Composites

▶ Superior Support

Use 1" x 1" plug wheels with Quick Change Wheel Mandrels (p.69).



QUICK CHANGE FINAL POLISHING DISCS

Specifically designed to polish smaller surface areas, quick change button allows fast changeover and applies additional pressure and support with rubber backing pad. Discs can be used flat or on edge, for multiple contours or part geometries.

- ▶ Will not alter part geometry or critical tolerances
- ▶ Small parts finishing and polishing
- ▶ Easily controllable operation and applied finesse
- ▶ Blend, finish or polish small spot welds with surrounding surface



Type	Diameter	Thickness	Max RPM	Optimal RPM	Std. Pkg.	2SVF
Type R	2"	1/4"	16,100	9,500	10	45618
	3"	1/4"	15,100	6,400	10	45620

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ○ Plastics ○ Composites

DEPRESSED CENTER FINAL POLISHING DISCS

Quickly produce a high luster or mirror finish with a greater wheel contact area. For use on large, flat surfaces or subtle contours with controlled pressure from fiberglass reinforced backing plate.

- ▶ Reinforced leverage with cushioned control
- ▶ Finish larger areas without operator or tooling fatigue
- ▶ Contour large inner or outer diameters

▶ Superior Support

Unitized products are run significantly slower than their coated counterparts. The use of variable speed grinders optimizes performance. For optimum polishing, try cutting RPM in half.

Diameter	Arbor	Max RPM	Optimal RPM	Std. Pkg.	4SVF
4-1/2"	7/8"	11,000	6,000	1	45107

Ferrous
 Non-Ferrous
 Stainless
 Exotic Alloys
 Plastics
 Composites



SHUR-BRITE® Unitized

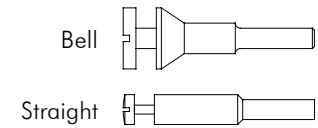
SCREW LOCK TYPE WHEEL ADAPTERS

Easy to access slotted screw secures wheel in place, providing a reduced adapter profile. Available in various lengths, with shank diameters from 1/8" to 3/8" for multiple tools.

- ▶ Easy product changeover with basic tools
- ▶ Available for a variety of wheel dimensions
- ▶ Long lasting, rust proof finish



▶ Superior Support



Wheel Arbor Hole	Wheel Thickness	Shank Diameter	Head Style	Head Diameter	Overall Length	Max RPM	Std. Pkg.	Part #
1/4"	Up to 1/4"	1/4"	Bell	3/4"	2"	28,000	1	12213
3/8"	Up to 1/4"	1/4"	Bell	3/4"	2"	28,000	1	12214
1/4" or 3/8"	Up to 1/4"	1/4"	Bell	3/4"	2"	28,000	1	26222
1/4"	3/8" to 1/2"	1/4"	Bell	3/4"	2"	28,000	1	35733
1/4"	3/8" to 1/2"	3/8"	Bell	3/4"	2"	28,000	1	35734
1/16"	Up to 1/4"	1/8"	Straight	3/16"	1-3/4"	28,000	1	12220
1/8"	Up to 3/16"	1/8"	Straight	1/4"	1-1/2"	28,000	1	12221
1/8"	Up to 1/4"	1/4"	Straight	3/8"	2"	28,000	1	12222
1/4"	Up to 1/4"	1/4"	Straight	7/16"	2"	28,000	1	12223
1/8"	Up to 1/4"	1/4"	Straight	3/8"	3"	28,000	1	12224
1/4"	Up to 1/4"	1/4"	Straight	7/16"	3"	28,000	1	12225

CHUCK TYPE WHEEL MANDRELS

Available for both 1/4" or 3/8" arbor holes and up to 3/8" wheel thickness. Washer and slotted screw secure wheels firmly in place.

- ▶ Remove washer and wheel with basic tools
- ▶ Long lasting, rust proof finish



Wheel Arbor Hole	Wheel Thickness	Shank Diameter	Flange Diameter	Overall Length	Max RPM	Std. Pkg.	Part #
1/4"	1/4" to 3/8"	1/4"	9/16"	2-1/8"	28,000	1	12211
3/8"	1/4" to 3/8"	1/4"	11/16"	2-1/8"	28,000	1	12212

NUT LOCK WHEEL ADAPTERS

Recommended for wheels used on edge. Large washer provides additional stability on larger diameter wheels. Fits wheels up to 3/4" thick.

- ▶ Remove wheel with basic wrench
- ▶ Machine flanged washer for extra stability



Wheel Arbor Hole	Wheel Thickness	Shank Diameter	Washer Diameter	Overall Length	Max RPM	Std. Pkg.	Part #
1/4"	Up to 5/8"	1/4"	1"	2-1/2"	28,000	1	10540
3/8"	Up to 3/4"	1/4"	1"	2-1/2"	28,000	1	12215

QUICK CHANGE WHEEL MANDRELS

Quick changeover, screw in mandrel for plug wheels. Coarse threads secure wheel in place without additional tooling.

- ▶ Quick changeover without tooling
- ▶ Rust proof, black oxide finish



Wheel Arbor Hole	Wheel Thickness	Shank Diameter	Shoulder Diameter	Overall Length	Max RPM	Std. Pkg.	Part #
3/16"	1"	1/4"	1/2"	1-3/4"	28,000	1	37519

ARBOR REDUCER BUSHINGS

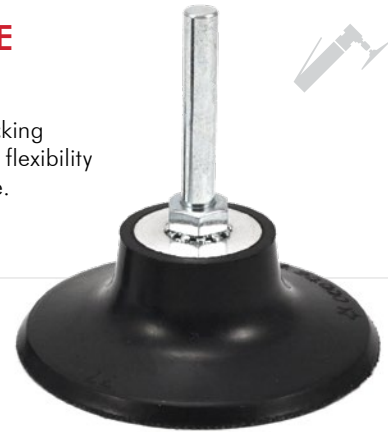
Retrofit existing tooling to accept wheels with 1" arbor.



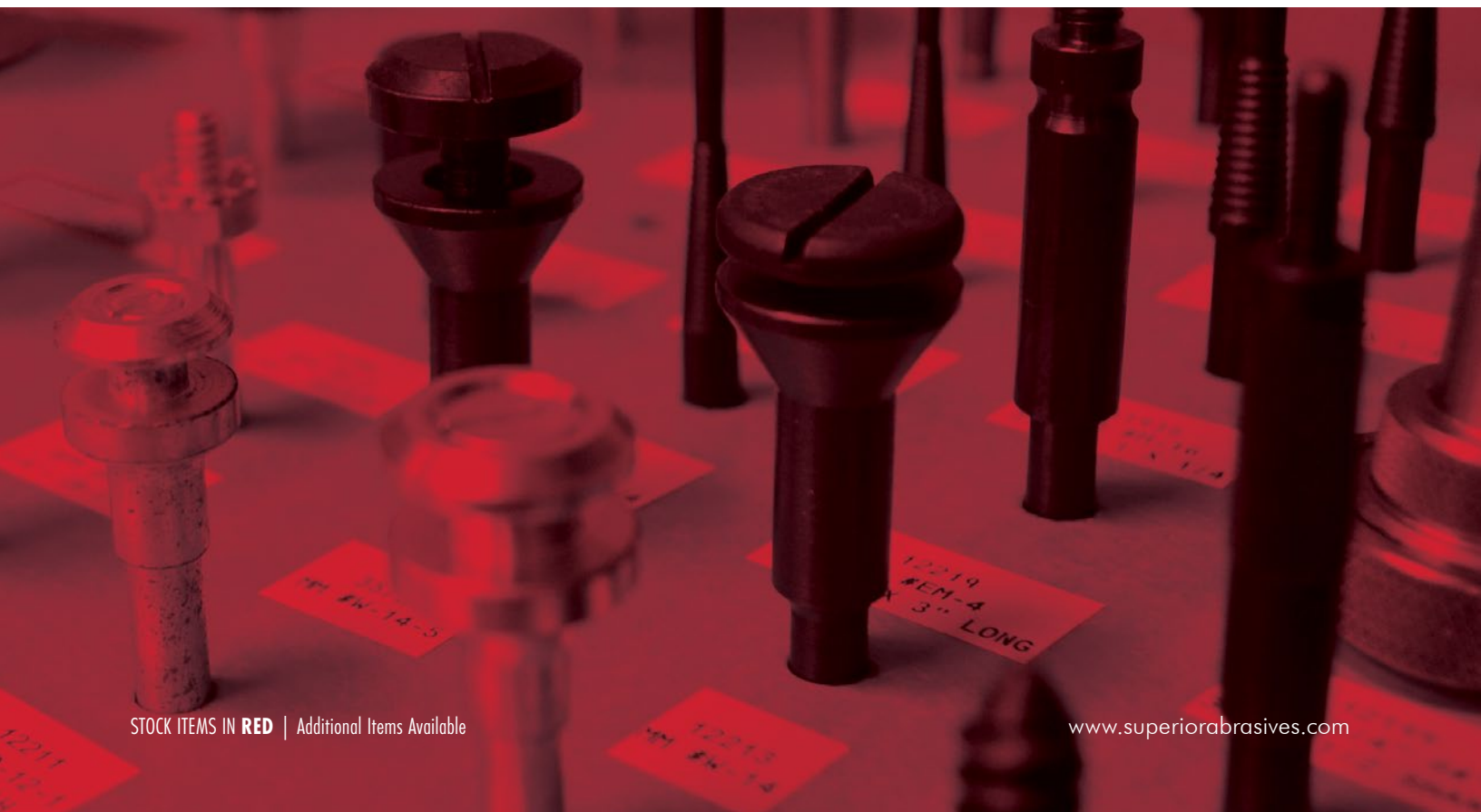
Arbor Diameter	Reduced Diameter	Std. Pkg.	Part #
1"	3/4"	1 Pair	10391
1"	5/8"	1 Pair	10392
1"	1/2"	1 Pair	10393

QUICK CHANGE DISC HOLDERS

Quick change rubber backing pad provides stability and flexibility under directional pressure.



Type	Diameter	Shank	Max RPM	Std. Pkg.	Part #
Type R	2"	1/4"	30,000	1	11275
	3"	1/4"	20,000	1	11276







SHUR-BRITE® Stripping

Stripping Characteristics

Similar in components to other nonwoven abrasives, SHUR-BRITE® Stripping materials are made with larger nylon fibers and increased resin content to produce a firm structure. The resin remains flexible, but the nylon fibers are thickly surrounded to hold their structure in place.

Extra coarse silicon carbide grains provide aggressive cutting action, but the friability of the grains prevents unnecessary gouging and metal removal. The balance of rigidity and flexibility allow the sharp grains to penetrate and remove the outermost layers without cutting deep into the solid surface.

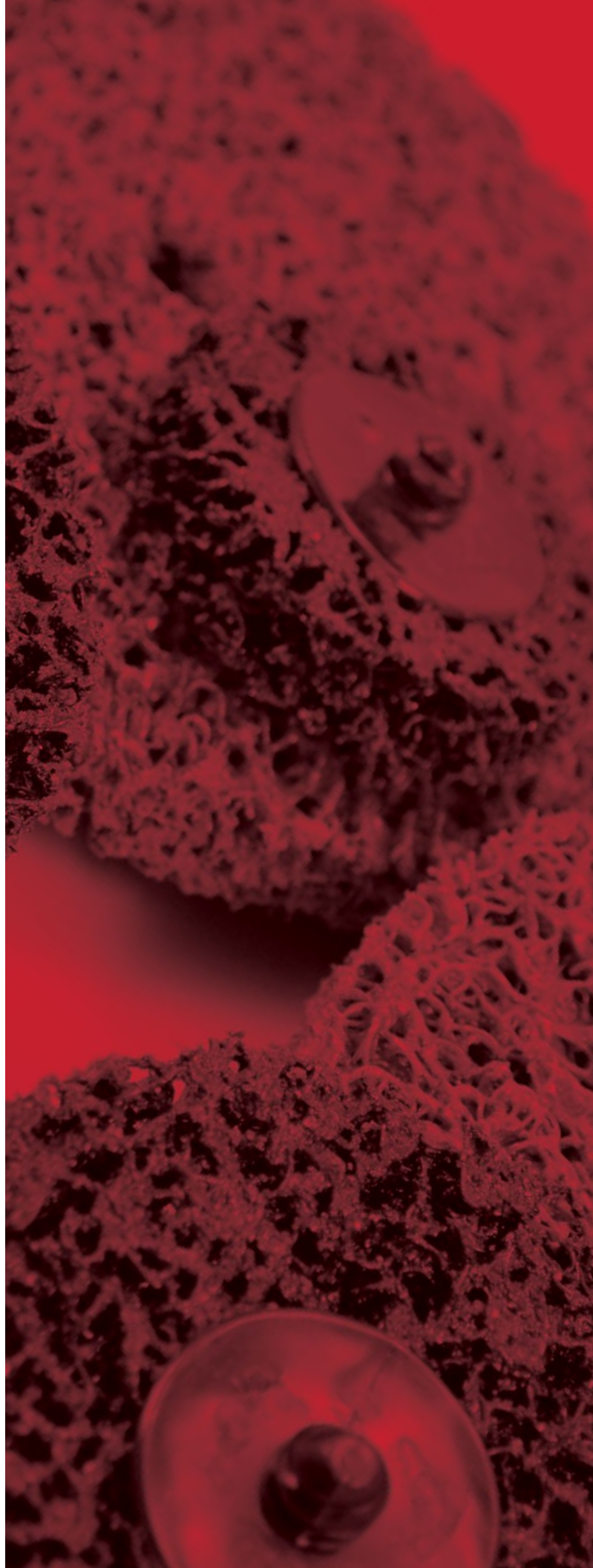
Stripping Features

Stripping products are aggressive enough to quickly remove layers of paint, residue, corrosion or rust, but the flexibility will not alter or reshape the solid surface underneath. The open, nonwoven structure resists heat buildup, which could cause excessive loading of some surface layers. Stripping products can be used on all sides and offer consistent performance throughout life.

- ▶ Removes only formed or applied layers
- ▶ Will not gouge metallic surfaces
- ▶ Greater surface area than wire brushes
- ▶ Stiff, open structure resists clogging and loading
- ▶ Consistent performance throughout life

Applications

- ▶ Remove gasket or adhesive residue
- ▶ Maintenance and machine refurbishing
- ▶ Clean welds or seams without removing material
- ▶ Removal of paint and other clogging materials
- ▶ Surface corrosion and rust removal



Less compressed, yet harder and richer with resins, stripping products remove workpiece layers of the least resistance. The extremely open, less-conformable structure is ideal for fast removal of undesired coatings.

Most Aggressive

R_D	Red	A higher resin content decreases flexibility for a more aggressive cutting action.
		<ul style="list-style-type: none"> Heavy duty removal Extended life and consistent performance Reduced heat buildup and loading
B_L	Black	Slightly flexible and conformable, reducing chances of marring or gouging softer metals.
		<ul style="list-style-type: none"> Consistent performance throughout life Open structure reduces loading and clogging

Least Aggressive

▶ Performance	Red	Black
Cut	●	◐
Life	●	◐
Finish	◐	●
Flexibility	◐	●
Pressure	●	◐
Density	●	◐

● Best ◐ Better ○ Good

SHUR-BRITE® Stripping

R_D ARBOR MOUNTED RED STRIPPING WHEELS



Aggressive removal of surface layers and contaminants. Extended wheel life and consistent cutting action. Can be stacked on stationary spindles to increase surface coverage and removal rate.

- ▶ Anti-clogging structure
- ▶ Quickly remove powder coatings
- ▶ Consistent, extended cutting action



Diameter	Thickness	Arbor	Max RPM	Optimal RPM	Std. Pkg.	XCRS
4"	1/2"	1/2"	8,000	4,500	10	54897
6"	1/2"	1/2"	5,500	3,000	10	54898

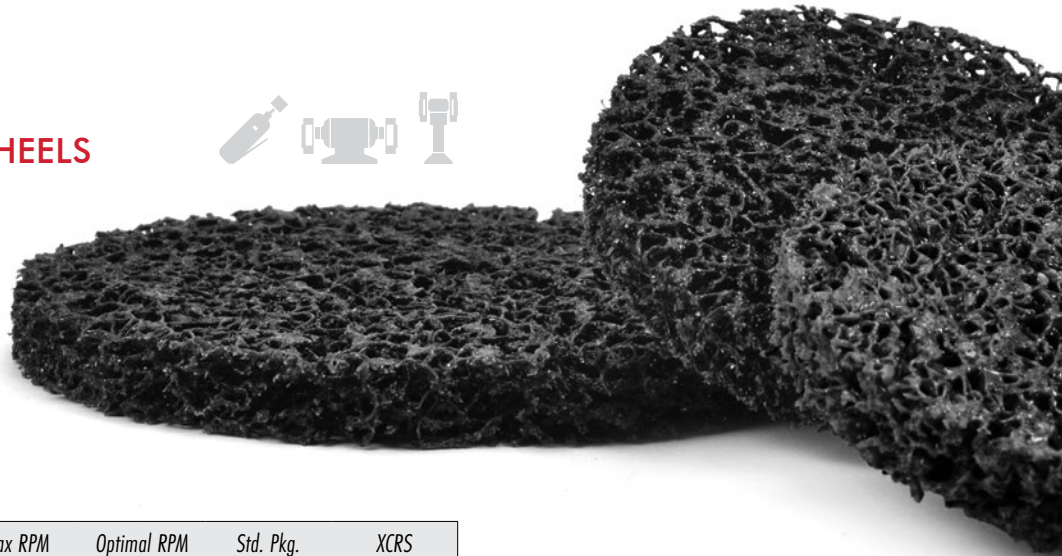
● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

B_L ARBOR MOUNTED BLACK STRIPPING WHEELS



Consistent removal of rust, paint or surface contaminants. Clean weld discoloration without altering workpiece. Moderate flexibility reduces harm to softer materials.

- ▶ Open structure resists heat
- ▶ Paint removal without gouging
- ▶ Gasket or adhesive removal without clogging



Diameter	Thickness	Arbor	Max RPM	Optimal RPM	Std. Pkg.	XCRS
4"	1/2"	1/4"	8,000	4,500	10	38699
4"	1/2"	1/2"	8,000	4,500	10	34361
6"	1/2"	1/2"	5,500	3,000	10	34362
8"	1/2"	1/2"	4,000	2,000	10	34363

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

NUT LOCK WHEEL ADAPTERS



Wheel Arbor Hole	Wheel Thickness	Shank Diameter	Washer Diameter	Overall Length	Max RPM	Std. Pkg.	Part #
1/4"	Up to 5/8"	1/4"	1"	2-1/2"	28,000	1	10540
1/2"	Up to 5/8"	1/4"	1-3/4"	2-1/2"	28,000	1	12216



BL SHANK MOUNTED BLACK STRIPPING WHEELS



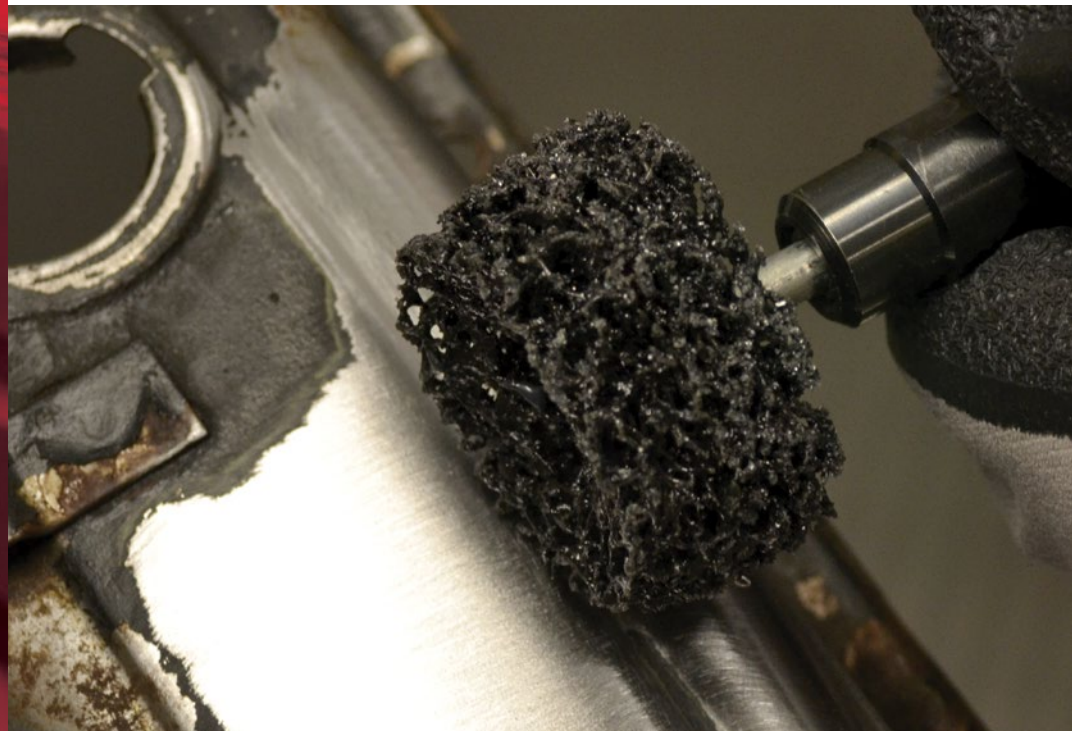
Utilize die grinders to navigate intricate parts or access small areas. Clean or prep stationary parts or extruded channels. No accessories necessary.

- ▶ Easily reach narrow areas
- ▶ Navigate and finesse small diameters and inner contours
- ▶ No mandrels or additional adapters required



Diameter	Width	Shank	Max RPM	Optimal RPM	Std. Pkg.	XCRS
2"	1/2"	1/4"	16,000	6,500	10	35805
2"	1"	1/4"	16,000	6,500	10	35806
3"	1/2"	1/4"	10,500	4,500	10	34359
3"	1"	1/4"	10,500	4,500	10	34360
4"	1/2"	1/4"	8,000	3,500	10	38446
4"	1"	1/4"	8,000	3,500	10	38447

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites



R_D DEPRESSED CENTER RED STRIPPING DISCS

Fiberglass reinforced backing plate allows increased pressure for harder surface coatings. Quickly clean or prep large areas without clogging or loading. Extended product life reduces changeover frequency.

- ▶ Used on large, flat or contoured surfaces
- ▶ Efficiently strip paint or coatings from large machinery
- ▶ Easily remove epoxies or other tough coatings

Diameter	Arbor	Max RPM	Optimal RPM	Std. Pkg.	XCRS
4-1/2"	7/8"	11,000	8,600	10	54896
5"	7/8"	9,800	7,800	10	55061

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

B_L DEPRESSED CENTER BLACK STRIPPING DISCS

Reinforced backing provides added leverage on flat or contoured parts. Open structure resists heat, loading and clogging, prolonging product life.

- ▶ Increased area and surface coverage
- ▶ Large-scale removal on hard surfaces
- ▶ Consistent performance throughout life

Diameter	Arbor	Max RPM	Optimal RPM	Std. Pkg.	XCRS
4-1/2"	7/8"	11,000	8,600	10	34366

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

RD QUICK CHANGE RED STRIPPING DISCS

Small diameter discs used flat or on edge, reaching small areas or intricate shapes. Quick change function reduces changeover time and can easily switch between other quick change products for multi-step processing.

- ▶ Easy control in small areas and on contours
- ▶ Consistent, long-life cutting action
- ▶ Aggressive cutting action for tough coatings
- ▶ Switch between quick change products



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	XCRS
Type R	2"	10,500	8,000	50	54899
	3"	7,000	5,600	25	54900

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

BL QUICK CHANGE BLACK STRIPPING DISCS



Ideal for spot removal, cleaning seam lines, or contoured stripping in small areas or intricate parts. Easily transition to other quick change applications.

- ▶ Gasket and residue removal before reassembly
- ▶ Easily access small areas
- ▶ Consistent cutting action throughout life

Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	XCRS
Type R	2"	10,500	8,000	50	34364
	3"	7,000	5,600	25	34365
	4"	9,800	7,800	10	41334

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

▶ Superior Support

Stripping products are more conformable and safer than wire brushes, which can shed wires.

QUICK CHANGE DISC HOLDERS

Type	Diameter	Shank	Max RPM	Std. Pkg.	Part #
Type R	2"	1/4"	30,000	1	11275
	3"	1/4"	20,000	1	11276
	4"	1/4"	10,000	1	34992







SHUR-KUT[®] Coated Abrasives

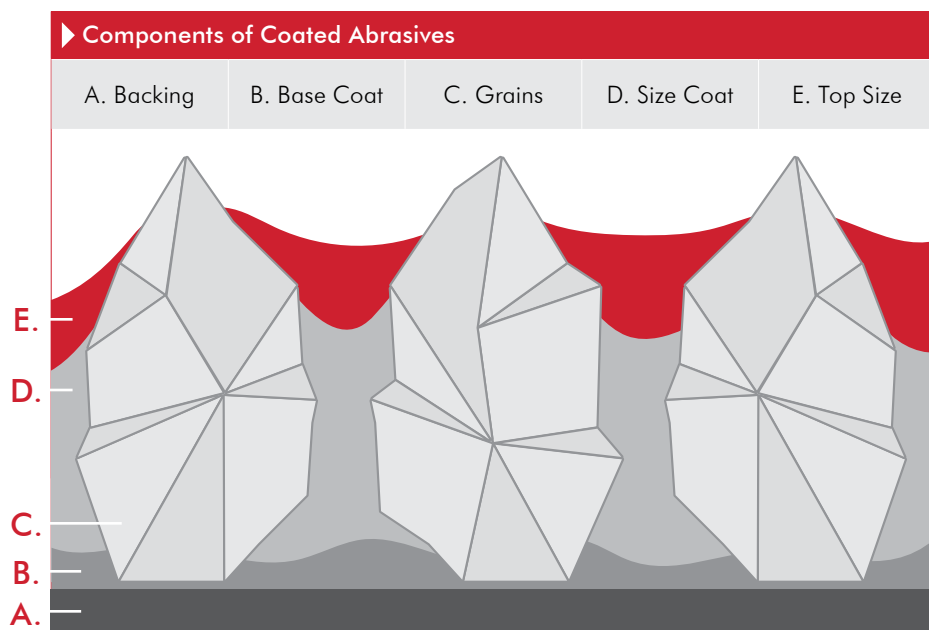
Coated Features

From shaping and heavy material removal to surface preparation and fine finishing, the broad selection of SHUR-KUT® Coated Abrasives includes several specialized materials and product forms. Variability in backing weight and flexibility, grain structure and additional coatings allow choice material combinations per your specific application, providing the most efficient solution.

Coated Characteristics




Although considered a 'single-layered' structure due to its one-directional operation, coated abrasives consist of resin bonding agents and abrasive grains layered and adhered to a supportive backing. The structure of coated abrasive materials offers more aggressive cutting action, simply considering the lack of compression and conformability to surfaces.

The dense organization of abrasive grains provides more friction, which results in cutting power, but also creates more heat. To combat excessive heat, proper grain selection is made based on metal type. Harder metals require a sharper grain to penetrate and cut, versus softer metals that are easily worn away. The addition of a grinding aid or stearate acts as a friction reducer, resulting in more efficient cutting action.



Backing Materials

Various backings help determine material strength, durability and flexibility – All critical factors when considering particular applications. Cloth backings consist of either cotton, which is most popular, or a more performance-oriented polyester, which provides better grain retention. Cotton backings are classified by flexibility, versus the weight of paper backings.

▶ Backing Types												
Weight	Paper						Cloth					
	A	B	C	D	E	F	E	F	J	T	X	Y
Durability												
Thickness												
Flexibility												

Base & Size Coat

The manner in which abrasive grains are adhered to the backing is done with a base coat. Grains are set in a resin or glue that secures grains upright and in place. On top of the grains and base coat, another layer of resin is applied, creating the size coat. Various alterations to resin compounds allow more or less flexibility of the abrasive grains, sometimes creating a stiffer, more durable product.

Top Size Coat

To counteract friction, excessive heat or loading, an additional layer may be added to coated abrasives. Top size coats can be utilized as a grinding aid or a stearate, which is commonly seen on products with paper backings.

Top size grinding aids react to high heat caused by friction from harder metals and alloys. Necessary pressure can be applied, but heat is not generated as quickly, reducing the stress and premature wear of the abrasive grains.

In lower temperature operations, a top size stearate may be preferred. Calcium stearate acts as a lubricant that reduces loading and clogging of softer metals with a lower melting point.

Abrasive Grains

Each unique group of abrasive grains share similar qualities tailored toward specific applications and operations. Some factors to consider when choosing abrasive grains are cut rate, finish quality, production environment and cost, as applied to any particular surface or workpiece.

 <p>C^A Ceramic Alumina</p>	<p>Tough, sharp grain fractures under moderate pressure to continually reveal fresh cutting points for consistent, long-lasting performance.</p>
 <p>S_c Silicon Carbide</p>	<p>Hard, extremely sharp grain breaks away under light pressure to continually expose fine cutting edges.</p>
 <p>Z_A Zirconia Alumina</p>	<p>Long-lasting, dense grain produces new cutting points under high pressure and aggressive use.</p>
 <p>A^O Aluminum Oxide</p>	<p>Dense and durable, multi-purpose grain for general grinding on all metals. Grains dull as they are worn, reducing consistency throughout use.</p>

Our comprehensive line of SHUR-KUT® products provides efficient solutions for heavy grinding and stock removal to finishing and fine polishing.

Discs	84
Belts	108
Wheels	112
Bore Polishers	118
Cartridge Rolls	120
Caps	126
Cones	130
Bands	132
Pads	135
Rolls	136
Sheets	138



SHUR-KUT® Coated

Quick Change Discs

The reduced diameter of quick change discs provide ease of use on intricate parts, and excellent control when shaping or blending surface portions. Ideally used on flat surfaces to utilize more cutting action, the moderate flexibility of quick change discs and their holders also allow contouring and access to inner corners. The unique quick change functionality reduces changeover downtime and eases transitions between grit, material, or even abrasive type where multi-step processes are required.

Applications

- ▶ General purpose grinding and stock removal
- ▶ Deburring or parting line removal on cast parts
- ▶ Spot weld removal and blending
- ▶ Mold and cavity grinding and refurbishing
- ▶ Grinding and preparing hot castings



Quick Change Discs

CA CERAMIC PREMIUM QUICK CHANGE DISCS



Premium, self-sharpening grain with advanced grinding aid substantially reduces heat to increase cutting power on harder metals. Durable polyester backing and cooler cutting action extend product life in lighter pressure applications.

- ▶ Light pressure, high temperature applications
- ▶ Aggressive cut rate on hard or exotic alloys
- ▶ Reduced operator and product fatigue
- ▶ Higher, prolonged cut rate



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	36	60	80	120
Type S	2"	30,000	10,500	100	54559	54124	54561	54562
	3"	20,000	7,000	50	54563	54125	54564	54565
Type R	2"	30,000	10,500	100	54566	54503	54509	54504
	3"	20,000	7,000	50	54567	54505	54510	54506

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

CA CERAMIC ADVANTAGE QUICK CHANGE DISCS

Finer crystalline grain structure introduces more cutting points under medium pressure. Increased amount of smaller cutting points provides a finer finish and longer life.

- ▶ Continual exposure of fresh, sharp cutting points
- ▶ Top size coat reduces loading, glazing and dulling
- ▶ Ideal for medium pressure applications



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	36	40	50	60	80	120
Type S	2"	30,000	10,500	100	53824	53904	53905	53906	53907	53908
	3"	20,000	7,000	50	53914	53915	53916	53917	53918	53919
Type R	2"	30,000	10,500	100	53726	53899	53900	53758	53902	53876
	3"	20,000	7,000	50	53814	53910	53911	53834	53912	53913

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

SHUR-KUT® Coated

CA CERAMIC GRINDING AID QUICK CHANGE DISCS

Self-sharpening grains continually produce fresh cutting points, reducing friction and prolonging cut rates under lighter pressure. Additional grinding aid further reduces heat, extending disc life.

- ▶ Additional heat dissipation for high temperature grinding
- ▶ Sharp grains easily cut through stainless steel and alloys
- ▶ Flexible X-weight backing
- ▶ Extended life and grain retention



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	36	40	50	60	80	120
Type S	1-1/2"	30,000	13,000	100	40305	40306	40307	40308	40309	40310
	2"	30,000	10,500	100	40311	40312	40313	40314	40315	40316
	3"	20,000	7,000	50	40317	40318	40319	40320	40321	40322
Type R	1-1/2"	30,000	13,000	100	40323	49377	40325	40326	40327	40328
	2"	30,000	10,500	100	40329	40330	40331	40332	40333	40334
	3"	20,000	7,000	50	40335	40336	40337	40338	40339	40340

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

Sc SILICON CARBIDE QUICK CHANGE DISCS

Hard, friable grain exposes sharp edges under light pressure. Contaminate free and safe for aerospace and food processing applications. Ideal for final processing or sanitary polishing applications.

- ▶ Sharper grains produce finer scratch patterns
- ▶ Cut and polish non-ferrous metals
- ▶ Approved use on aircraft components



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	60	80	120
Type S	2"	30,000	10,500	100	18154	16980	18157
	3"	20,000	7,000	50	18059	18166	49395
Type R	2"	30,000	10,500	100	18216	18217	32035
	3"	20,000	7,000	50	49393	32033	18232

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ○ Composites

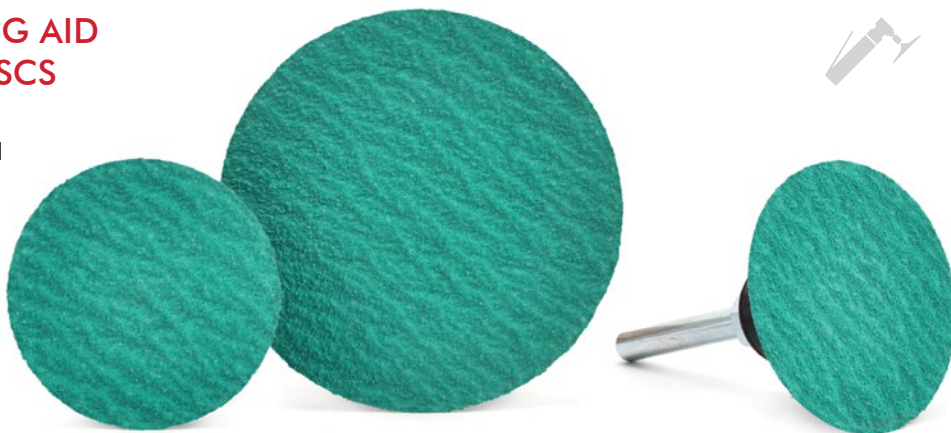
▶ Superior Support

Silicon carbide is ideal for aerospace operations in which iron contamination from other abrasive grains is of concern.

Za ZIRCONIA GRINDING AID QUICK CHANGE DISCS

Long lasting, durable grains and sharp cutting action with additional grinding aid to reduce heat generation. Cooler cut reduces friction and premature breakdown of grains and backing.

- ▶ Extended stock removal with low heat generation
- ▶ Aggressive grinding on stainless steel
- ▶ Hybrid grain exposes fresh cutting edge during use



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	36	40	50	60	80	120
Type S	1-1/2"	30,000	13,000	100	36665	36666	36667	36668	36669	36670
	2"	30,000	10,500	100	36677	36678	36679	36680	36681	36682
	3"	20,000	7,000	50	36689	36690	36691	36692	36693	36694
Type R	1-1/2"	30,000	13,000	100	36671	36672	36673	36674	36675	36676
	2"	30,000	10,500	100	36683	36684	36685	36686	36687	36688
	3"	20,000	7,000	50	36695	36696	36697	36698	36699	36700

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ● Composites

SHUR-KUT® Coated

Z ZIRCONIA QUICK CHANGE DISCS

Dense grains continually generate new cutting edges, ideal for long lasting stock removal. Sharp grains reduce heat and friction in high pressure applications.

- ▶ Aggressive stock removal on hard metals and alloys
- ▶ Sharp cut reduces heat, friction and loading
- ▶ high pressure applications



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	36	40	50	60	80	120
Type S	2"	30,000	10,500	100	11155	11156	11157	11158	11159	11161
	3"	20,000	7,000	50	11162	11163	11164	11165	11166	11168
Type R	2"	30,000	10,500	100	11258	11259	11260	11261	11262	11264
	3"	20,000	7,000	50	11265	11266	11267	11268	11269	11271

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ● Composites

A ALUMINUM OXIDE GRINDING AID QUICK CHANGE DISCS

Reduced heat, general purpose grinding action on a variety of materials. Ideal for stock removal, shaping and deburring. Specially applied grinding aid reduces heat in aggressive, high pressure applications, extending cutting life.

- ▶ Additional heat dissipation non-ferrous metals
- ▶ Cool cutting action and extended life
- ▶ Efficient grinding and shaping on aircraft grade aluminum



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	36	50	60	80	120
Type S	2"	30,000	10,500	100	16827	16829	16830	16831	16833
	3"	20,000	7,000	50	21344	26668	22391	26825	32018
Type R	2"	30,000	10,500	100	32050	32049	32048	32047	32045
	3"	20,000	7,000	50	32044	32043	32042	32041	32039

● Ferrous ● Non-Ferrous ○ Stainless ● Exotic Alloys ● Plastics ● Composites

A^o ALUMINUM OXIDE QUICK CHANGE DISCS

Dense, blocky grain well suited for general purpose grinding and stock removal. Durable use on ferrous, non-ferrous, stainless steels, alloys and non-metallics.

- ▶ General stock removal and shaping on most metals
- ▶ Spot weld removal or rough blending
- ▶ Leveling or blending imperfections



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	24	36	40	50	60	80	100	120	150	180	240	320
Type S	1"	40,000	20,000	100	54308	11087	11088	11089	11090	11091	11092	11093	50911	11095	11096	11097
	1-1/2"	30,000	13,000	100	11098	11099	11100	11101	11102	11103	11104	11105	11106	11107	11108	11109
	2"	30,000	10,500	100	11110	11111	11112	11113	11114	11115	11116	11117	11118	11119	11120	11121
	3"	20,000	7,000	50	11122	11123	11124	11125	11126	11127	11128	11129	11130	11131	11132	11133
Type R	1"	40,000	20,000	100	-	35361	42716	34998	11193	11194	38037	11196	-	11198	11199	39121
	1-1/2"	30,000	13,000	100	11201	11202	11203	11204	11205	11206	11207	11208	43491	11210	11211	33983
	2"	30,000	10,500	100	11213	11214	11215	11216	11217	11218	11219	11220	34463	11222	11223	11224
	3"	20,000	7,000	50	11225	11226	11227	11228	11229	11230	11231	11232	11233	11234	11235	11236

● Ferrous ● Non-Ferrous ○ Stainless ○ Exotic Alloys ● Plastics ● Composites



A^o ALUMINUM OXIDE COMPACT GRAIN QUICK CHANGE DISCS

Clusters of aluminum oxide grains wear away to reveal fresh grains to maintain cutting rate and consistency, substantially extending disc life. Ideal for consistent surface finishes and stock removal rates.

- ▶ Consistent performance and extended wear rate
- ▶ Moderate pressure to evenly break down grain clusters
- ▶ Consistently polishing multiple heat sensitive parts

Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	80	120	180	240	320
Type S	2"	30,000	10,500	100	40270	40271	40272	40273	40274
	3"	20,000	7,000	50	40277	40278	40279	40280	40281
Type R	2"	30,000	10,500	100	40291	40292	40293	40294	40295
	3"	20,000	7,000	50	40298	40299	40300	40301	40302

● Ferrous ● Non-Ferrous ○ Stainless ○ Exotic Alloys ○ Plastics ● Composites

SHUR-KUT® Coated

CA RIGID KUT CERAMIC QUICK CHANGE DISCS

Specialized backing for aggressive grinding and high-pressure applications on hard alloys and other metals. Rigid backing and improved grain retention transfer more pressure to properly breakdown ceramic grains, exposing new, sharp cutting edges.

- ▶ Self-sharpening grains permit cooler cut
- ▶ Better edge wear than fiber backings
- ▶ Apply higher pressure than standard backings



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	36	50	60	80	100	120
Type S	2"	30,000	10,500	100	47801	47802	47803	47804	47805	47806
	3"	20,000	7,000	50	47807	47808	47809	47810	47811	47812
Type R	2"	30,000	10,500	100	47813	47814	47815	47816	47817	47818
	3"	20,000	7,000	50	47819	47820	47821	47822	47823	47824

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ● Composites

AO RIGID KUT ALUMINUM OXIDE QUICK CHANGE DISCS

Stiff backing keeps grains in place during aggressive, general purpose applications. High edge retention resists shredding during sharp deburring applications. Dense aluminum oxide grains suitable for most metals and general applications.

- ▶ Dense grains ideal for stock removal
- ▶ Highly resistant to shredding
- ▶ Heavy deburring and edge applications



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	36	50	60	80	100	120
Type S	2"	30,000	10,500	100	46853	46854	46855	46856	46857	46858
	3"	20,000	7,000	50	46859	46860	46861	46862	46863	46864
Type R	2"	30,000	10,500	100	46871	46872	46873	46874	46875	46876
	3"	20,000	7,000	50	46877	46878	46879	46880	46881	46882

● Ferrous ● Non-Ferrous ○ Stainless ● Exotic Alloys ● Plastics ● Composites



QUICK CHANGE DISC HOLDERS

Type	Diameter	Shank	Max RPM	Std. Pkg.	SOFT	MEDIUM	FIRM
Type S	3/4"	1/4"	40,000	1	-	11169	-
	1"	1/4"	40,000	1	-	11170	-
	1-1/2"	1/4"	30,000	1	50257	11171	46310
	2"	1/4"	30,000	1	11172	11173	11174
	3"	1/4"	20,000	1	11175	11176	11177
	4"	1/4"	12,000	1	-	11178	-
Type R	3/4"	1/4"	40,000	1	-	40564	-
	1"	1/4"	40,000	1	-	11273	-
	1-1/2"	1/4"	30,000	1	50258	11274	51082
	2"	1/4"	30,000	1	50254	11275	40821
	3"	1/4"	20,000	1	50420	11276	38308
	4"	1/4"	12,000	1	-	34992	-

SHUR-KUT® Coated

Discs

Larger scale grinding and finishing in portable form, and shaping, deburring or blending against stationary grinders, SHUR-KUT® PSA and Hook & Loop discs offer several coated materials to match demanding metalworking applications. The PSA and Hook & loop fastening systems are easy to apply and remove for fast changeover, maintaining efficient productivity throughout production. Available in paper and cloth, both servicing a variety of industrial applications.

Applications

- ▶ General purpose grinding and stock removal
- ▶ Flat surface leveling or parting line removal
- ▶ Weld removal and blending
- ▶ Paint preparation and finishing
- ▶ Handheld parts shaping
- ▶ Surface cleaning or corrosion removal





Z_A ZIRCONIA GRINDING AID CLOTH PSA DISCS



Tough, sharp and durable grains for extended life on high pressure, aggressive applications. Additional grinding aid to reduce friction and premature breakdown where heat generation is of concern.

- ▶ Aggressive grinding on stainless steel
- ▶ Dissipates heat and resists loading
- ▶ Quickly shape or recondition stainless steel and alloys

Diameter	Max RPM	Std. Pkg.	36	40	50	60	80	120
5"	12,000	50	21372	34014	17127	21150	21151	21153
6"	10,000	50	21176	26381	31349	24531	16108	21177
12"	1,720	50	16728	16919	19277	16729	18943	16056
20"	1,720	50	21012	21013	17152	24686	17154	-

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

Z_A ZIRCONIA CLOTH PSA DISCS

Sharp, durable zirconia grains reduce friction causing excessive heat and loading. Long lasting, high pressure grains ideal for aggressive applications.

- ▶ Aggressive stock removal on hard metals
- ▶ Sharp cut reduces heat, friction and loading
- ▶ High pressure applications



Diameter	Max RPM	Std. Pkg.	36	40	50	60	80	120
5"	12,000	50	17498	17499	17500	17501	17502	17504
6"	10,000	50	17505	17506	17507	17508	17509	17511
12"	1,720	50	17458	17459	17460	17461	17462	40497
20"	1,720	50	17483	17484	17485	17486	17487	46648

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ● Composites

SHUR-KUT® Coated

A^o ALUMINUM OXIDE CLOTH PSA DISCS

Dense, blocky grain well suited for general purpose grinding and stock removal. Durable use on ferrous, non-ferrous, stainless steels, alloys and non-metallics.

- ▶ General stock removal and shaping
- ▶ Spot weld removal or rough blending
- ▶ Leveling or blending imperfections



▶ Superior Support

A warmer disc is easier to remove from a platen or holder. Use a piece of scrap metal to heat the disc if not in actual use.

Diameter	Max RPM	Std. Pkg.	24	36	40	50	60	80	100	120	180	240	320
1/2"	22,000	100	-	-	-	-	11376	11377	11378	11379	11380	16685	16095
3/4"	22,000	100	-	-	-	11382	11383	11384	11385	11386	11387	16955	18509
1"	22,000	100	-	-	-	11389	11390	11391	11392	11393	11394	18004	18508
1-1/2"	20,000	100	-	11396	11397	11398	11399	11400	11401	11402	11404	11405	11406
2"	18,000	100	11407	11408	11409	11410	11411	11412	11413	11414	11416	11417	11418
3"	17,000	50	11419	11420	11421	11422	11423	11424	11425	11426	11428	11429	11430
4"	16,000	50	11431	11432	11433	11434	11435	11436	11437	11438	11440	11441	11442
5"	12,000	50	11443	11444	11445	11446	11447	11448	11449	11450	11452	11453	11454
6"	10,000	50	11455	11456	11457	11458	11459	11460	11461	11462	11464	11465	11466
8"	4,800	50	11476	11477	11478	11479	11480	11481	11482	11483	11484	30428	30430
9"	1,720	25	11485	11486	11487	11488	11489	11490	11491	11492	11493	-	-
10"	1,720	25	11494	11495	11496	11497	11498	11499	11500	11501	11502	30443	30444
12"	1,720	25	11503	11504	11505	11506	11507	11508	11509	11510	11512	11513	11514
16"	1,720	25	11533	11534	11535	11536	11537	11538	11539	11540	-	52928	-
18"	1,720	10	11542	11543	11544	11545	11546	11547	11548	11549	-	-	30463
20"	1,720	10	11551	11552	11553	11554	11555	11556	11557	11558	11559	-	-
24"	1,150	10	11560	11561	11562	11563	11564	11565	11566	11567	11568	53249	53250

● Ferrous ● Non-Ferrous ○ Stainless ○ Exotic Alloys ● Plastics ● Composites

PSA CLOTH DISC HOLDERS

Used with pistol grip sanders or die grinders and up to 5" discs. Durable and flexible pad for moderate contouring and conformability.



Diameter	Shank	Max RPM	Std. Pkg.	Part #
1/2"	1/8"	30,000	1	11701
1/2"	1/4"	30,000	1	11702
3/4"	1/8"	30,000	1	11703
3/4"	1/4"	30,000	1	11704
1"	1/8"	30,000	1	11705
1"	1/4"	30,000	1	11706
1-1/2"	1/4"	30,000	1	11707
2"	1/4"	28,000	1	11708
3"	1/4"	20,000	1	11709
4"	1/4"	16,000	1	11710
5"	1/4"	12,000	1	11711



SHUR-KUT® Coated

AO ALUMINUM OXIDE GOLD PSA DISCS

General purpose grains on a C-weight paper backing, able to level small imperfections on most surfaces. Ideal for prep and sanding between coatings to ensure adhesion of smooth layers.

- ▶ Load resistant stearate
- ▶ Surface blending and leveling
- ▶ Prep between applied coatings
- ▶ Easy to remove PSA when finished

Diameter	Max RPM	Std. Pkg.	60	80	120
5"	12,000	100	44838	39981	40425
6"	10,000	100	46654	40066	40068

Ferrous
 Non-Ferrous
 Stainless
 Exotic Alloys
 Plastics
 Composites

AO ALUMINUM OXIDE GOLD HOOK & LOOP DISCS

Hook & loop fastening system makes disc changeover fast and easy without any adhesives. General purpose grains on a C-weight paper backing, ideal for prep and sanding between coatings to ensure adhesion of smooth layers.

- ▶ Load resistant stearate
- ▶ Surface blending and leveling
- ▶ Prep between applied coatings
- ▶ Quick changeover fastening system

Diameter	Max RPM	Std. Pkg.	60	80	120
5"	12,000	100	44711	38835	40882
6"	10,000	100	46655	40887	40889

Ferrous
 Non-Ferrous
 Stainless
 Exotic Alloys
 Plastics
 Composites

A^o ALUMINUM OXIDE GOLD PSA DISC ROLLS

Conveniently packaged in roll form with no backing liner to remove. General purpose grains on a C-weight paper backing, able to level small imperfections on most surfaces. Ideal for prep and sanding between coatings to ensure adhesion of smooth layers.

- ▶ Load resistant stearate
- ▶ Surface blending and leveling
- ▶ Prep between applied coatings



Diameter	Max RPM	Std. Pkg. (100 Discs/Roll)	80	100	120	150	180	220	240	320
5"	12,000	1 Roll	25078	25079	25080	25081	25082	25083	25084	25085
6"	10,000	1 Roll	25086	25087	25088	25089	25090	25091	-	25093

● Ferrous ● Non-Ferrous ○ Stainless ○ Exotic Alloys ● Plastics ● Composites

A^o ALUMINUM OXIDE BLUE STEARATE PSA DISC ROLLS

Added stearate acts as a lubricant to reduce loading or clogging. Reduced loading and prolonged disc life for larger preparation and finishing applications. Packaged in roll form for convenient use.

- ▶ Smooth surface cleaning or preparation
- ▶ Surface leveling and blending
- ▶ Load-resistant for softer metals



Diameter	Max RPM	Std. Pkg. (125 Discs/Roll)	80	120	150	180	220	320
5"	12,000	1 Roll	11685	11687	11688	11689	-	11692
6"	10,000	1 Roll	11693	11695	-	11697	11698	-

● Ferrous ● Non-Ferrous ○ Stainless ○ Exotic Alloys ● Plastics ● Composites



HOOK & LOOP PAPER DISC HOLDERS



Diameter	Shank	Max RPM	Std. Pkg.	Part #
5"	5/16"-24	12,000	1	40910
6"	5/16"-24	10,000	1	40911



PSA PAPER DISC HOLDERS



Diameter	Shank	Max RPM	Std. Pkg.	Part #
5"	5/16"-24	12,000	1	11715
6"	5/16"-24	10,000	1	11716

SHUR-KUT® Coated

Flap Discs

Overlapping layers of coated abrasives wear down to expose new cutting surfaces, allowing extended use of flap discs and much more control and comfort than rigid grinding wheels. The profile of flap discs, either flat faced (Type 27) or angle faced (Type 29) controls the amount of leverage applied to surfaces. Type 27 flap discs are better for finesse and extended use, whereas Type 29 discs are much more aggressive. Standard density discs provide less flap compression, best suited for stock removal and rough shaping. High density discs utilize more flaps, prolonging life, and are less compressed, allowing limited conformability to the workpiece.

Applications

- ▶ Weld and heavy stock removal
- ▶ Rough shaping
- ▶ Edge grinding or beveling
- ▶ Weld blending and surface leveling





Z_A BLAC-KUT ZIRCONIA HIGH DENSITY FLAP DISCS



A cost efficient option to high density discs, Blac-Kut Flap Discs are manufactured with larger flaps, providing effective material removal with an extended product life. Available in Type 29, for beveling and removal, or Type 27 for flat grinding and blending.

- ▶ Larger flaps for greater surface contact
- ▶ Extra-long product life
- ▶ Aggressive stock removal on hard metals
- ▶ Sharp cut reduces heat, friction and loading
- ▶ High pressure applications

▶ Superior Support



Shape	Diameter	Arbor	Max RPM	Std. Pkg.	40	60	80
Type 29	4-1/2"	7/8"	13,300	10	58848	58849	58850
Type 27	4-1/2"	7/8"	13,300	10	59820	55888	59815

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites



C_A CERAMIC GRINDING AID FLAP DISCS



Self-sharpening grains continually produce fresh cutting points, reducing friction and prolonging cut rates. Additional grinding aid further reduces heat, extending disc life. Durable polyester backing retains grain orientation and contact pressure against stainless and exotic alloys.

- ▶ Additional heat dissipation for high temperature grinding
- ▶ Sharp grains cut through hard alloys
- ▶ Extended life and grain retention

Shape	Diameter	Arbor	Max RPM	Std. Pkg.	40	60	80
Type 29	4-1/2"	7/8"	13,300	10	48300	48301	48302
	4-1/2"	5/8"-11	13,300	10	48304	48305	48306
Type 27	4-1/2"	7/8"	13,300	10	48316	48317	48318
	4-1/2"	5/8"-11	13,300	10	48320	48321	48322

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

Z_A ZIRCONIA HIGH DENSITY FLAP DISCS

Increased flap count provides moderate compression for better blending and finesse. Greater cutting area promotes extended life and consistent performance throughout use.

- ▶ Longer life for repeatable application
- ▶ Aggressive weld and stock removal
- ▶ Quickly blend flat and contoured seams
- ▶ Leveling or blending imperfections

▶ Superior Support

Flap compression allows conformability around contoured parts, increasing the versatility of flap discs.



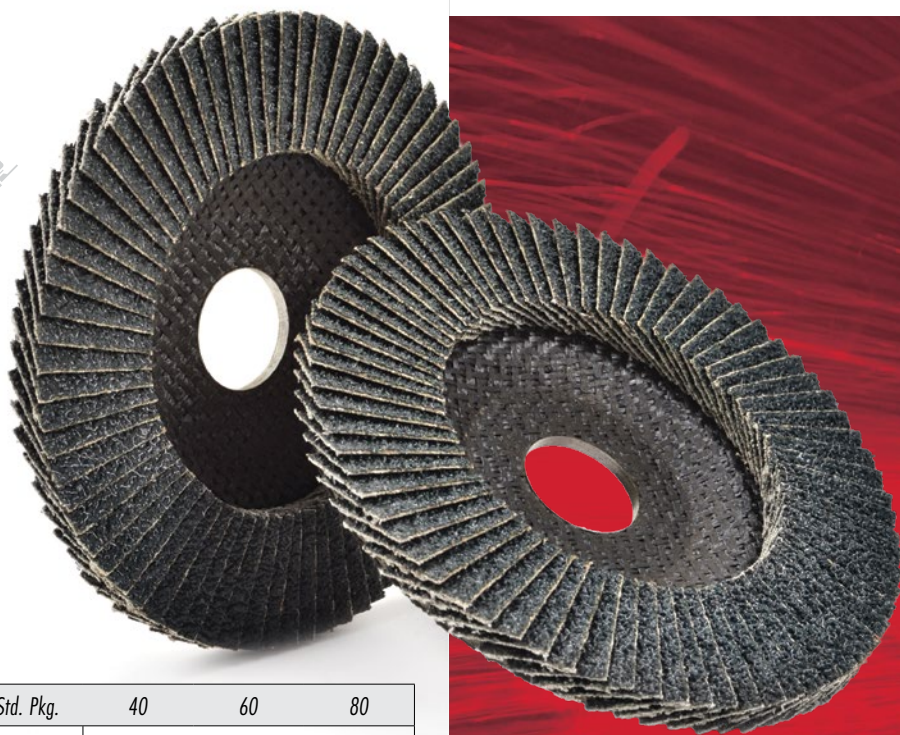
Shape	Diameter	Arbor	Max RPM	Std. Pkg.	40	60	80
Type 29	4-1/2"	7/8"	13,300	10	28848	28849	28850
Type 27	4-1/2"	7/8"	13,300	10	39820	35888	39815

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

Z_A ZIRCONIA FLAP DISCS

Dense grains continually generate new cutting edges, ideal for long lasting stock removal. Sharp grains reduce heat and friction in high pressure applications.

- ▶ Aggressive stock removal on hard metals and alloys
- ▶ Sharp cut reduces heat, friction and heavy loading
- ▶ High pressure applications



Shape	Diameter	Arbor	Max RPM	Std. Pkg.	40	60	80
Type 29	4-1/2"	7/8"	13,300	10	44028	44029	44030
Type 27	4-1/2"	7/8"	13,300	10	34982	11823	11824
	4-1/2"	5/8"-11	13,300	10	40572	34324	34325

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

A_o ALUMINUM OXIDE HIGH DENSITY FLAP DISCS

Added layers of dense grains well suited for general purpose grinding and stock removal. Durable use on ferrous, non-ferrous, stainless steels, alloys and non-metallics. Ideal for mild steels and aluminum.

- ▶ General stock removal and shaping on most metals
- ▶ Increased flap count extends life
- ▶ Blending and beveling



Shape	Diameter	Arbor	Max RPM	Std. Pkg.	40	60	80
Type 29	4-1/2"	7/8"	13,300	10	21950	21951	21952

Ferrous
 Non-Ferrous
 Stainless
 Exotic Alloys
 Plastics
 Composites



SHUR-KUT® Coated

Z_A ZIRCONIA QUICK CHANGE MINI FLAP DISCS

Small footprint for aggressive grinding and stock removal in smaller areas. Overlapping flaps wear away to fresh cutting surfaces, prolonging disc life and use. Quick change functionality alleviates production downtime.

- ▶ Aggressive removal in small areas
- ▶ Quick changeover between discs
- ▶ Sharp cuts reduce heat and loading
- ▶ High pressure applications



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	36	40	60	80	120
Type R	2"	25,000	13,000	10	37895	37896	37897	37898	37899
	3"	20,000	9,000	10	37905	37906	37907	37908	37909

● Ferrous ○ Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ● Composites

Z_A ZIRCONIA QUICK CHANGE MINI FLEX DISCS

Less compressed flaps flex and conform to contours and inside corners and are easily finessed. Sharp zirconia grains reduce heat and friction in demanding applications.

- ▶ Durable, long-life zirconia grains
- ▶ Extended flaps reach small areas
- ▶ Conformable control for critical parts
- ▶ Quick change functionality for die grinders

▶ Superior Support

Take advantage of flex discs to reach tight areas.



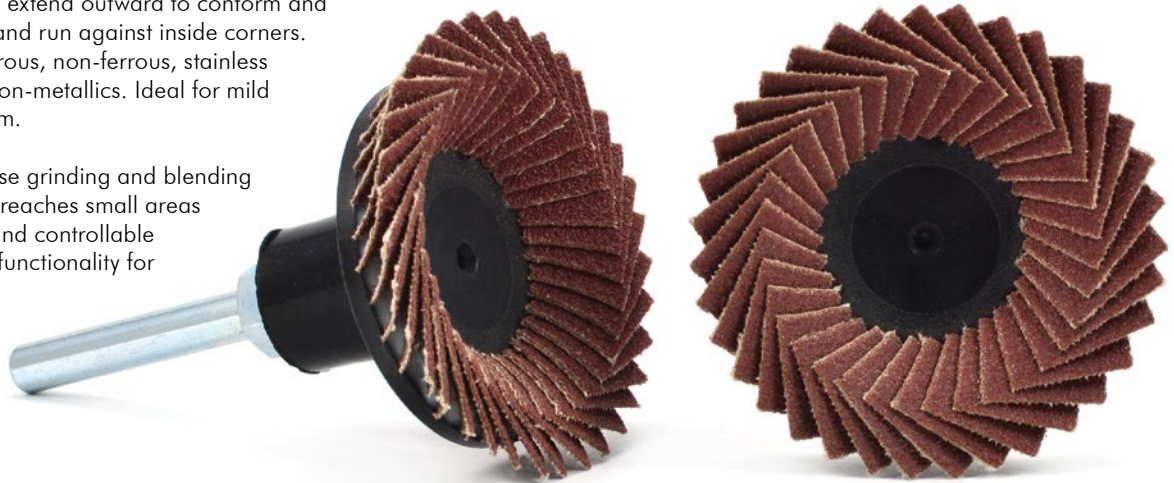
Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	36	40	60	80	120
Type R	2"	25,000	13,000	10	37865	37866	37867	37868	37869
	3"	20,000	9,000	10	39271	39272	39273	39274	39275

● Ferrous ○ Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ● Composites

Ao ALUMINUM OXIDE QUICK CHANGE MINI FLEX DISCS

Compressible flaps extend outward to conform and reach small areas and run against inside corners. Durable use on ferrous, non-ferrous, stainless steels, alloys and non-metallics. Ideal for mild steels and aluminum.

- ▶ General purpose grinding and blending
- ▶ Flap overhang reaches small areas
- ▶ Conformable and controllable
- ▶ Quick change functionality for die grinders



Type	Diameter	Max RPM	Optimal RPM	Std. Pkg.	36	40	60	80	120
Type R	2"	25,000	13,000	10	37860	37861	37862	37863	37864
	3"	20,000	9,000	10	39266	39267	39268	39269	39270

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ● Composites

QUICK CHANGE DISC HOLDERS

Type	Diameter	Shank	Max RPM	Std. Pkg.	Part #
Type R	2"	1/4"	25,000	1	11275
	3"	1/4"	20,000	1	11276



SHUR-KUT® Coated

Resin Fiber Discs

A dense, rigid backing is utilized for better grain retention and direct pressure from abrasive grains, creating a heavy duty, aggressive cutting action. Best for flat surfaces with minimal contours, resin fiber discs can provide the most aggressive and heavy stock removal of all coated abrasives. The substantial surface area minimizes time taken to finish large areas. Used with an air-cooled backing pad, heat is dissipated to reduce overheating and loading, providing a long life from resin fiber discs.

Applications

- ▶ Grinding and heavy stock removal
- ▶ Weld removal and blending
- ▶ Surface leveling and shaping
- ▶ Shape and prep large cast parts





CA CERAMIC GRINDING AID RESIN FIBER DISCS



Self-sharpening grains continually produce fresh cutting points, reducing friction and prolonging cut rates. Additional grinding aid further reduces heat, extending disc life. Densely pressed fiber backing retains grain orientation and contact pressure against stainless and exotic alloys.

- ▶ Additional heat dissipation for high temperature grinding
- ▶ Large surface area and coverage
- ▶ Sharp grains cut through hard alloys
- ▶ Extended life and grain retention

Diameter	Arbor	Max RPM	Optimal RPM	Std. Pkg.	24	36	50	60	80
4-1/2"	7/8"	13,300	8,000	25	43582	43583	43830	43553	43831
5"	7/8"	13,000	7,000	25	42965	42966	42967	42655	41929
7"	7/8"	8,600	5,400	25	40703	40704	42390	40705	42969

Ferrous
 Non-Ferrous
 Stainless
 Exotic Alloys
 Plastics
 Composites

ZA ZIRCONIA RESIN FIBER DISCS

Dense grains continually generate new cutting edges, ideal for long lasting stock removal. Rigid backing provides additional pressure for sharp grains to break down properly.

- ▶ Aggressive stock removal on hard metals and alloys
- ▶ Sharp cut reduces heat, friction and loading
- ▶ High pressure applications



Diameter	Arbor	Max RPM	Optimal RPM	Std. Pkg.	24	36	50	60	80
4-1/2"	7/8"	13,300	8,000	25	11748	11749	11750	11751	11752
5"	7/8"	13,000	7,000	25	11753	11754	11755	11756	11757
7"	7/8"	8,600	5,400	25	11758	11759	11760	11761	11762

Ferrous
 Non-Ferrous
 Stainless
 Exotic Alloys
 Plastics
 Composites

SHUR-KUT® Coated

A_o ALUMINUM OXIDE
RESIN FIBER DISCS

Tough, blocky grain well suited for general purpose grinding and stock removal. Rigid pressure cuts faster. Durable use on ferrous, non-ferrous, stainless steels, alloys and non-metallics.

- ▶ General stock removal and shaping
- ▶ Weld removal and blending
- ▶ Leveling or blending imperfections

▶ Superior Support

Flexible and rigid back up pads are offered to improve performance in unique operations. Additional flexibility may be helpful when blending welds in tanks or vessels.



Diameter	Arbor	Max RPM	Optimal RPM	Std. Pkg.	24	36	50	60	80	120
4-1/2"	7/8"	13,300	8,000	25	11718	11719	11720	11721	11722	11724
5"	7/8"	13,000	7,000	25	11726	11727	11728	11729	11730	11732
7"	7/8"	8,600	5,400	25	11734	11735	11736	11737	11738	11740

● Ferrous ● Non-Ferrous ○ Stainless ○ Exotic Alloys ○ Plastics ● Composites

BACK UP PADS

Air-cooled design dissipates generated heat during grinding, reducing loading and extending life.



Diameter	Arbor	Max RPM	Std. Pkg.	FLEXIBLE	MEDIUM	RIGID
4-1/2"	5/8"-11	13,500	1	-	11847	-
5"	5/8"-11	13,000	1	-	11850	-
7"	5/8"-11	8,600	1	11852	11853	11854
Retainer Nut			1		11858	
Spanner Wrench			1		11859	

*Nut and wrench not supplied with back up pad.



FIBER DISC CUTTER

Reuse larger discs by removing the outer diameter, effectively doubling or tripling disc life.



▶ Superior Support

Description	Std. Pkg.	Part #
Disc Cutter & Blades	1	12142
Replacement Upper Blade	1	12143
Replacement Lower Blade	1	12144

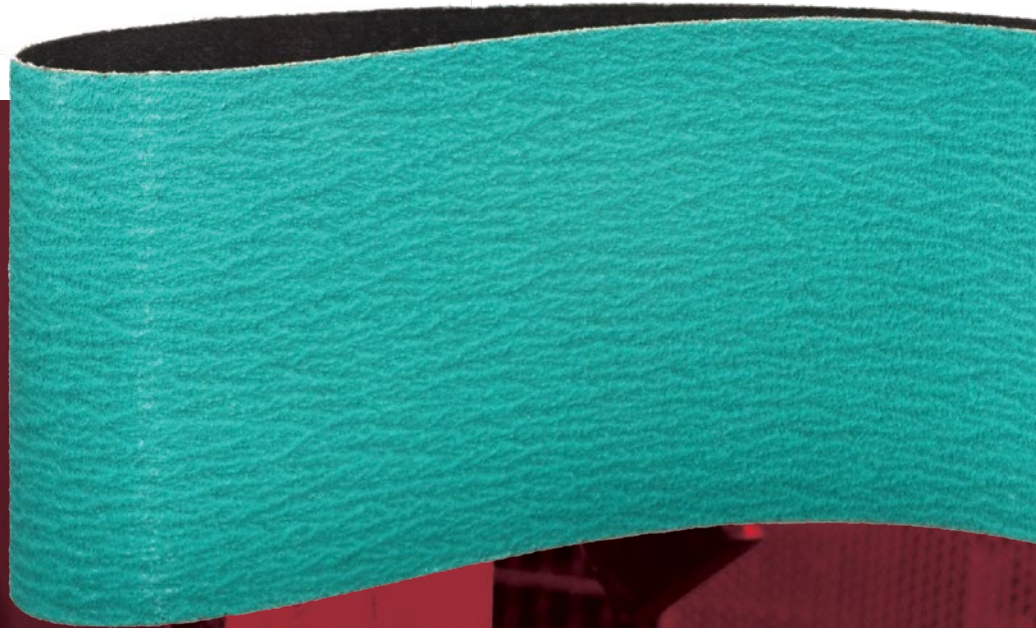
SHUR-KUT® Coated

Belts

Due to the size range of coated belts, applications range from small inside corner weld removal to coil and sheet steel surface finishing. The availability of backing weight and flexibility allows use with small airfile contact wheels to larger diameter drum or cylindrical grinding. Durability also prevents stretch or slack in backstand applications, allowing coated materials to perform properly with consistent wear.

Applications

- ▶ High production processing and polishing
- ▶ Flat surface prep and leveling
- ▶ Weld removal and blending
- ▶ Cylindrical grinding and polishing
- ▶ Surface cleaning or corrosion removal



CA CERAMIC GRINDING AID BELTS



Self-sharpening grains continually produce fresh cutting points, reducing friction and prolonging cut rates under lighter pressure. Additional grinding aid further reduces heat, extending belt life.

- ▶ Additional heat dissipation for high temperature grinding
- ▶ Sharp grains cut through stainless steel and alloys
- ▶ Extended life and grain retention

Width	Length	Grits Available						
Custom Sizes Available	24	36	40	50	60	80	100	120

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

ZA ZIRCONIA GRINDING AID BELTS



Tough, durable grains for extended life on high pressure applications. Continually sharp cutting surfaces provide excellent cut in finishing and polishing applications. Additional grinding aid to reduce friction and premature breakdown where heat generation is of concern.

- ▶ Aggressive, sharp cut on stainless steel
- ▶ Dissipates heat and resists loading
- ▶ Extended performance and stock removal
- ▶ Fresh cutting edges exposed during use

Width	Length	Std. Pkg.	40	60	80	120
1/2"	24"	50	28346	27445	28347	28349
3/4"	18"	50	30500	27500	27473	52421
3/4"	20-1/2"	50	36794	28097	36795	36796
1"	42"	50	30505	30506	30507	30510
2"	48"	50	52422	30512	27107	30513
2-1/2"	60"	50	52423	30522	30523	52424
3"	132"	50	22400	26232	32003	52425
6"	48"	10	32009	32062	18912	32063

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

Ao ALUMINUM OXIDE BELTS



Dense, blocky grain well suited for general purpose grinding and stock removal. Airfile belts easily reach narrow areas inaccessible by discs or wheels. Durable use on ferrous, non-ferrous, stainless steels, alloys and non-metallics.



- ▶ General stock removal and shaping
- ▶ Cylindrical shaping or conditioning
- ▶ Inside corner weld removal
- ▶ Deburring handheld parts

Width	Length	Std. Pkg.	36	40	50	60	80	100	120	180
3/8"	13"	50 (*200)	10667*	10668*	10669*	10670	10671	10672*	10673*	10674*
1/2"	12"	50 (*200)	10675*	10676*	10677*	10678	10679	10680*	10681	10682*
1/2"	18"	50 (*200)	14384*	14385*	14386*	14387	14388	14389*	14390	14392*
1/2"	24"	50 (*200)	10683	10684	10685*	10686	10687	10688*	10689	10690*
3/4"	18"	50 (*200)	10691	10692	10693*	10694	10695	10696*	10697	10698*
3/4"	20-1/2"	50 (*200)	10699*	10700*	10701*	10702	10703	10704*	10705*	10706*
1"	42"	100 (*200)	10735*	43834*	10737*	43835	43836	43837*	43838*	43839*
1-1/8"	21"	50	10744	10745	10746	10747	10748	10749	10750	28224
1-1/2"	60"	50	10753	10754	10755	10756	10757	10758	10759	10760
1-1/2"	72"	50	10762	10763	10764	10765	10766	10767	10768	28104
2"	20"	50	10771	10772	10773	10774	10775	10776	10777	10778
2"	48"	50	10780	10781	10782	10783	10784	10785	10786	10787
2"	60"	50	10789	10790	10791	10792	10793	10794	10795	10796
2"	132"	50	10807	10808	10809	10810	10811	10812	10813	10814
2-1/2"	48"	50	10816	10817	10818	10819	10820	10821	10822	27734
2-1/2"	60"	50	10825	10826	10827	10828	10829	10830	10831	10832
2-1/2"	72"	50	10834	10835	10836	10837	10838	10839	10840	10841
3"	18"	50	10843	10844	10845	10846	10847	10848	10849	10850
3"	60"	50	10870	10871	10872	10873	10874	10875	10876	10877
3"	72"	50	10879	10880	10881	10882	10883	34898	10884	10886
3"	90"	50	10888	10889	10890	10891	10892	10893	10894	10895
3"	132"	50	10897	10898	10899	10900	10901	10902	10903	10904
3"	168"	50	10906	10907	10908	10909	10910	10911	10912	28161
3-1/2"	15-1/2"	50	10915	10916	10917	10918	10919	10920	10921	10922
4"	21"	50	10924	10925	10926	10927	10928	10929	10930	20977
4"	21-3/4"	50	10933	10934	10935	10936	10937	10938	10939	10940
4"	54"	50	10960	10961	10962	10963	10964	10965	10966	10967
6"	48"	20	43840	43841	43842	43843	43844	43845	43846	11039

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ○ Plastics ○ Composites



A_o ALUMINUM OXIDE WIDE BELTS

Wide belts fit a wide range of stationary equipment for high production processing. Greater surface area and longer life with consistent finishing qualities. Dense, blocky grain well suited for general purpose grinding and stock removal. Durable use on ferrous, non-ferrous, stainless steels, alloys and non-metallics.

- ▶ Aggressive, general purpose cutting action
- ▶ Leveling surface imperfections
- ▶ High production grinding or polishing



Width	Length	Std. Pkg.	36	40	50	60	80	100	120	180
18"	85"	5	24353	24354	24355	24356	24357	24358	24359	24360
19"	48"	5	26100	38436	38437	38438	21357	37938	25289	28254
25"	60"	5	24379	24380	24381	24382	24383	24384	24385	24386
25"	75"	5	24391	24392	24393	24164	24394	24395	24165	24396
30"	103"	5	24398	24399	24400	24401	24402	24403	21681	24404
36"	60"	5	24406	24407	24408	24409	24410	24411	24412	24413
36"	75"	5	24417	24418	24419	24420	18704	24421	24422	24423
37"	60"	5	24425	22886	17150	21649	17151	16723	30361	22888
37"	75"	5	24427	24428	24429	18975	18676	24430	24167	24168
50"	103"	5	24432	24433	24434	24435	24436	24437	24438	24439
52"	75"	5	24441	24442	24443	24444	24445	24446	24447	24448
52"	103"	5	24459	24460	24461	24462	24463	24464	24465	24466

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ○ Plastics ○ Composites

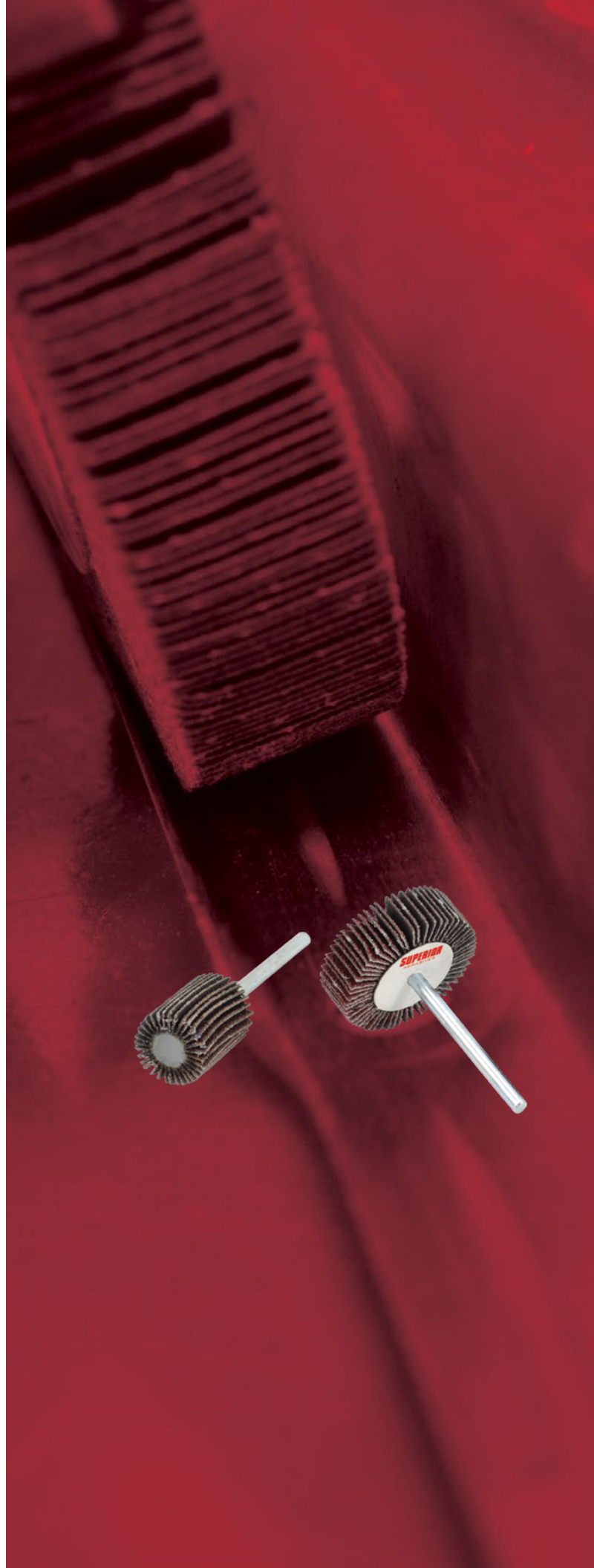
SHUR-KUT® Coated

Flap Wheels

Flexible flaps are arranged radially around a center core allowing high removal and finishing rates with reduced pressure and fatigue from operators. The flexibility of the flaps allows excellent control and conformability on contours and inside or around intricate parts. As the grains wear away, so does the cloth backing, continually exposing fresh abrasive material and sharp cutting grains. The variety of shapes and sizes available provide versatility in grinding, deburring and polishing flat or contoured surfaces and edges. Several mounting options are available for many tools, including right angle grinders.

Applications

- ▶ Contoured grinding and finishing
- ▶ Inner tube deburring, cleaning and polishing
- ▶ Shaping or refining contours on cast or machined parts
- ▶ Weld seam blending or finishing
- ▶ Straight line finishing and surface preparation



Ao FLAP WHEELS FOR ANGLE GRINDERS

Portable, large diameter flap wheel conforms to right angles to remove or refine inside corner welds, clean or refine narrow channels or extrusions. Quick change hub for use with right angle grinders.

- ▶ Narrow profile with extended flaps
- ▶ Easily refine or prep deeper channels
- ▶ Strong, flexible cloth backing wears uniformly
- ▶ Quick changeover between other right angle wheels or discs

▶ Superior Support

The low profile of flap wheels are excellent for working very close to edges and corners without damaging surrounding surfaces.



Diameter	Width	Arbor	Max RPM	Optimal RPM	Std. Pkg.	40	60	80	120
4-1/2"	3/4"	5/8"-11	13,300	7,500	2	54801	54802	54803	54804

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites



Ao MINI MOUNTED FLAP WHEELS

Access and finish small and intricate openings and contours. Flexible flaps conform to acute angles and wear uniformly for consistent parts finishing. Ideal for reshaping or cleaning intricate cast parts.

- ▶ Easily access small openings or channels
- ▶ Continual grain exposure throughout product life
- ▶ Flexibility to contours and intricate parts

Diameter	Width	Shank	Max RPM	Optimal RPM	Std. Pkg.	80	120	180	240	320
3/8"	3/8"	1/8"	40,000	30,000	10	24791	24802	24803	24804	24805
5/8"	5/8"	1/8"	40,000	30,000	10	24806	24807	24808	24809	24810
5/8"	3/4"	1/8"	40,000	30,000	10	24811	24812	24813	24814	-
3/4"	5/8"	1/8"	38,100	19,000	10	24816	24817	24818	24819	-
3/4"	3/4"	1/8"	38,100	19,000	10	24821	24822	24823	24824	24825
1-3/16"	1/8"	1/8"	25,000	12,000	10	24826	24827	24828	24829	-
1-3/16"	3/16"	1/8"	25,000	12,000	10	24832	24833	24834	24835	-
1-3/16"	3/8"	1/8"	25,000	12,000	10	24837	24838	24839	24840	-

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites

Ao MOUNTED FLAP WHEELS

Reach small ports or channels and easily navigate contours for grinding, deburring or polishing. Flaps wear evenly exposing fresh cuts throughout life. Several sizes available to match workpieces.

- ▶ Contoured grinding and finishing
- ▶ Inner tube deburring, cleaning and polishing
- ▶ Shaping or refining contours on cast or machined parts
- ▶ Weld seam blending or finishing



Diameter	Width	Shank	Max RPM	Optimal RPM	Std. Pkg.	40	60	80	120	180	240	320
3/4"	3/4"	1/4"	38,100	19,000	10	44406	21881	21882	33358	26874	-	-
1"	5/8"	1/4"	25,000	15,000	10	-	10101	10102	10103	-	-	-
1"	1"	1/4"	25,000	15,000	10	18593	10104	10105	10106	10107	17116	16952
1-1/2"	1/2"	1/4"	23,000	9,600	10	-	10108	10109	10110	16037	50664	53333
1-1/2"	1"	1/4"	23,000	9,600	10	31198	10114	10115	10116	10117	31201	47589
2"	1/2"	1/4"	23,000	7,000	10	-	10118	10119	10120	55293	-	-
2"	1"	1/4"	23,000	7,000	10	10124	10125	10126	10127	10128	10129	16293
2"	1-1/2"	1/4"	15,000	7,000	10	31257	10130	10131	10132	-	-	-
2-1/2"	1"	1/4"	23,000	6,300	10	18445	10136	10137	10138	10139	52745	54602
3"	1/2"	1/4"	20,000	4,800	10	16283	10142	10143	10144	31369	50085	49881
3"	1"	1/4"	20,000	4,800	10	10148	10149	10150	10151	10152	10153	-
3"	2"	1/4"	6,000	4,800	10	31474	10157	10158	10159	16930	-	31479

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites

Ao 10-PIECE FLAP WHEEL TEST KIT

A variety of the most popular shank mounted flap wheels to match several applications in one convenient test kit.

Size	60	80	120	180	Std. Pkg.	Part #
1 x 1 x 1/4"	1	1	1	-	1	28799
2 x 1 x 1/4"	1	1	1	1		
3 x 1 x 1/4"	1	1	1	-		

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites



Flap Wheels

Ao THREADED MOUNTED FLAP WHEELS



Quick change threaded mandrel provides fast changeover between worn and new wheels, or between sizes and grits. Flaps wear evenly exposing fresh cuts throughout life. Used with a threaded mandrel adapter, no extra tooling is necessary.

- ▶ Contoured grinding and finishing
- ▶ Inner tube deburring, cleaning and polishing
- ▶ Shaping or refining contours on cast or machined parts
- ▶ Weld seam blending or finishing



Diameter	Width	Shank	Max RPM	Optimal RPM	Std. Pkg.	60	80	120
1"	5/8"	1/4"-20	25,000	15,000	10	10160	10161	10162
1"	1"	1/4"-20	25,000	15,000	10	10163	10164	10165
1-1/2"	1/2"	1/4"-20	23,000	9,600	10	10167	10168	10169
1-1/2"	1"	1/4"-20	23,000	9,600	10	10173	10174	10175
2"	1/2"	1/4"-20	23,000	7,000	10	10177	10178	10179
2"	1"	1/4"-20	23,000	7,000	10	10184	10185	10186
2-1/2"	1"	1/4"-20	23,000	6,300	10	10192	10193	-
3"	1/2"	1/4"-20	20,000	4,800	10	10196	10197	10198
3"	1"	1/4"-20	20,000	4,800	10	10203	10204	10205

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites

THREADED MANDREL ADAPTER



Quick change mandrel alleviating the need for additional tooling when replacing worn wheels or exchanging sizes and grits. Used with threaded mounted flap wheels.



Connector	Shank	Overall Length	Std. Pkg.	Part #
1/4"-20 Female	1/4"	1-3/4"	1	10208

● Best ● Better ○ Good

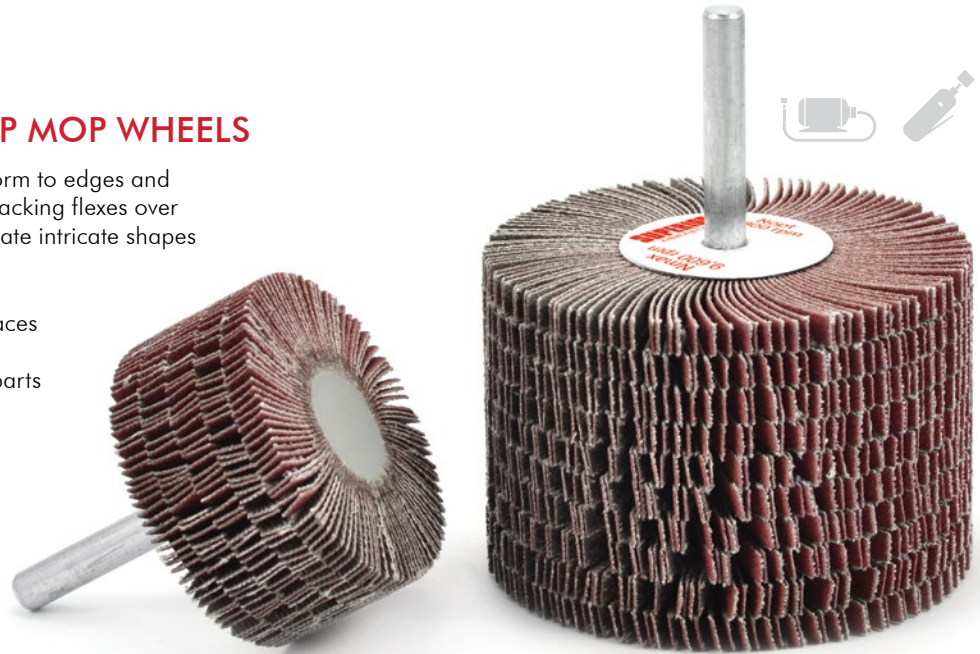
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STOCK ITEMS IN RED | Additional Items Available

Ao MOUNTED FLAP MOP WHEELS

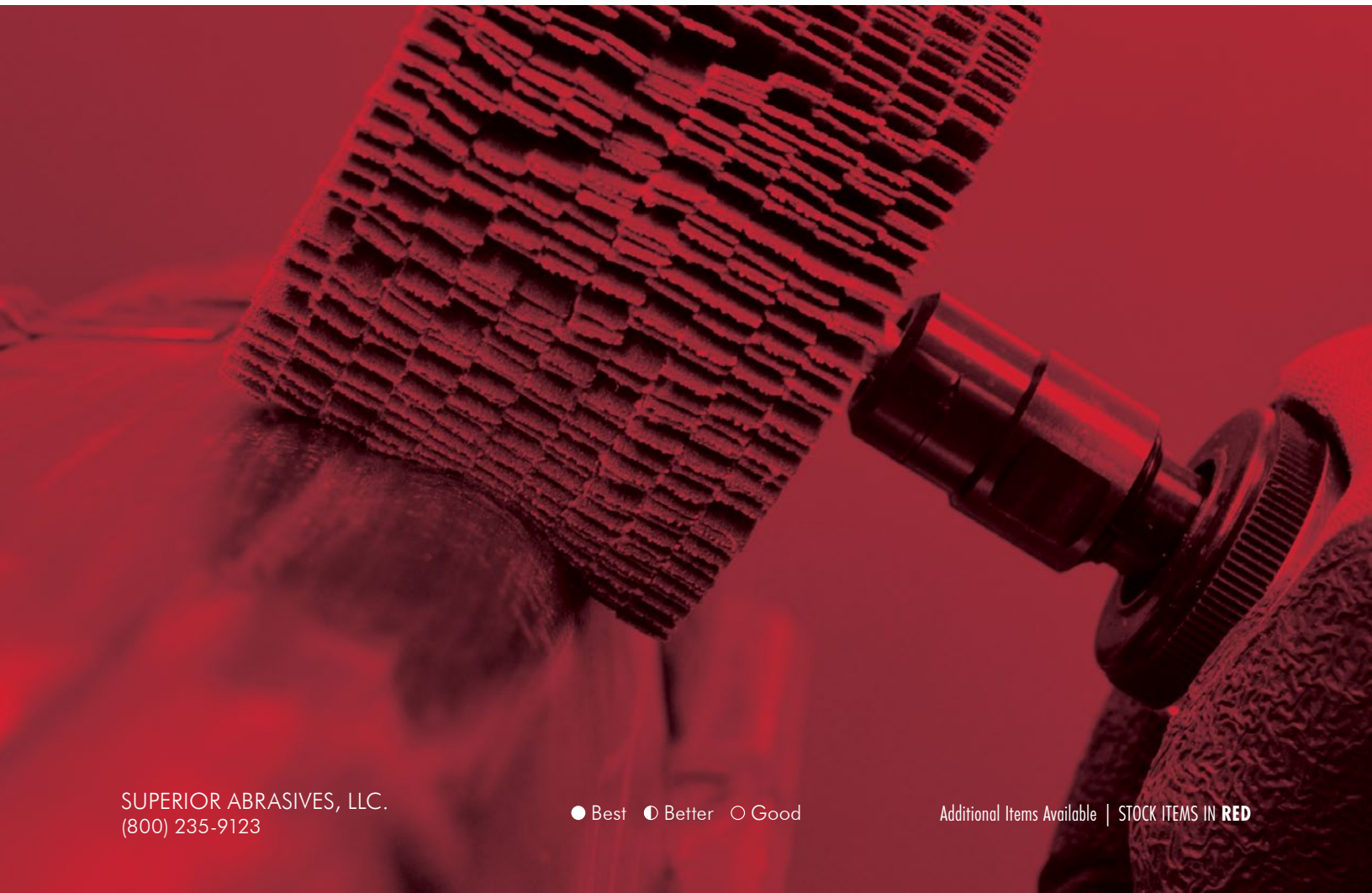
Slotted flaps increase ability to conform to edges and contours. The softer J-weight cloth backing flexes over irregular surfaces easily. Easily navigate intricate shapes without damage.

- ▶ Deburr and polish irregular surfaces
- ▶ Added control and finesse
- ▶ Controlled finishing of intricate parts



Diameter	Width	Shank	Max RPM	Optimal RPM	Std. Pkg.	120	180	240	320
2"	1"	1/4"	20,000	12,000	10	28967	28968	28969	28970
2-1/2"	1-1/2"	1/4"	18,000	11,000	10	28971	28973	28974	28953
3"	2"	1/4"	9,600	5,800	5	28954	28955	28145	28956

Ferrous
 Non-Ferrous
 Stainless
 Exotic Alloys
 Plastics
 Composites





Ao UNMOUNTED FLAP WHEELS

Spindle mounted wheels used with stationary equipment or adaptable handheld tools. Shape, finish and polish handheld parts, or produce linear finishes on flat parts. Longer, more flexible flaps finesse and conform to contours and smaller parts.

- ▶ Contoured grinding and finishing
- ▶ Shaping or refining contours on cast or machined parts
- ▶ Weld seam blending or finishing
- ▶ Straight line finishing and surface preparation



Diameter	Width	Arbor	Max RPM	Optimal RPM	Std. Pkg.	40	50	60	80	120	180
4"	1"	5/8"	8,600	8,000	5	53220	-	26269	26270	26272	26273
4"	2"	5/8"	8,600	8,000	5	-	26279	26280	26281	26282	26283
6"	1"	1"	5,700	5,000	5	26289	26290	26291	26292	26294	26296
6"	2"	1"	5,700	5,000	5	26304	26305	26306	26307	26309	26310
8"	1"	1"	4,300	3,800	3	52787	-	26315	26316	26318	26319

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites

ARBOR REDUCER BUSHINGS



Arbor Diameter	Reduced Diameter	Std. Pkg.	Part #
1"	3/4"	1 Pair	10391
1"	5/8"	1 Pair	10392
1"	1/2"	1 Pair	10393



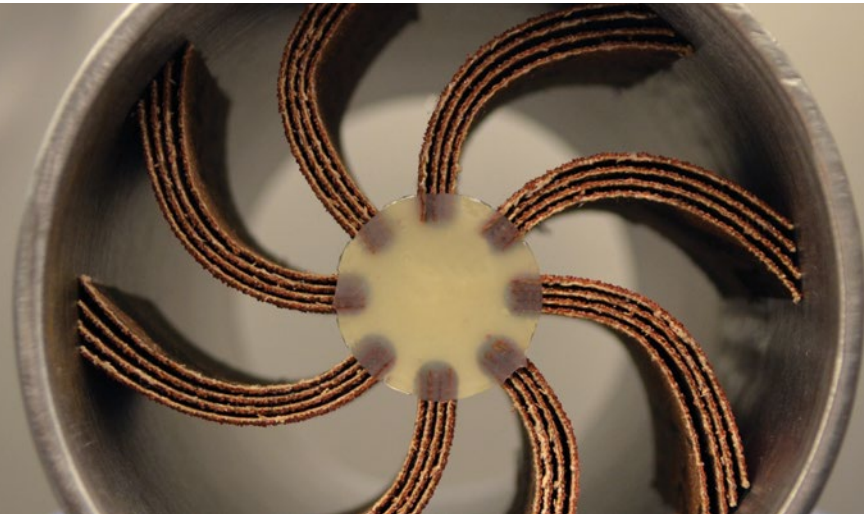
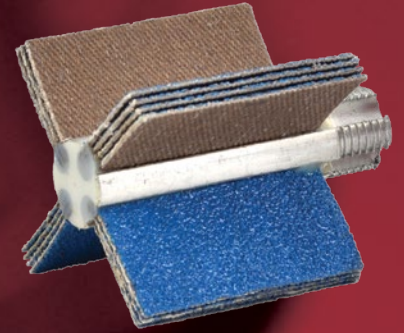
SHUR-KUT® Coated

Bore Polishers

Specially made for inside diameter tube and cylinders, bore polishers utilize precise flap spacing, ensuring balanced operation. Evenly spaced, the flaps act as a self-centering device to provide equal pressure to the surrounding cylinder, which can be utilized for smoothing and cleaning. Bore polishers are ideal for deburring or cleaning cylinders, tubes or hydraulic fittings.

Applications

- ▶ Self-centered, flush wall grinding or polishing
- ▶ Inside diameter use only
- ▶ Deburring cut tube
- ▶ Boring cylinder walls
- ▶ Cleaning hydraulic fittings



BORE POLISHER MANDRELS

Series	Thread	Shank Diameter	Overall Length	Std. Pkg.	Part #
SK-3	5/16"-18	1/4"	2"	1	39204
SK-4	1/2"-20	1/4"	3"	1	39205
SK-8	1/4"-20	1/4"	2"	1	39206
	1/4"-20	1/4"	4"	1	39207
	1/4"-20	1/4"	6"	1	39208
	1/4"-20	1/4"	8"	1	39209



Z_A ZIRCONIA BORE POLISHERS



Sharp, durable zirconia grains reduce the friction that causes excessive heat and loading. Long lasting, precise cutting action ideal for stainless steels.

- ▶ Clean or polish cylinder walls
- ▶ Refining machined inner diameters
- ▶ Recondition hydraulic fittings

Series	Min ID	Max ID	Thread	Max RPM	Std. Pkg.	60	80	120	180
SK-3	3/4"	1"	5/16"-18	25,000	10	46169	46170	46171	46172
SK-4	1"	1-1/2"	1/2"-20	22,000	10	46173	46174	46175	46176
	1-1/2"	2"	1/2"-20	20,000	10	46177	46178	46179	46180
	2-1/8"	2-1/2"	1/2"-20	16,000	10	17218	17219	17220	17221
	2-1/2"	3"	1/2"-20	15,000	10	46181	46182	46183	46184
SK-8	3-1/8"	4"	1/4"-20	10,000	10	46195	46196	46197	46239

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ● Composites



A_O ALUMINUM OXIDE BORE POLISHERS



Strong, blocky grain used in general purpose operations, or where critical finish is not required. Easily clean and refurbish cylinder walls and inside tube.

- ▶ Clean and smooth cylinder walls
- ▶ Deburr pipe and tubing
- ▶ Clean or repair hydraulic fittings

Series	Min ID	Max ID	Thread	Max RPM	Std. Pkg.	60	80	120	180
SK-3	3/4"	1"	5/16"-18	25,000	10	39161	39162	39163	39164
SK-4	1"	1-1/2"	1/2"-20	22,000	10	39165	39166	39117	39167
	1-1/2"	2"	1/2"-20	20,000	10	39168	39169	39170	39171
	2-1/8"	2-1/2"	1/2"-20	16,000	10	39172	39173	39174	39175
	2-1/2"	3"	1/2"-20	15,000	10	39176	39177	39178	39179
	3-1/8"	4"	1/2"-20	10,000	10	39180	39181	39182	39183
SK-8	2"	2-1/2"	1/4"-20	16,000	10	39184	39185	39186	39187
	2-5/8"	3"	1/4"-20	15,000	10	39188	39189	39190	39191
	3-1/8"	4"	1/4"-20	10,000	10	39192	39193	39194	39195
	4-1/4"	5-1/4"	1/4"-20	8,000	10	39196	39197	39198	39199
	5-1/4"	5-7/8"	1/4"-20	8,000	10	39200	39201	39202	39203

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ○ Composites

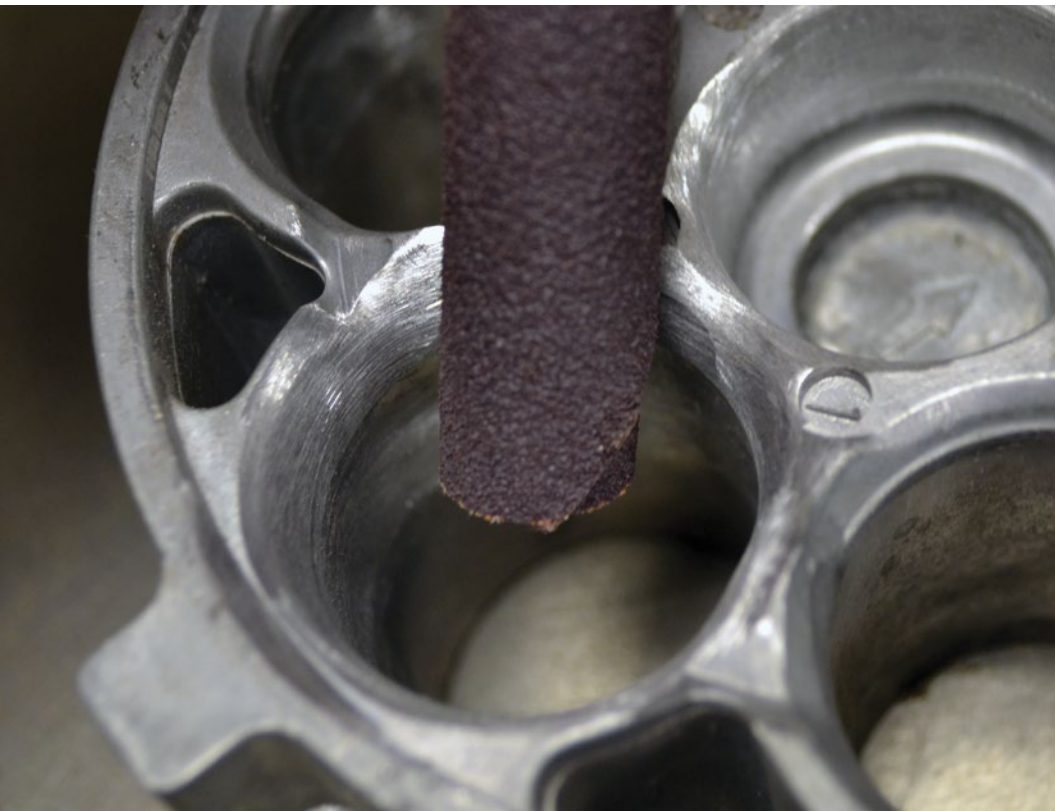
SHUR-KUT® Coated

Cartridge Rolls

Specially wrapped design produces new layers of fresh cutting action throughout life as top layers are worn away. For shaping, porting, finishing or polishing hard to reach areas. Cotton cloth acts as a cushion for polishing in finer grits. Many diameters are available to match or enlarge existing contours, while straight or tapered designs are also available for through holes or inside corner grinding.

Applications

- ▶ Long lasting grinding and shaping
- ▶ Polishing intricate contours or holes
- ▶ Shaping and rounding inside corner welds
- ▶ Porting and smoothing cast parts



CA CERAMIC STRAIGHT CARTRIDGE ROLLS

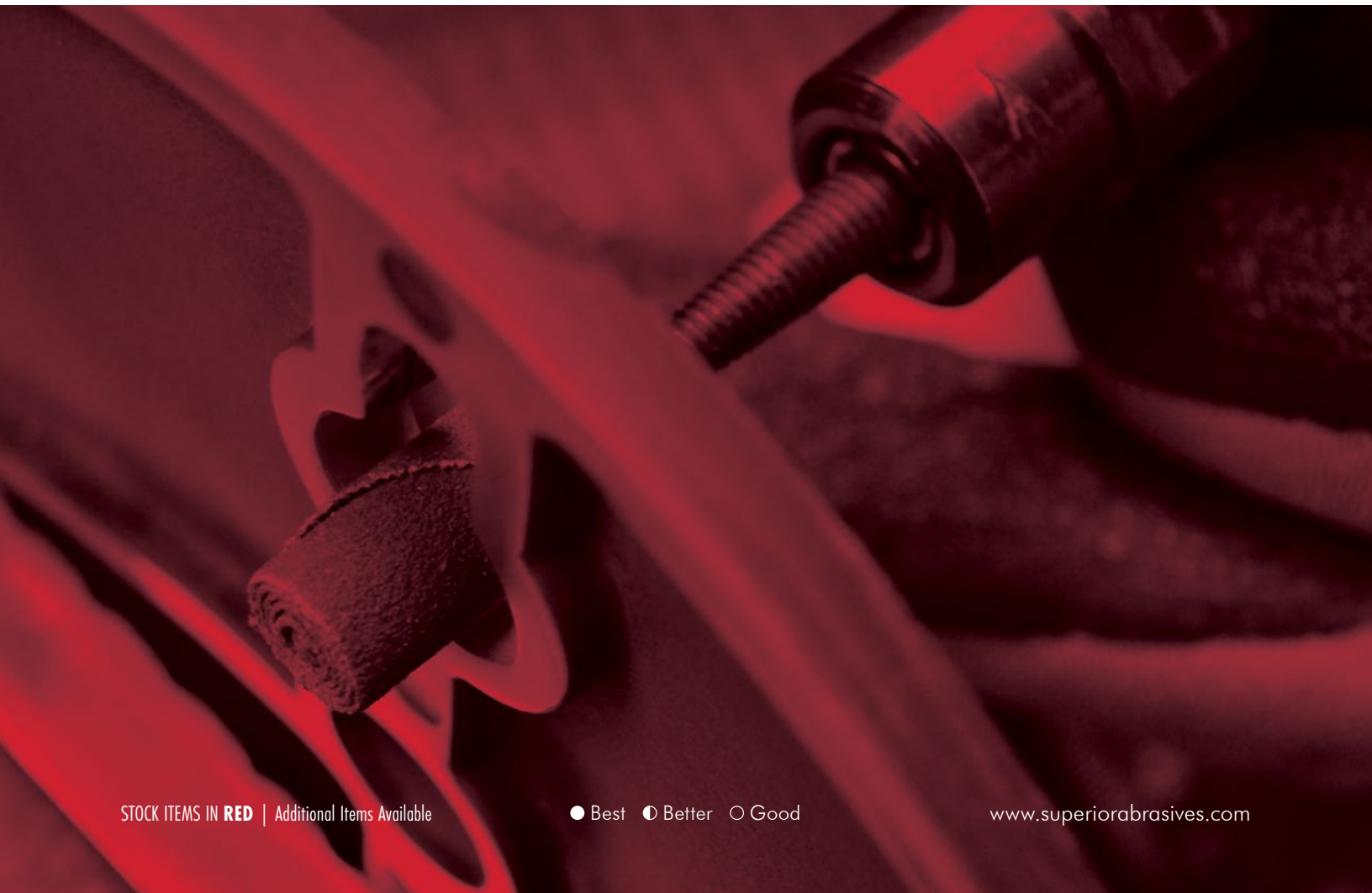
Self-sharpening grains continually produce fresh cutting points, reducing friction and prolonging cut rates. Additional grinding aid further reduces heat, extending life. Multiple layers wear away to expose fresh abrasive material, further extend life.

- ▶ Sharp grains cut easily through stainless steel and alloys
- ▶ Fine cut for refined finishing results
- ▶ Extended wear for reduced downtime



Diameter	Length	Pilot Hole	Max RPM	Optimal RPM	Std. Pkg.	60	80	120
1/4"	1"	1/8"	25,000	20,000	100	49490	48035	49491
1/4"	1-1/2"	1/8"	25,000	20,000	100	49100	49101	49102
3/8"	1-1/2"	1/8"	24,000	16,000	100	49103	47144	49104
1/2"	1-1/2"	1/8"	18,000	12,000	100	49105	49106	49107
3/4"	1-1/2"	3/16"	12,000	8,000	100	49492	49493	49494

Ferrous
 Non-Ferrous
 Stainless
 Exotic Alloys
 Plastics
 Composites

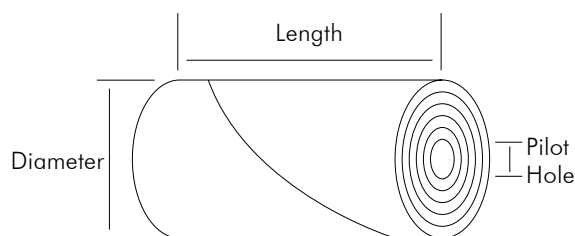


Ao ALUMINUM OXIDE STRAIGHT CARTRIDGE ROLLS

General purpose cutting action wears evenly and uniformly, producing a consistent cut on ferrous and non-ferrous metals. Use in straight holes or cylinders or around contoured parts.

- ▶ Remove or shape parts quickly
- ▶ Access intricate areas or small holes
- ▶ Deburr stamped parts

▶ Superior Support



Diameter	Length	Pilot Hole	Max RPM	Optimal RPM	Std. Pkg.	36	60	80	100	120	180	240	320
3/16"	1"	3/32"	25,000	20,000	100	-	18965	11860	18094	11861	18970	18803	18805
1/4"	1"	1/8"	25,000	20,000	100	-	11862	11863	11864	11865	11866	16984	16985
1/4"	1-1/2"	1/8"	25,000	20,000	100	-	11867	11868	11869	11870	11871	16719	16612
1/4"	2"	1/8"	25,000	20,000	100	-	19721	18666	19722	19723	-	19727	55291
5/16"	1"	1/8"	23,000	18,500	100	-	19732	16783	-	18874	17016	32086	49876
5/16"	1-1/2"	1/8"	23,000	18,500	100	-	19741	11872	28232	17068	37515	18567	19745
3/8"	1"	1/8"	24,000	16,000	100	-	11873	11874	19750	11875	11876	19752	17066
3/8"	1-1/2"	1/8"	24,000	16,000	100	-	11877	11878	11879	11880	11881	17160	16703
3/8"	2"	1/8"	24,000	16,000	100	-	21071	18665	21851	23006	-	25636	40828
1/2"	1"	1/8"	18,000	12,000	100	-	11882	11883	11884	11885	11886	18710	16986
1/2"	1-1/2"	1/8"	18,000	12,000	100	11887	11889	11890	11891	11892	11893	11894	11895
1/2"	2"	1/8"	18,000	12,000	100	18716	17167	16642	-	18475	16747	54244	52465
5/8"	1-1/2"	3/16"	15,000	9,500	100	45889	19799	19828	-	19830	-	46224	-
3/4"	1"	3/16"	12,000	8,000	100	-	19852	19853	19854	17007	-	-	-
3/4"	1"	1/4"	12,000	8,000	100	-	17061	16655	16713	16716	-	16717	16718
3/4"	1-1/2"	3/16"	12,000	8,000	100	19878	16069	16704	19880	19881	49284	19885	-
3/4"	1-1/2"	1/4"	12,000	8,000	100	18811	11896	11897	54042	11898	19889	16731	16732
3/4"	2"	1/4"	12,000	8,000	100	-	11899	11900	-	17120	16646	54408	54053
1"	1-1/2"	1/4"	9,000	6,000	100	16165	17006	18604	-	18946	53501	53987	-
1"	2"	1/4"	9,000	6,000	100	18347	11901	11902	16981	11903	-	52193	19977

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites



A_o ALUMINUM OXIDE FULL TAPERED CARTRIDGE ROLLS

Tapered design provides more access and pointed control in concave areas or inside corners. Grind and follow acute seams and welds as the layers wear away to reveal fresh cutting action.

- ▶ Remove or smooth inside corner welds
- ▶ Port and shape concave areas
- ▶ Navigate intricate cast parts



Diameter	Length	Pilot Hole	Max RPM	Optimal RPM	Std. Pkg.	60	80	100	120	180	240	320
3/8"	1"	1/8"	24,000	16,000	100	11904	11905	17139	11906	11907	18585	17165
3/8"	1-1/2"	1/8"	24,000	16,000	100	11908	11909	18808	11910	11911	16029	18850
1/2"	1"	1/8"	18,000	12,000	100	11912	11913	30123	11914	11915	30126	30127
1/2"	1-1/2"	1/8"	18,000	12,000	100	11916	11917	17001	11918	11919	16987	16988
1/2"	2"	1/8"	18,000	12,000	100	16751	20099	-	30091	16841	-	-
5/8"	1-1/2"	3/16"	15,000	9,500	100	38597	16615	55282	44891	-	47486	-
3/4"	1-1/2"	3/16"	12,000	8,000	100	16993	16652	-	16624	-	-	-
1"	1-1/2"	3/16"	9,000	6,000	100	30341	30342	-	42845	-	-	-

- Ferrous
 Non-Ferrous
 Stainless
 Exotic Alloys
 Plastics
 Composites



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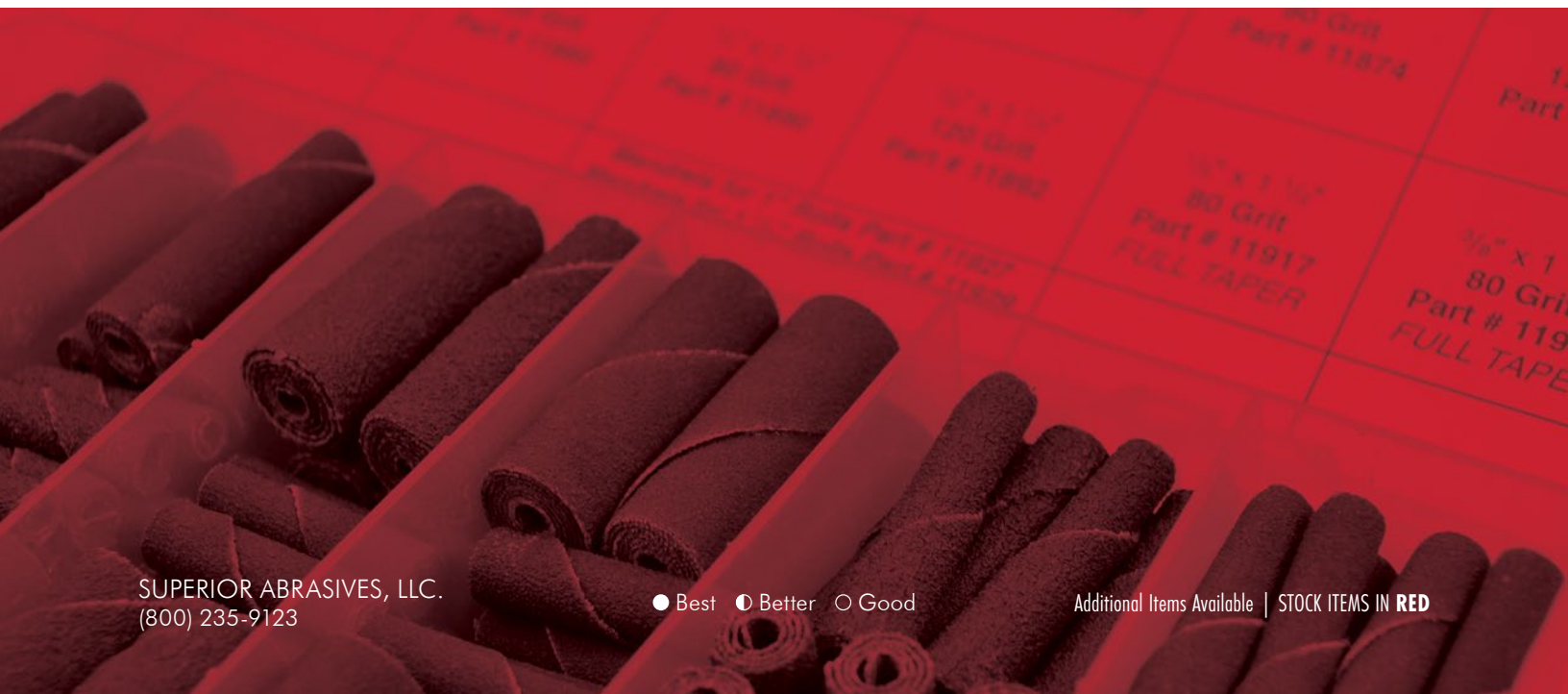
ALUMINUM OXIDE CARTRIDGE ROLL TEST KIT

Several popular sizes and grits included with associated mandrels, providing everything you need in one convenient cartridge roll test kit.



Diameter	Length	Pilot Hole	Shape	80	120	Std. Pkg.	Part #
1/4"	1"	1/8"	Straight	16	16	1	28802
1/4"	1-1/2"	1/8"	Straight	9	12		
3/8"	1"	1/8"	Straight	6	6		
3/8"	1-1/2"	1/8"	Straight	12	12		
1/2"	1-1/2"	1/8"	Straight	8	8		
3/8"	1-1/2"	1/8"	Tapered	6	-		
1/2"	1-1/2"	1/8"	Tapered	9	-		
For 1" Cartridge Rolls			Mandrel	1			
For 1-1/2" Cartridge Rolls			Mandrel	1			

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites





CARTRIDGE ROLL MANDRELS

Used with portable die grinders, a tapered threaded shaft safely secures cartridge rolls to the mandrel. To ensure proper fitting, match the pilot dimensions.



► Superior Support

Roll Length	Proper Pilot Length
1"	3/4"
1-1/2"	1"
2"	1-1/2"

The diagram shows a cross-section of a mandrel with a wider 'Shank' section on the left and a narrower, tapered 'Pilot' section on the right.

Pilot Diameter	Pilot Length	Shank Diameter	Shank Length	Overall Length	Max RPM	Std. Pkg.	Part #
5/64"	1"	1/8"	1"	3"	60,000	1	11920
3/32"	3/4"	1/8"	1"	2-3/4"	60,000	1	11921
3/32"	3/4"	1/4"	1"	2-3/4"	28,000	1	46934
3/32"	1"	1/4"	1"	3"	28,000	1	46933
1/8"	1/2"	1/4"	1"	2-1/4"	28,000	1	11926
1/8"	3/4"	1/8"	1"	2-3/4"	60,000	1	11923
1/8"	3/4"	1/4"	1"	2-1/2"	28,000	1	11927
1/8"	3/4"	1/4"	4-1/2"	6"	28,000	1	11928
1/8"	1"	1/8"	1"	3"	60,000	1	11924
1/8"	1"	1/4"	1"	2-3/4"	28,000	1	11929
1/8"	1"	1/4"	4-1/4"	6"	28,000	1	11930
1/8"	1"	1/4"	6-1/4"	8"	28,000	1	11931
1/8"	1-1/2"	1/8"	1"	3-1/2"	60,000	1	11925
1/8"	1-1/2"	1/4"	1"	3-1/4"	28,000	1	11932
3/16"	3/4"	1/4"	1-1/4"	2-3/4"	28,000	1	11934
3/16"	1"	1/4"	1-1/4"	3"	28,000	1	11935
3/16"	1"	1/4"	4-1/4"	6"	28,000	1	11936
3/16"	1-1/2"	1/4"	1-1/4"	3-1/2"	28,000	1	11937
1/4"	3/4"	1/4"	1-1/4"	2-3/4"	28,000	1	11939
1/4"	1"	1/4"	1-1/4"	3"	28,000	1	11940
1/4"	1"	1/4"	4-1/4"	6"	28,000	1	11941
1/4"	1-1/2"	1/4"	1-1/4"	3-1/2"	28,000	1	11942

SHUR-KUT® Coated

Abrasive Caps

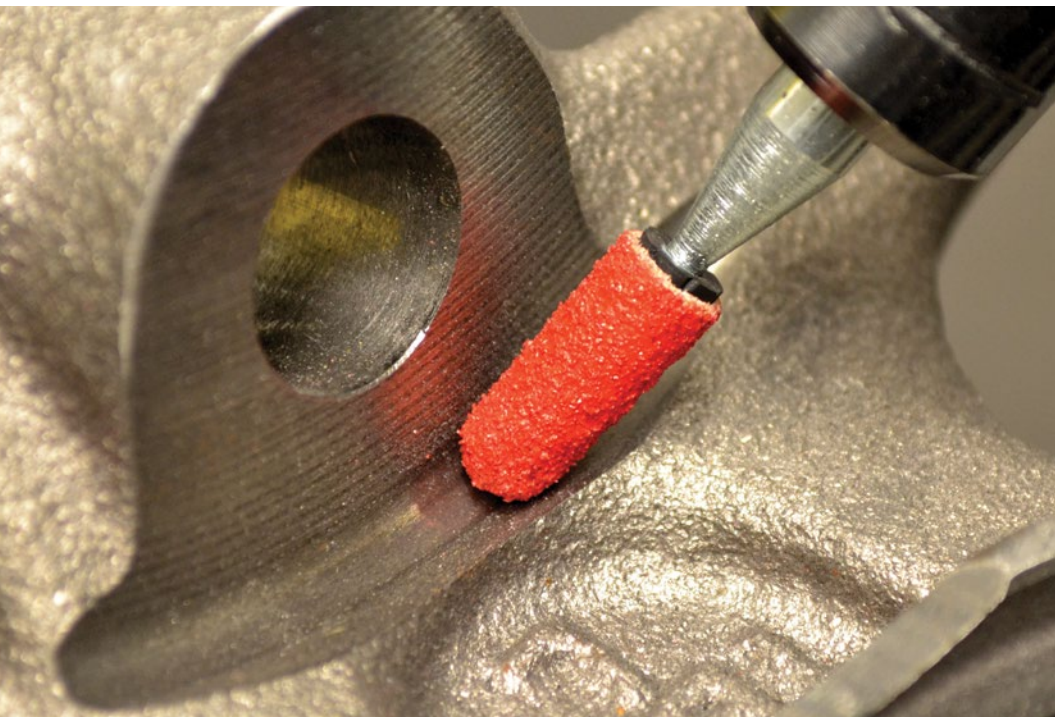
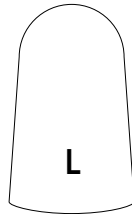
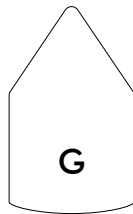
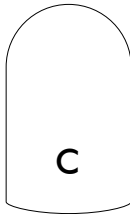
A rigid design and firm holder provide precision shaping and grinding on all types of metal. The seamless design of abrasive caps allows use of their entire surface area. Beneficial to fine detail work, the consistent edge radius upholds the grinding shape, creating a repeatable action with every replacement cap. Multiple shapes and sizes are available and provide a fitted tool for many unique workpieces and hard to access areas.

Applications

- ▶ Repeatable grinding and shaping
- ▶ Mold and die repair
- ▶ Access small holes and channels
- ▶ Fine detail work on intricate parts

▶ Superior Support

Multiple styles available to precisely match existing surface shapes and contours.



CA CERAMIC CAPS

Self-sharpening grains continually produce fresh cutting points, reducing friction and prolonging cut rates. Reshape or blend corners without premature failure. Available with tapered or cylindrical radius end.

- ▶ Access narrow areas
- ▶ Precision shaping and grinding
- ▶ Rigid design withholds shape
- ▶ Shape or repair casting molds



Shape	Diameter	Length	Max RPM	Optimal RPM	Std. Pkg.	80	120
Shape C	3/16"	7/16"	95,000	40,000	1	53350	53351
	9/32"	1/2"	65,000	30,000	1	53356	53357
	3/8"	5/8"	45,000	20,000	1	53362	53363
	1/2"	11/16"	35,000	16,000	1	53368	53369
	5/8"	1"	30,000	12,000	1	53374	53375
Shape L	1/4"	5/8"	95,000	40,000	1	53380	53381
	7/16"	1"	40,000	20,000	1	53386	53387
	5/8"	1-1/4"	30,000	12,000	1	53392	53393
	27/32"	1-9/16"	20,000	9,000	1	53398	53399

Ferrous
 Non-Ferrous
 Stainless
 Exotic Alloys
 Plastics
 Composites





Ao ALUMINUM OXIDE CAPS

General purpose cutting action and durable use on ferrous, non-ferrous, stainless steel, alloys and non-metallics. Rigid design quickly removes stock and is precise and repeatable in shaping parts. Available with tapered, cylindrical or pointed cone end.

- ▶ Access narrow areas
- ▶ Precision shaping and grinding
- ▶ Rigid design retains shape
- ▶ Shape or repair casting molds



Shape	Diameter	Length	Max RPM	Optimal RPM	Std. Pkg.	60	80	150	280
Shape C	3/16"	7/16"	95,000	40,000	50	-	53347	53348	53349
	9/32"	1/2"	65,000	30,000	50	53353	-	53354	53355
	3/8"	5/8"	45,000	20,000	50	53359	-	53360	53361
	1/2"	11/16"	35,000	16,000	50	53365	-	53366	53367
	5/8"	1"	30,000	12,000	50	53371	-	53372	53373
Shape G	3/16"	7/16"	95,000	40,000	50	-	53401	53402	53403
	9/32"	1/2"	65,000	30,000	50	53405	-	53406	53407
	3/8"	5/8"	45,000	20,000	50	53409	-	53410	53411
	1/2"	11/16"	35,000	16,000	50	53413	-	53414	53415
	5/8"	1"	30,000	12,000	50	53417	-	53418	53419
Shape L	1/4"	5/8"	95,000	40,000	50	-	53377	53378	53379
	7/16"	1"	40,000	20,000	50	53383	-	53384	53385
	5/8"	1-1/4"	30,000	12,000	50	53389	-	53390	53391
	27/32"	1-9/16"	20,000	9,000	50	53395	-	53396	53397

● Ferrous ● Non-Ferrous ○ Stainless ○ Exotic Alloys ● Plastics ● Composites

CAP HOLDERS

The precision form of cap holders secure caps in place by expanding during use.



▶ Superior Support

To assist with removal and replacement, raise and lower the used or worn cap while slightly twisting.



Shape	Diameter	Length	Shank	Max RPM	Std. Pkg.	Part #
Shape C	3/16"	7/16"	1/8"	95,000	1	53346
	9/32"	1/2"	1/8"	65,000	1	53352
	3/8"	5/8"	1/8"	45,000	1	53358
	1/2"	11/16"	1/4"	35,000	1	53364
	5/8"	1"	1/4"	30,000	1	53370
Shape G	3/16"	7/16"	1/8"	95,000	1	53400
	9/32"	1/2"	1/8"	65,000	1	53404
	3/8"	5/8"	1/8"	45,000	1	53408
	1/2"	11/16"	1/4"	35,000	1	53412
	5/8"	1"	1/4"	30,000	1	53416
Shape L	1/4"	5/8"	1/4"	95,000	1	53376
	7/16"	1"	1/4"	40,000	1	53382
	5/8"	1-1/4"	1/4"	30,000	1	53388
	27/32"	1-9/16"	1/4"	20,000	1	53394

SHUR-KUT® Coated

Cones

Small diameter cones are designed to chamfer at precise angles. Easily used in holes and around edges for edge breaking or deburring. Chamfering and center lap cones are well suited for recessing holes to specified depths. Rigid cloth backing with tough and durable aluminum oxide grains retains its shape throughout use, ensuring consistent results.

Applications

- ▶ Precisely recess holes
- ▶ Edge breaking and chamfering
- ▶ Deburring machined holes
- ▶ Use on stationary or small parts



A₀ CHAMFERING CONES

Rapid 90° chamfering on stationary or handheld parts. Quick change mounting system for fast, tool-less changeout. Accurately and safely chamfer without damaging surrounding surfaces.

- ▶ Quickly chamfer holes or edges
- ▶ Use with multiple tools
- ▶ Molded backing upholds shape
- ▶ Quick change design



Base Diameter	Angle	Min ID	Max ID	Max RPM	Std. Pkg.	60	80	120	180
5/8"	90°	1/8"	1/2"	25,000	100	12201	12202	12203	12204
7/8"	90°	1/8"	3/4"	21,000	100	12205	12206	12207	12208

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

CHAMFERING CONE HOLDERS

Base Diameter	Shank	Angle	Max RPM	Std. Pkg.	Part #
5/8"	1/4"	90°	10,000	1	12209
7/8"	1/4"	90°	8,800	1	12210



A_o CENTER LAP CONES



Durable cloth abrasive is precisely formed and mounted to a solid pointed holder. Tool-free locknut prevents cone slippage for continued performance against all types of metals. Used with center lapping machines and drill presses.

- ▶ Rigid cloth backing maintains shape
- ▶ Accurate 60° chamfer
- ▶ Precision holder reduces chatter
- ▶ Tool-free locknut for fast changeout

Base Diameter	Angle	Min ID	Max ID	Max RPM	Std. Pkg.	60	80	120	180
3/4"	60°	1/8"	5/8"	21,000	100	12191	12192	12193	12194
1-1/2"	60°	1/8"	1-3/8"	17,000	100	12195	12196	12197	12198

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

CENTER LAP CONE HOLDERS



Base Diameter	Shank	Angle	Max RPM	Std. Pkg.	Part #
3/4"	1/2"	60°	10,000	1	12199
1-1/2"	1/2"	60°	8,800	1	12200

SHUR-KUT® Coated

Spiral Bands

The solid, single layer design of spiral bands produces rapid material removal on curved or contoured parts. Used with a well-balanced rubber drum, bands are smooth in operation and do not chatter during use. With the firm combination of abrasive band and rubber drum, precise diameter grinding and finishing is achievable.

Applications

- ▶ Fast and aggressive blending and removal
- ▶ Remove flash or burrs from small parts
- ▶ Precision diameter grinding
- ▶ Cast parting line removal

A₀ SPIRAL BANDS



General purpose cutting action and durable use on ferrous, non-ferrous, stainless steel, alloys and non-metallics. Rigid design quickly removes stock and is precise in diameter grinding.

- ▶ Remove or shape parts quickly
- ▶ Navigate contoured surfaces easily
- ▶ Fast changeover with no tooling
- ▶ Parting line and flash removal
- ▶ Precise deburring and blending



Diameter	Length	Max RPM	Std. Pkg.	36	60	80	120
1/2"	1/2"	30,000	100	52306	11947	11948	11949
1/2"	1"	20,000	100	11950	11953	11954	11955
3/4"	3/4"	24,000	100	-	18101	18882	19297
3/4"	1"	19,000	100	11962	11965	11966	11967
3/4"	2"	9,000	100	11974	11977	11978	19321
1"	1"	15,000	100	11981	11984	11985	11986
1"	1-1/2"	10,000	100	11988	11991	11992	11993
1-1/2"	1"	14,000	100	16765	18765	16683	49950
1-1/2"	1-1/2"	10,000	100	12002	12005	12006	12007
2"	1"	11,000	100	12016	12019	12020	12021
2"	1-1/2"	8,000	100	12023	12026	12027	12028
2"	2"	6,000	100	12030	12033	12034	12035
3"	3"	3,000	50	12051	12054	12055	12056

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ● Composites

RUBBER EXPANDING DRUMS



For use with Spiral Bands, the balanced construction provides smooth operation for high speed, precision applications.



Diameter	Length	Shank	Max RPM	Std. Pkg.	Part #
1/4"	1/2"	1/8"	30,000	1	12057
3/8"	1/2"	1/8"	30,000	1	12058
1/2"	1/2"	1/8"	30,000	1	12059
1/2"	1/2"	1/4"	30,000	1	12060
1/2"	1"	1/4"	20,000	1	12061
1/2"	1-1/2"	1/4"	14,000	1	12062
1/2"	2"	1/4"	10,000	1	12063
3/4"	1"	1/4"	19,000	1	12069
3/4"	1-1/2"	1/4"	12,000	1	12070
3/4"	2"	1/4"	9,000	1	12071
1"	1"	1/4"	15,000	1	12073
1"	1-1/2"	1/4"	10,000	1	12074
1"	2"	1/4"	8,000	1	12075
1-1/2"	1"	1/4"	14,000	1	12080
1-1/2"	1-1/2"	1/4"	10,000	1	12081
2"	1"	1/4"	11,000	1	12084
2"	1-1/2"	1/4"	8,000	1	12085
2"	2"	1/4"	6,000	1	12086
3"	3"	3/8"	3,000	1	12090

SHUR-KUT® Coated

Pads

Mandrel mounted pads are available in cross or square construction, both providing specialized use. Durable layers of cloth abrasives allow fresh exposure of new grains as top layers are worn away, providing consistent performance and long life throughout use.

Applications

- ▶ Inside diameter cleaning and deburring
- ▶ Clean or prep narrow channels
- ▶ Inside corner stock removal and weld shaping
- ▶ Tube finishing

Ao CROSS PADS

Flexible fingers easily conform to inside diameters and tubes for cleaning, prep or finishing. Easily deburr or chamfer machined holes with the finesse of handheld tools. Self-centering for smooth, flush wall sanding.

- ▶ Propeller-like design keeps workpiece visible
- ▶ Flex and conform to holes without damage
- ▶ Quickly clean hydraulic cylinders
- ▶ Quick change mandrel design



▶ Superior Support

“Width” specifies the shortest dimension of the cross-fingers.



Length	Width	Ply	Eyelet	Max RPM	Std. Pkg.	60	80	120
1"	3/8"	8	3-48	25,000	100	21281	21282	21284
1-1/2"	1/2"	8	8-32	23,000	100	13523	13524	13526
2"	1/2"	8	8-32	23,000	100	13545	13546	13548
3"	1"	8	1/4"-20	14,000	100	13743	13744	13746

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ○ Composites

Ao SQUARE PADS

Corner strokes aggressively remove stock in channels, inside corners or hard to reach areas. Ideal for shaping, smoothing or removing inside corner welds, material layers wear away to expose fresh cutting surfaces, prolonging life.

- ▶ Sturdy design promotes aggressive removal
- ▶ Intermittent shape allows extra visibility
- ▶ Reach difficult channels and geometries
- ▶ Continually exposed layers for long life



Size	Thickness	Eyelet	Max RPM	Std. Pkg.	60	80	120
1-1/2"	3/8"	8-32	18,000	100	13998	13999	14001
1-1/2"	1/2"	1/4"-20	18,000	100	14009	14010	14012
1-1/2"	3/4"	1/4"-20	18,000	100	14020	14021	14023
2"	3/8"	1/4"-20	12,000	100	14042	14043	14045
2"	1/2"	1/4"-20	12,000	100	14053	14054	14056
3"	1/2"	1/4"-20	9,000	100	14097	14098	14100

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ○ Plastics ○ Composites

EYELET MANDRELS



Overall Length	Shank Diameter	Fits Thread	Std. Pkg.	Part #
3"	1/4"	3-48	1	21316
3"	1/4"	8-32	1	12218
3"	1/4"	1/4"-20	1	12219
6"	1/4"	1/4"-20	1	42815

MANDREL EXTENSIONS



Overall Length	Shank Diameter	Fits Thread	Std. Pkg.	Part #
4"	1/4"	1/4"-20	1	39207
6"	1/4"	1/4"-20	1	39208
8"	1/4"	1/4"-20	1	39209

SHUR-KUT® Coated

Rolls

Conveniently dispensed, tear-to-length rolls in common widths for several applications. Cloth backing provides durable wear and flexibility for extended use on edge or cylindrical parts. Commonly used for lathe parts shaping and sizing, finishing or polishing. Standard sizing and packaging for versatile maintenance and machine shop use.

Applications

- ▶ Hand finishing tube or contoured parts
- ▶ General purpose hand finishing
- ▶ Lathe parts finishing and polishing
- ▶ Crankshaft and bearing polishing

A_o RESIN CLOTH SHOP & PRODUCTION ROLLS

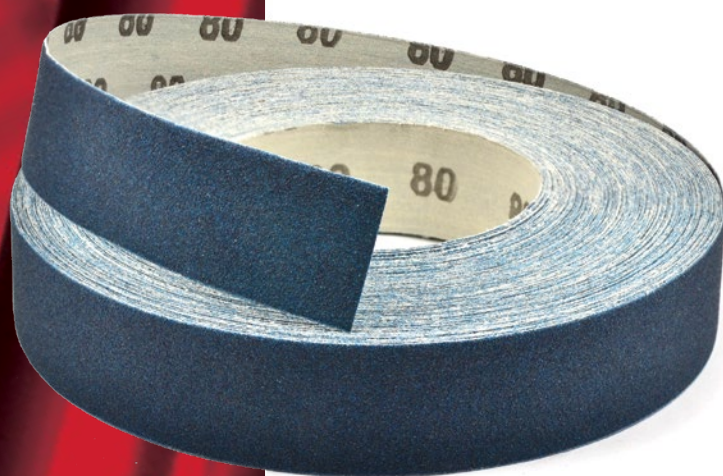
Durable, flexible cloth backing conforms to cylindrical or contoured parts. Tear to useable length to accommodate various tasks and reduce waste. Up to 6" width for larger scale applications.

- ▶ Flexible with excellent grain retention
- ▶ Conform to small radii and fine contours
- ▶ Precision lathe grinding
- ▶ Durable backing for aggressive applications



Width	Length	Std. Pkg.	50J	60J	80J	100J	120J	150J	180J	220J	240J	320J	400J	500J	CROCUS
1"	50 Yds.	1	12106	12107	12108	12109	12110	12111	12112	12113	12114	12115	12116	12117	40038
1-1/2"	50 Yds.	1	12118	12119	12120	12121	12122	12123	12124	12125	12126	12127	12128	12129	40039
2"	50 Yds.	1	12130	12131	12132	12133	12134	12135	12136	12137	12138	12139	12140	12141	40040
3"	50 Yds.	1	48897	26395	26870	27142	26461	35157	35158	35159	27595	39427	27597	-	-
6"	50 Yds.	1	-	27135	27136	53496	27137	-	27138	-	27139	50346	52227	-	-

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ● Composites



Ao BLUE SHOP ROLLS



Flexible, blue aluminum oxide cloth rolls for shaping, cleaning, prep or finishing contoured parts. Tear to usable length to accommodate various tasks and reduce waste.

- ▶ Flexible, durable backing
- ▶ Smoothing and deburring
- ▶ Conform to small radii and fine contours

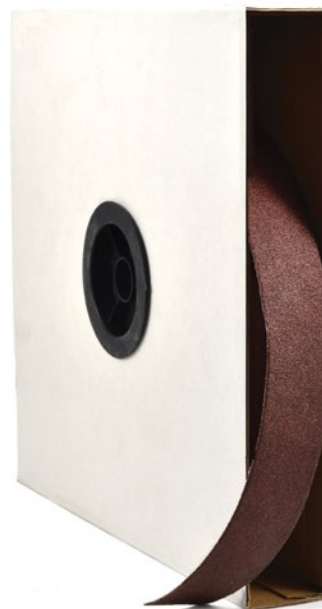
Width	Length	Std. Pkg.	60J	80J	100J	120J	150J	180J	240J
1"	50 Yds.	1	44951	44952	44953	44954	44955	44956	44958
1-1/2"	50 Yds.	1	44959	44960	44961	44962	44963	44964	44966
2"	50 Yds.	1	44967	44968	44969	44970	44971	44972	44974

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ● Composites

Ao COST CONTROL SHOP ROLLS

Reduce waste with tear-to-length shops rolls, suited for hand or machine shaping, finishing or polishing. Cost effective option to Resin Cloth Shop Rolls.

- ▶ Flexible backing contours parts
- ▶ Lathe grinding and drum sanding
- ▶ Durable aluminum oxide grains



Width	Length	Std. Pkg.	60J	80J	100J	120J	180J	220J	240J	320J
1"	50 Yds.	1	26682	26683	26684	26685	26687	26688	26689	26690
1-1/2"	50 Yds.	1	26694	26695	26696	26697	26699	26700	26701	26702
2"	50 Yds.	1	26726	26727	26728	26729	26731	26732	26733	26734

● Ferrous ● Non-Ferrous ● Stainless ○ Exotic Alloys ● Plastics ● Composites

SHUR-KUT® Coated

Sheets

General purpose product form can be cut to size, folded, or used in full sheets for a variety of maintenance or machine shop applications. Durable cloth materials flex and conform to contours and cylindrical parts and withstand aggressive applications. Paper backings adapt to corners and acute geometries and can be wrapped around dowels for finishing small tubes or holes.

Applications

- ▶ Cleaning, prep or finishing flat and contoured parts
- ▶ Polishing large or intricate parts
- ▶ Lathe parts finishing and polishing
- ▶ Blending or spot sanding
- ▶ Crankshaft and bearing polishing

A_o ALUMINUM OXIDE RESIN CLOTH SHEETS

Durable, flexible cloth backing and dense grains conform to cylindrical or contoured parts. Cut or tear to useable size to accommodate various tasks and reduce waste.

- ▶ Flexible with excellent grain retention
- ▶ Conform to small radii and fine contours
- ▶ Durable backing for aggressive applications
- ▶ Precision lathe and drum grinding



Width	Length	Std. Pkg.	40X	50X	60X	80J	100J	120J	150J	180J	220J	240J	320J	400J	500J	CROCUS
9"	11"	50 (*25)	12145*	12146*	12147*	12148	12149	12150	12151	12152	12153	12154	12155	12156	12157	16130

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ● Composites



A_o ALUMINUM OXIDE RESIN CLOTH STIK-ON STRIPS

Pre-cut cloth strips with PSA backing allows temporary adhesion to stationary or handheld sanding blocks for delicate shaping, cleaning or finishing. Narrow width to access channels or hard to reach areas.

- ▶ Strong, removeable adhesive
- ▶ Narrow strips for limited access
- ▶ Durable backing for aggressive applications



Width	Length	Std. Pkg.	80	100	120	150	180	240	320
1"	11"	100	12227	12228	12229	12230	12231	12232	12233

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ● Composites

E_M EMERY CLOTH SHEETS

Flexible cloth backing with self-sharpening, fine grained abrasives. Used for final sizing and fitting of critical components where excess material removal is not necessary.

- ▶ Sharp fractures produce fine cuts
- ▶ Minimal surface removal for critical or sensitive applications
- ▶ Delicate rust removal



Width	Length	Std. Pkg.	CRS	MED	FINE
9"	11"	50 (*25)	12174*	12175	12176

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ● Composites

S_c SILICON CARBIDE WATERPROOF PAPER SHEETS

Silicon carbide grains provide a sharp, fine cut. Thin, paper backing conforms to undulations and variable contours. Use with water or lubricants for much finer finishing and polishing.

- ▶ Sharper grains produce brighter and finer scratch patterns
- ▶ Cut and polish non-ferrous metals
- ▶ Use wet for finer polishing



Width	Length	Std. Pkg.	80C	100C	120C	150C	180C	220A	240A	320A	400A	500A	600A	1000	1500
9"	11"	50	12158	21306	12159	18343	12160	12161	12162	12163	12164	12165	12166	40208	41347

● Ferrous ● Non-Ferrous ● Stainless ● Exotic Alloys ● Plastics ● Composites

10101	114	10173	115	10517.....	39	10581B	26	10643.....	33	10700.....	110
10102	114	10174	115	10518.....	39	10582	26	10644	33	10701.....	110
10103	114	10175	115	10531	40	10582B	26	10645.....	33	10702	110
10104	114	10177	115	10532	40	10583	26	10646.....	33	10703	110
10105	114	10178	115	10533.....	40	10583B	26	10647.....	33	10704.....	110
10106	114	10179	115	10540	68, 74	10584	26	10648.....	33	10705.....	110
10107	114	10184	115	10541.....	22	10584B	26	10649.....	33	10706.....	110
10108	114	10185	115	10541B	22	10585	26	10650	33	10735.....	110
10109	114	10186	115	10542	22	10585B	26	10651.....	33	10737.....	110
10110	114	10192.....	115	10542B	22	10589	26	10658.....	33	10744.....	110
10114	114	10193.....	115	10543	22	10589B	26	10659.....	33	10745.....	110
10115	114	10196.....	115	10543B	22	10590	26	10660.....	33	10746.....	110
10116	114	10197	115	10544	22	10590B	26	10661.....	33	10747.....	110
10117	114	10198.....	115	10544B	22	10591	26	10662.....	33	10748.....	110
10118	114	10203	115	10545	22	10591B.....	26	10663.....	33	10749.....	110
10119	114	10204.....	115	10545B	22	10598	27	10664	33	10750.....	110
10120	114	10205	115	10546	22	10599	27	10665	33	10753.....	110
10124	114	10208	115	10546B	22	10600	27	10666	33	10754.....	110
10125	114	10391... 45, 59, 69, 117		10547	22	10601	27	10667.....	110	10755.....	110
10126	114	10392 ... 45, 59, 69, 117		10547B	22	10602	27	10668.....	110	10756	110
10127	114	10393 ... 45, 59, 69, 117		10548	22	10605	27	10669.....	110	10757.....	110
10128	114	10426	45	10548B	22	10607	33	10670	110	10758.....	110
10129	114	10427	45	10549	22	10608	33	10671	110	10759.....	110
10130	114	10428	45	10549B	22	10609	33	10672.....	110	10760.....	110
10131	114	10429	45	10550	22	10610	33	10673.....	110	10762.....	110
10132.....	114	10430	45	10550B	22	10611	33	10674.....	110	10763.....	110
10136	114	10431	45	10551	22	10612	33	10675.....	110	10764.....	110
10137	114	10459	46	10551B	22	10613	33	10676.....	110	10765.....	110
10138	114	10460	46	10552	22	10614	33	10677.....	110	10766.....	110
10139.....	114	10461	46	10552B	22	10615	33	10678	110	10767.....	110
10142	114	10462	46	10553	22	10616	33	10679	110	10768.....	110
10143	114	10463	46	10553B	22	10617	33	10680.....	110	10771.....	110
10144	114	10464	46	10554	22	10618	33	10681	110	10772.....	110
10148	114	10465	46	10554B	22	10622	33	10682.....	110	10773.....	110
10149	114	10466	46	10555	22	10623	33	10683.....	110	10774.....	110
10150	114	10467	44	10555B	22	10624	33	10684	110	10775.....	110
10151	114	10468	44	10556	22	10625	33	10685.....	110	10776.....	110
10152	114	10469	44	10556B	22	10626	33	10686	110	10777.....	110
10153	114	10470	44	10557	22	10627	33	10687	110	10778.....	110
10157	114	10471	44	10557B	22	10628	33	10688.....	110	10780.....	110
10158	114	10472	44	10558	22	10629	33	10689	110	10781.....	110
10159	114	10473	52	10558B	22	10630	33	10690.....	110	10782.....	110
10160	115	10474	52	10577.....	26	10631.....	33	10691.....	110	10783	110
10161	115	10475	52	10577B	26	10632.....	33	10692	110	10784	110
10162	115	10476	52	10578.....	26	10633.....	33	10693.....	110	10785.....	110
10163	115	10511	39	10578B	26	10634.....	33	10694	110	10786.....	110
10164	115	10512	39	10579.....	26	10635	33	10695	110	10787.....	110
10165	115	10513	39	10579B	26	10636	33	10696.....	110	10789.....	110
10167	115	10514	39	10580	26	10637.....	33	10697	110	10790.....	110
10168	115	10515.....	39	10580B	26	10638.....	33	10698.....	110	10791.....	110
10169	115	10516	39	10581	26	10639.....	33	10699.....	110	10792.....	110

10793	110	10879	110	10939	110	11128	89	11222	89	11397	94
10794	110	10880	110	10940	110	11129	89	11223	89	11398	94
10795	110	10881	110	10960	110	11130	89	11224	89	11399	94
10796	110	10882	110	10961	110	11131	89	11225	89	11400	94
10807	110	10883	110	10962	110	11132	89	11226	89	11401	94
10808	110	10884	110	10963	110	11133	89	11227	89	11402	94
10809	110	10886	110	10964	110	11155	88	11228	89	11404	94
10810	110	10888	110	10965	110	11156	88	11229	89	11405	94
10811	110	10889	110	10966	110	11157	88	11230	89	11406	94
10812	110	10890	110	10967	110	11158	88	11231	89	11407	94
10813	110	10891	110	11039	110	11159	88	11232	89	11408	94
10814	110	10892	110	11087	89	11161	88	11233	89	11409	94
10816	110	10893	110	11088	89	11162	88	11234	89	11410	94
10817	110	10894	110	11089	89	11163	88	11235	89	11411	94
10818	110	10895	110	11090	89	11164	88	11236	89	11412	94
10819	110	10897	110	11091	89	11165	88	11258	88	11413	94
10820	110	10898	110	11092	89	11166	88	11259	88	11414	94
10821	110	10899	110	11093	89	11168	88	11260	88	11416	94
10822	110	10900	110	11095	89	11169	23, 91	11261	88	11417	94
10825	110	10901	110	11096	89	11170	23, 91	11262	88	11418	94
10826	110	10902	110	11097	89	11171	23, 91	11264	88	11419	94
10827	110	10903	110	11098	89	11172	23, 91	11265	88	11420	94
10828	110	10904	110	11099	89	11173	23, 39, 91	11266	88	11421	94
10829	110	10906	110	11100	89	11174	23, 91	11267	88	11422	94
10830	110	10907	110	11101	89	11175	23, 91	11268	88	11423	94
10831	110	10908	110	11102	89	11176	23, 39, 91	11269	88	11424	94
10832	110	10909	110	11103	89	11177	23, 91	11271	88	11425	94
10834	110	10910	110	11104	89	11178	23, 91	11273	23, 91	11426	94
10835	110	10911	110	11105	89	11193	89	11274	23, 91	11428	94
10836	110	10912	110	11106	89	11194	89	11275	23, 39, 69, 77, 91, 103	11429	94
10837	110	10915	110	11107	89	11196	89	11276	23, 39, 69, 77, 91, 103	11430	94
10838	110	10916	110	11108	89	11198	89	11376	94	11431	94
10839	110	10917	110	11109	89	11199	89	11377	94	11432	94
10840	110	10918	110	11110	89	11201	89	11378	94	11433	94
10841	110	10919	110	11111	89	11202	89	11378	94	11434	94
10843	110	10920	110	11112	89	11203	89	11385	94	11435	94
10844	110	10921	110	11113	89	11204	89	11379	94	11436	94
10845	110	10922	110	11114	89	11205	89	11380	94	11437	94
10846	110	10924	110	11115	89	11206	89	11382	94	11438	94
10847	110	10925	110	11116	89	11207	89	11383	94	11440	94
10848	110	10926	110	11117	89	11208	89	11384	94	11441	94
10849	110	10927	110	11118	89	11210	89	11385	94	11442	94
10850	110	10928	110	11119	89	11211	89	11386	94	11443	94
10870	110	10929	110	11120	89	11213	89	11387	94	11444	94
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10872	110	10933	110	11122	89	11215	89	11390	94	11446	94
10873	110	10934	110	11123	89	11216	89	11391	94	11447	94
10874	110	10935	110	11124	89	11217	89	11392	94	11448	94
10875	110	10936	110	11125	89	11218	89	11393	94	11449	94
10876	110	10937	110	11126	89	11219	89	11394	94	11450	94
10877	110	10938	110	11127	89	11220	89	11396	94	11452	94

11453	94	11533	94	11709	95	11864	122	11916	123	12019	132
11454	94	11534	94	11710	95	11865	122	11917	123	12020	132
11455	94	11535	94	11711	95	11866	122	11918	123	12021	132
11456	94	11536	94	11715	97	11867	122	11919	123	12023	132
11457	94	11537	94	11716	97	11868	122	11920	125	12026	132
11458	94	11538	94	11718	106	11869	122	11921	125	12027	132
11459	94	11539	94	11719	106	11870	122	11923	125	12028	132
11460	94	11540	94	11720	106	11871	122	11924	125	12030	132
11461	94	11542	94	11721	106	11872	122	11925	125	12033	132
11462	94	11543	94	11722	106	11873	122	11926	125	12034	132
11464	94	11544	94	11724	106	11874	122	11927	125	12035	132
11465	94	11545	94	11726	106	11875	122	11928	125	12051	132
11466	94	11546	94	11727	106	11876	122	11929	125	12054	132
11476	94	11547	94	11728	106	11877	122	11930	125	12055	132
11477	94	11548	94	11729	106	11878	122	11931	125	12056	132
11478	94	11549	94	11730	106	11879	122	11932	125	12057	133
11479	94	11551	94	11732	106	11880	122	11934	125	12058	133
11480	94	11552	94	11734	106	11881	122	11935	125	12059	133
11481	94	11553	94	11735	106	11882	122	11936	125	12060	133
11482	94	11554	94	11736	106	11883	122	11937	125	12061	133
11483	94	11555	94	11737	106	11884	122	11939	125	12062	133
11484	94	11556	94	11738	106	11885	122	11940	125	12063	133
11485	94	11557	94	11740	106	11886	122	11941	125	12069	133
11486	94	11558	94	11748	105	11887	122	11942	125	12070	133
11487	94	11559	94	11749	105	11889	122	11947	132	12071	133
11488	94	11560	94	11750	105	11890	122	11948	132	12073	133
11489	94	11561	94	11751	105	11891	122	11949	132	12074	133
11490	94	11562	94	11752	105	11892	122	11950	132	12075	133
11491	94	11563	94	11753	105	11893	122	11953	132	12080	133
11492	94	11564	94	11754	105	11894	122	11954	132	12081	133
11493	94	11565	94	11755	105	11895	122	11955	132	12084	133
11494	94	11566	94	11756	105	11896	122	11962	132	12085	133
11495	94	11567	94	11757	105	11897	122	11965	132	12086	133
11496	94	11568	94	11758	105	11898	122	11966	132	12090	133
11497	94	11685	97	11759	105	11899	122	11967	132	12106	136
11498	94	11687	97	11760	105	11900	122	11974	132	12107	136
11499	94	11688	97	11761	105	11901	122	11977	132	12108	136
11500	94	11689	97	11762	105	11902	122	11978	132	12109	136
11501	94	11692	97	11823	100	11903	122	11981	132	12110	136
11502	94	11693	97	11824	100	11904	123	11984	132	12111	136
11503	94	11695	97	11847	29, 107	11905	123	11985	132	12112	136
11504	94	11697	97	11850	29, 107	11906	123	11986	132	12113	136
11505	94	11698	97	11852	107	11907	123	11988	132	12114	136
11506	94	11701	95	11853	107	11908	123	11991	132	12115	136
11507	94	11702	95	11854	107	11909	123	11992	132	12116	136
11508	94	11703	95	11858	29, 107	11910	123	11993	132	12117	136
11509	94	11704	95	11859	29, 107	11911	123	12002	132	12118	136
11510	94	11705	95	11860	122	11912	123	12005	132	12119	136
11512	94	11706	95	11861	122	11913	123	12006	132	12120	136
11513	94	11707	95	11862	122	11914	123	12007	132	12121	136
11514	94	11708	95	11863	122	11915	123	12016	132	12122	136

12123	136	12195	131	14012	135	16731	122	17462	93	18805	122
12124	136	12196	131	14020	135	16732	122	17483	93	18808	123
12125	136	12197	131	14021	135	16747	122	17484	93	18811	122
12126	136	12198	131	14023	135	16751	123	17485	93	18850	123
12127	136	12199	131	14042	135	16765	132	17486	93	18874	122
12128	136	12200	131	14043	135	16783	122	17487	93	18882	132
12129	136	12201	130	14045	135	16827	88	17498	93	18912	109
12130	136	12202	130	14053	135	16829	88	17499	93	18943	93
12131	136	12203	130	14054	135	16830	88	17500	93	18946	122
12132	136	12204	130	14056	135	16831	88	17501	93	18965	122
12133	136	12205	130	14097	135	16833	88	17502	93	18970	122
12134	136	12206	130	14098	135	16841	123	17504	93	18975	111
12135	136	12207	130	14100	135	16919	93	17505	93	19277	93
12136	136	12208	130	14384	110	16930	114	17506	93	19297	132
12137	136	12209	130	14385	110	16952	114	17507	93	19321	132
12138	136	12210	130	14386	110	16955	94	17508	93	19721	122
12139	136	12211	68	14387	110	16980	87	17509	93	19722	122
12140	136	12212	68	14388	110	16981	122	17511	93	19723	122
12141	136	12213	68	14389	110	16984	122	18004	94	19727	122
12142	107	12214	68	14390	110	16985	122	18059	87	19732	122
12143	107	12215	68	14392	110	16986	122	18094	122	19741	122
12144	107	12216	74	16029	123	16987	123	18101	132	19745	122
12145	138	12218	135	16037	114	16988	123	18154	87	19750	122
12146	138	12219	31, 51, 135	16056	93	16993	123	18157	87	19752	122
12147	138	12220	68	16069	122	17001	123	18166	87	19799	122
12148	138	12221	68	16095	94	17006	122	18216	87	19828	122
12149	138	12222	68	16108	93	17007	122	18217	87	19830	122
12150	138	12223	68	16120	40	17016	122	18232	87	19852	122
12151	138	12224	68	16130	138	17061	122	18343	139	19853	122
12152	138	12225	68	16165	122	17066	122	18347	122	19854	122
12153	138	12227	139	16283	114	17068	122	18353	22	19878	122
12154	138	12228	139	16293	114	17116	114	18353B	22	19880	122
12155	138	12229	139	16612	122	17120	122	18354	22	19881	122
12156	138	12230	139	16615	123	17124	40	18354B	22	19885	122
12157	138	12231	139	16624	123	17127	93	18434	33	19889	122
12158	139	12232	139	16642	122	17139	123	18435	33	19977	122
12159	139	12233	139	16646	122	17150	111	18445	114	20099	123
12160	139	13523	134	16652	123	17151	111	18475	122	20977	110
12161	139	13524	134	16655	122	17152	93	18508	94	21012	93
12162	139	13526	134	16683	132	17154	93	18509	94	21013	93
12163	139	13545	134	16685	94	17160	122	18567	122	21071	122
12164	139	13546	134	16703	122	17165	123	18585	123	21150	93
12165	139	13548	134	16704	122	17167	122	18593	114	21151	93
12166	139	13743	134	16713	122	17218	119	18604	122	21153	93
12174	139	13744	134	16716	122	17219	119	18665	122	21176	93
12175	139	13746	134	16717	122	17220	119	18666	122	21177	93
12176	139	13998	135	16718	122	17221	119	18704	111	21281	134
12191	131	13999	135	16719	122	17458	93	18710	122	21282	134
12192	131	14001	135	16723	111	17459	93	18716	122	21284	134
12193	131	14009	135	16728	93	17460	93	18765	132	21306	139
12194	131	14010	135	16729	93	17461	93	18803	122	21316	135

21341	33	24404	111	24804	113	26222	68	26731	137	28849	100
21342	33	24406	111	24805	113	26232	109	26732	137	28850	100
21344	88	24407	111	24806	113	26269	117	26733	137	28854	49
21357	111	24408	111	24807	113	26270	117	26734	137	28855	49
21372	93	24409	111	24808	113	26272	117	26825	88	28857	49
21554	40	24410	111	24809	113	26273	117	26870	136	28858	49
21649	111	24411	111	24810	113	26279	117	26874	114	28863	49
21681	111	24412	111	24811	113	26280	117	26877	48	28864	49
21851	122	24413	111	24812	113	26281	117	26881	48	28866	49
21881	114	24417	111	24813	113	26282	117	26883	48	28867	49
21882	114	24418	111	24814	113	26283	117	27107	109	28872	49
21950	101	24419	111	24816	113	26289	117	27135	136	28873	49
21951	101	24420	111	24817	113	26290	117	27136	136	28953	116
21952	101	24421	111	24818	113	26291	117	27137	136	28954	116
22391	88	24422	111	24819	113	26292	117	27138	136	28955	116
22400	109	24423	111	24821	113	26294	117	27139	136	28956	116
22886	111	24425	111	24822	113	26296	117	27142	136	28967	116
22888	111	24427	111	24823	113	26304	117	27147	29	28968	116
23006	122	24428	111	24824	113	26305	117	27147B	28	28969	116
24164	111	24429	111	24825	113	26306	117	27445	109	28970	116
24165	111	24430	111	24826	113	26307	117	27457	33	28971	116
24167	111	24432	111	24827	113	26309	117	27473	109	28973	116
24168	111	24433	111	24828	113	26310	117	27500	109	28974	116
24353	111	24434	111	24829	113	26315	117	27595	136	30091	123
24354	111	24435	111	24832	113	26316	117	27597	136	30123	123
24355	111	24436	111	24833	113	26318	117	27734	110	30126	123
24356	111	24437	111	24834	113	26319	117	28097	109	30127	123
24357	111	24438	111	24835	113	26381	93	28104	110	30341	123
24358	111	24439	111	24837	113	26395	136	28145	116	30342	123
24359	111	24441	111	24838	113	26461	136	28161	110	30361	111
24360	111	24442	111	24839	113	26668	88	28224	110	30428	94
24379	111	24443	111	24840	113	26682	137	28232	122	30430	94
24380	111	24444	111	25078	97	26683	137	28254	111	30443	94
24381	111	24445	111	25079	97	26684	137	28346	109	30444	94
24382	111	24446	111	25080	97	26685	137	28347	109	30463	94
24383	111	24447	111	25081	97	26687	137	28349	109	30500	109
24384	111	24448	111	25082	97	26688	137	28799	114	30505	109
24385	111	24459	111	25083	97	26689	137	28802	124	30506	109
24386	111	24460	111	25084	97	26690	137	28832	31	30507	109
24391	111	24461	111	25085	97	26694	137	28833	31	30510	109
24392	111	24462	111	25086	97	26695	137	28834	31	30512	109
24393	111	24463	111	25087	97	26696	137	28835	31	30513	109
24394	111	24464	111	25088	97	26697	137	28836	31	30522	109
24395	111	24465	111	25089	97	26699	137	28837	31	30523	109
24396	111	24466	111	25090	97	26700	137	28838	31	30537	53
24398	111	24531	93	25091	97	26701	137	28839	31	30538	53
24399	111	24603	33	25093	97	26702	137	28840	31	30539	53
24400	111	24686	93	25289	111	26726	137	28841	31	30540	53
24401	111	24791	113	25636	122	26727	137	28842	31	30541	53
24402	111	24802	113	25913	40	26728	137	28843	31	30542	53
24403	111	24803	113	26100	111	26729	137	28848	100	30543	53

30544	53	34366	76	36690	87	38456	22	39180	119	40170	39
30607	47	34463	89	36691	87	38456B	22	39181	119	40208	139
30608	47	34470	40	36692	87	38457	22	39182	119	40270	89
30609	47	34569	52	36693	87	38457B	22	39183	119	40271	89
30610	47	34898	110	36694	87	38458	22	39184	119	40272	89
30611	47	34961	52	36695	87	38458B	22	39185	119	40273	89
30612	47	34982	100	36696	87	38459	22	39186	119	40274	89
30613	47	34992	23, 77, 91	36697	87	38459B	22	39187	119	40277	89
30614	47	34998	89	36698	87	38460	22	39188	119	40278	89
31198	114	35126	48	36699	87	38460B	22	39189	119	40279	89
31201	114	35157	136	36700	87	38461	22	39190	119	40280	89
31257	114	35158	136	36794	109	38461B	22	39191	119	40281	89
31349	93	35159	136	36795	109	38597	123	39192	119	40291	89
31369	114	35361	89	36796	109	38699	74	39193	119	40292	89
31474	114	35564	48	37348	49	38799	26	39194	119	40293	89
31479	114	35565	48	37515	122	38799B	26	39195	119	40294	89
32003	109	35599	29	37519	69	38800	26	39196	119	40295	89
32009	109	35599B	28	37860	103	38800B	26	39197	119	40298	89
32018	88	35644	44	37861	103	38801	26	39198	119	40299	89
32033	87	35733	68	37862	103	38801B	26	39199	119	40300	89
32035	87	35734	68	37863	103	38802	26	39200	119	40301	89
32039	88	35795	44	37864	103	38802B	26	39201	119	40302	89
32041	88	35804	44	37865	102	38835	96	39202	119	40305	86
32042	88	35805	75	37866	102	38857	38	39203	119	40306	86
32043	88	35806	75	37867	102	38858	38	39204	118	40307	86
32044	88	35888	100	37868	102	38859	38	39205	118	40308	86
32045	88	36665	87	37869	102	38860	38	39206	118	40309	86
32047	88	36666	87	37895	102	38861	38	39207	31, 51, 118, 135	40310	86
32048	88	36667	87	37896	102	38862	38	39208	31, 51, 118, 135	40311	86
32049	88	36668	87	37897	102	38894	33	39209	31, 51, 118, 135	40312	86
32050	88	36669	87	37898	102	39117	119	39266	103	40313	86
32062	109	36670	87	37899	102	39121	89	39267	103	40314	86
32063	109	36671	87	37905	102	39161	119	39268	103	40315	86
32086	122	36672	87	37906	102	39162	119	39269	103	40316	86
32120	22	36673	87	37907	102	39163	119	39270	103	40317	86
32120B	22	36674	87	37908	102	39164	119	39271	102	40318	86
32352	33	36675	87	37909	102	39165	119	39272	102	40319	86
32361	33	36676	87	37938	111	39166	119	39273	102	40320	86
33358	114	36677	87	38037	89	39167	119	39274	102	40321	86
33791	33	36678	87	38178	46	39168	119	39275	102	40322	86
33983	89	36679	87	38179	46	39169	119	39427	136	40323	86
34014	93	36680	87	38181	46	39170	119	39815	100	40325	86
34324	100	36681	87	38182	46	39171	119	39820	100	40326	86
34325	100	36682	87	38213	39	39172	119	39911	39	40327	86
34359	75	36683	87	38214	39	39173	119	39931	39	40328	86
34360	75	36684	87	38308	23, 91	39174	119	39981	96	40329	86
34361	74	36685	87	38436	111	39175	119	40038	136	40330	86
34362	74	36686	87	38437	111	39176	119	40039	136	40331	86
34363	74	36687	87	38438	111	39177	119	40040	136	40332	86
34364	77	36688	87	38446	75	39178	119	40066	96	40333	86
34365	77	36689	87	38447	75	39179	119	40068	96	40334	86

40335	86	40882	96	43847	51	45889	122	46655	96	47822	90
40336	86	40887	96	43848	51	46050	44	46853	90	47823	90
40337	86	40889	96	43849	51	46169	119	46854	90	47824	90
40338	86	40910	97	43850	48	46170	119	46855	90	48035	121
40339	86	40911	97	43851	48	46171	119	46856	90	48300	99
40340	86	41323	29	43852	48	46172	119	46857	90	48301	99
40402	25	41323B	28	43883	33	46173	119	46858	90	48302	99
40403	25	41334	77	43934	52	46174	119	46859	90	48304	99
40404	25	41347	139	44028	100	46175	119	46860	90	48305	99
40405	25	41382	22	44029	100	46176	119	46861	90	48306	99
40406	25	41382B	22	44030	100	46177	119	46862	90	48316	99
40407	25	41383	21	44125	33	46178	119	46863	90	48317	99
40408	25	41384	21	44383	33	46179	119	46864	90	48318	99
40409	25	41861	44	44406	114	46180	119	46871	90	48320	99
40412	21	41929	105	44615	44	46181	119	46872	90	48321	99
40413	21	42390	105	44711	96	46182	119	46873	90	48322	99
40414	21	42655	105	44838	96	46183	119	46874	90	48897	136
40415	21	42716	89	44891	123	46184	119	46875	90	49100	121
40416	21	42774	29	44951	137	46195	119	46876	90	49101	121
40417	21	42774B	28	44952	137	46196	119	46877	90	49102	121
40418	21	42806	51	44953	137	46197	119	46878	90	49103	121
40419	21	42807	51	44954	137	46204	49	46879	90	49104	121
40420	21	42808	51	44955	137	46224	122	46880	90	49105	121
40421	21	42809	51	44956	137	46239	119	46881	90	49106	121
40422	21	42810	51	44958	137	46310	23, 91	46882	90	49107	121
40423	21	42811	51	44959	137	46582	30	46933	125	49284	122
40425	96	42815	31, 51, 135	44960	137	46583	30	46934	125	49366	52
40433	46	42845	123	44961	137	46584	30	47144	121	49377	86
40434	46	42965	105	44962	137	46585	39	47486	123	49393	87
40435	46	42966	105	44963	137	46586	40	47589	114	49395	87
40436	46	42967	105	44964	137	46587	40	47801	90	49490	121
40437	46	42969	105	44966	137	46588	38	47802	90	49491	121
40438	46	43491	89	44967	137	46589	38	47803	90	49492	121
40439	46	43553	105	44968	137	46590	38	47804	90	49493	121
40440	46	43582	105	44969	137	46591	38	47805	90	49494	121
40497	93	43583	105	44970	137	46592	38	47806	90	49876	122
40508	39	43830	105	44971	137	46593	38	47807	90	49881	114
40564	23, 91	43831	105	44972	137	46614	49	47808	90	49950	132
40572	100	43834	110	44974	137	46615	49	47809	90	50085	114
40610	40	43835	110	45065	49	46618	49	47810	90	50254	23, 91
40611	40	43836	110	45066	49	46619	49	47811	90	50257	23, 91
40612	40	43837	110	45102	66	46630	46	47812	90	50258	23, 91
40613	40	43838	110	45103	66	46631	46	47813	90	50346	136
40627	33	43839	110	45104	66	46632	46	47814	90	50420	23, 91
40628	33	43840	110	45105	66	46633	46	47815	90	50664	114
40703	105	43841	110	45106	66	46640	30	47816	90	50758	21
40704	105	43842	110	45107	67	46641	30	47817	90	50760	21
40705	105	43843	110	45108	59	46642	30	47818	90	50761	21
40754	52	43844	110	45109	59	46648	93	47819	90	50762	21
40821	23, 91	43845	110	45618	66	46649	39	47820	90	50763	21
40828	122	43846	110	45620	66	46654	96	47821	90	50764	21

50765	21	53359	128	53409	128	54510	85	54695	58	54826	64
50766	21	53360	128	53410	128	54559	85	54696	58	54829	64
50843	25	53361	128	53411	128	54561	85	54697	64	54830	64
50844	25	53362	127	53412	129	54562	85	54698	64	54831	64
50911	89	53363	127	53413	128	54563	85	54699	64	54832	64
51082	23, 91	53364	129	53414	128	54564	85	54700	64	54835	64
51408	25	53365	128	53415	128	54565	85	54701	64	54836	64
51543	25	53366	128	53416	129	54566	85	54702	64	54872	65
51544	25	53367	128	53417	128	54567	85	54703	64	54873	65
51811	21	53368	127	53418	128	54602	114	54704	64	54896	76
52193	122	53369	127	53419	128	54652	64	54705	64	54897	74
52227	136	53370	129	53496	136	54653	64	54709	65	54898	74
52290	21	53371	128	53501	122	54654	64	54710	64	54899	77
52306	132	53372	128	53726	85	54655	64	54713	65	54900	77
52332	21	53373	128	53758	85	54656	64	54714	64	55061	76
52338	21	53374	127	53814	85	54657	64	54715	65	55282	123
52339	21	53375	127	53824	85	54658	64	54716	64	55291	122
52340	21	53376	129	53834	85	54659	64	54717	65	55293	114
52375	25	53377	128	53876	85	54660	64	54718	64	55343	58
52376	25	53378	128	53899	85	54661	64	54723	65	55344	58
52378	25	53379	128	53900	85	54662	64	54725	64	55345	58
52400	44	53380	127	53902	85	54663	64	54726	65	55346	58
52401	44	53381	127	53904	85	54664	64	54727	64	55347	58
52421	109	53382	129	53905	85	54665	64	54784	64	55348	58
52422	109	53383	128	53906	85	54666	64	54785	64	55349	58
52423	109	53384	128	53907	85	54667	64	54801	113	55350	58
52424	109	53385	128	53908	85	54668	64	54802	113	55351	58
52425	109	53386	127	53910	85	54669	64	54803	113	55352	58
52465	122	53387	127	53911	85	54670	64	54804	113	55356	58
52466	44	53388	129	53912	85	54671	64	54805	43	55357	58
52745	114	53389	128	53913	85	54672	64	54806	43	55358	58
52787	117	53390	128	53914	85	54673	64	54807	43	55359	58
52928	94	53391	128	53915	85	54674	64	54808	43	55360	58
53220	117	53392	127	53916	85	54675	64	54809	43	55361	58
53249	94	53393	127	53917	85	54676	64	54810	43	55362	58
53250	94	53394	129	53918	85	54680	58	54811	43	55363	58
53333	114	53395	128	53919	85	54681	58	54812	43	55364	58
53346	129	53396	128	53987	122	54682	58	54813	43	55380	58
53347	128	53397	128	54042	122	54683	58	54814	43	55381	58
53348	128	53398	127	54053	122	54684	58	54815	43	55888	99
53349	128	53399	127	54124	85	54685	58	54816	43	58848	99
53350	127	53400	129	54125	85	54686	58	54817	41	58849	99
53351	127	53401	128	54244	122	54687	58	54818	41	58850	99
53352	129	53402	128	54308	89	54688	58	54819	42	59815	99
53353	128	53403	128	54408	122	54689	58	54820	42	59820	99
53354	128	53404	129	54503	85	54690	58	54821	42		
53355	128	53405	128	54504	85	54691	58	54822	42		
53356	127	53406	128	54505	85	54692	58	54823	42		
53357	127	53407	128	54506	85	54693	58	54824	42		
53358	129	53408	129	54509	85	54694	58	54825	64		

Conditions of Sales

1. NEW ACCOUNT REQUIREMENTS

When applying for the right to sell our product and to become an approved distributor, a minimum stocking order of \$1000.00 may be required as part of our partnering commitment

2. ORDERING

All items should be ordered by part number and placed through your local Superior distributor, they stock many of our products for your convenience. Call us for the one nearest you.

An order shall be deemed to have been accepted when it has been confirmed by us in writing or when it is supplied. The times of delivery indicated in our order confirmation shall be deemed to have been agreed upon as approximate delivery times. They shall be deemed to have been complied with, if the goods were dispatched within the period agreed upon or if – within said period – the buyer was advised that the goods are ready for shipment. The time of delivery shall be reasonably extended – also when a delay in delivery has occurred – in case of unforeseen and inevitable events that we were unable to avert in spite of exercising reasonable care, such as a shortage of raw materials, an interruption of operations, the effects of labor disputes or the like. If, through any of the aforementioned circumstances, delivery or performance becomes impossible, we shall thus be exempt from our obligation to deliver.

In any case where products of a special manufacture are ordered, it is the responsibility of the buyer to ensure that any drawings or samples do not infringe the legal patents or protection rights of a third party. We are not obliged to check for such legal rights. Where there is a liability of the supplier, it is the responsibility of the buyer to indemnify himself against any such liability. If specialty manufactures are supplied, we reserve production-related and, if catalogue articles are supplied, we reserve packing-related reasonable deviations from the quantities ordered. Partial deliveries shall be permissible.

3. MINIMUM ORDER

Each order must be \$50.00 Net Per Invoice to a single destination. Each item must be ordered in a full "Standard Package."

4. PRICING

Prices listed in this catalog are suggested list prices and subject to change without notice, although every effort will be made to announce any changes 30 days in advance. Stenographic, clerical and other errors, should they occur, on special quotes or in this catalog are subject to correction. All agreements, which include sales, are contingent upon strikes, fires, accidents, delays of nature or other causes unavoidable beyond our control.

5. TERMS OF PAYMENT

Standard net terms are 30 days. All invoices over 30 days will be considered delinquent, and all in-house orders will be placed on hold until balance of the account is brought below 31 days. Any account placed for collection will receive a finance charge of 1-1/2% per month (18% per year) to balances over 30 days, plus attorney fees and costs. To establish an open account, your firm must supply three industrial and one bank reference.

6. FREIGHT

Superior Abrasives, LLC will prepay freight charges for one delivery to the customer on order values of \$500.00 or more. All orders with a value less than \$500.00, the cost of freight will be added to the distributor's invoice. Each release from a blanket order must total \$500 net or more to receive prepaid freight. Export shipments will be shipped freight collect. A separate charge may be made for customer's special routing instructions. All orders are sold in Ohio and title passes to the buyer when your order leaves Superior's factory. The buyer is solely responsible for their shipment. By placing an order, you authorize us to act on your behalf to engage a common carrier to deliver your order to you.

7. ADD-ON POLICY

Due to the speed of our order entry, manufacturing process and rapid shipment of goods, we find it detrimental to our service to accept additions to existing orders.

8. QUANTITY VARIANCE

Due to the nature of manufacturing, Superior reserves the right to over-ship or under-ship the quantity ordered by 10%.

9. RETURNED GOODS POLICY

We will not accept the return of merchandise without our "RETURN AUTHORIZATION NUMBER" clearly marked on all boxes. When a R/A number is issued by our Customer Service Department, they will send all information to you. The merchandise must be returned to Superior within 30 days from the date the R/A number was issued. After 30 days, R/A numbers are automatically cancelled in house and the request will become null and void. All credits must be taken within six months or they will be disallowed. Superior reserves the right to accept returns in quantities relative to our established stocking levels. Freight is to be prepaid and a \$15.00 or 15% (whichever is greater) restocking and handling charge will apply unless "Superior" is at fault. Many of our items fall into a "non-stock" or "special order" category; items in this group are not returnable. In any case no merchandise may be returned after six months from date of shipment from our factory. All claims of shortages must be made within 10 days after receipt of goods.

All goods supplied shall remain our property until all our claims, in particular any remaining claims against the buyer, are met (paid) in full. This shall apply even if payment of specially designated claims is made. The orderer shall be entitled to resell the goods supplied by us within the normal course of business; but shall assign to us all claims up to the amount of the final invoice amount (including value-added tax) that will accrue to him from the resale to his buyers or third parties. We agree to release upon the buyer's request the securities due to us to such an extent that the value of our securities exceeds the claims to be secured by more than twenty (20) percent; we shall be entitled to select the securities to be released. If the orderer suspends his payments, we shall be entitled to take back the goods against issuing a credit note. The buyer shall be obliged to surrender the goods. If we exercise our reservations of ownership, this shall not mean that we withdraw from the contract. Moreover, we shall be entitled to withdraw from the fulfilment of further existing delivery obligations.

10. LIMITED WARRANTY

Superior Abrasives, LLC. warrants that its products shall be free from defects in material and workmanship under normal and ordinary usage when owned by the original purchaser for a period of six months from the date such products are shipped from Superior's factory. Any claim for breach of Warranty must be brought within 30 days after customer's receipt of the product and customer must cease use of the product pending Superior's substantiation of any warranty claim. In the event a product defect shall occur, Superior shall, at its option, repair or replace the defective product(s) or, upon return of such product(s), cancel the transaction and refund to customer any amount previously paid therefor.

THIS WARRANTY EXPRESSLY IS MADE IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SUPERIOR ABRASIVES, LLC.'S EXCLUSIVE DUTIES TO PURCHASERS OF ITS PRODUCTS WILL BE AS HEREINABOVE PROVIDED. CUSTOMERS SHALL HAVE NO CLAIM AGAINST SUPERIOR FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

11. SAFETY WARNING

Coated, bonded and non-woven abrasives are dangerous if used improperly. Please comply with all safety regulations set by the AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) Z87.1, also by OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA); covering eye face and body protection, wheel and discs speeds safety guards, flanges, mounting and operating procedures.

SUPERIOR ABRASIVES

PRODUCT GUIDE & REFERENCE MANUAL 26
Supersedes all previous literature
Reorder Number 70600

SUPERIOR ABRASIVES, LLC

1620 Fieldstone Way
Vandalia, OH 45377

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