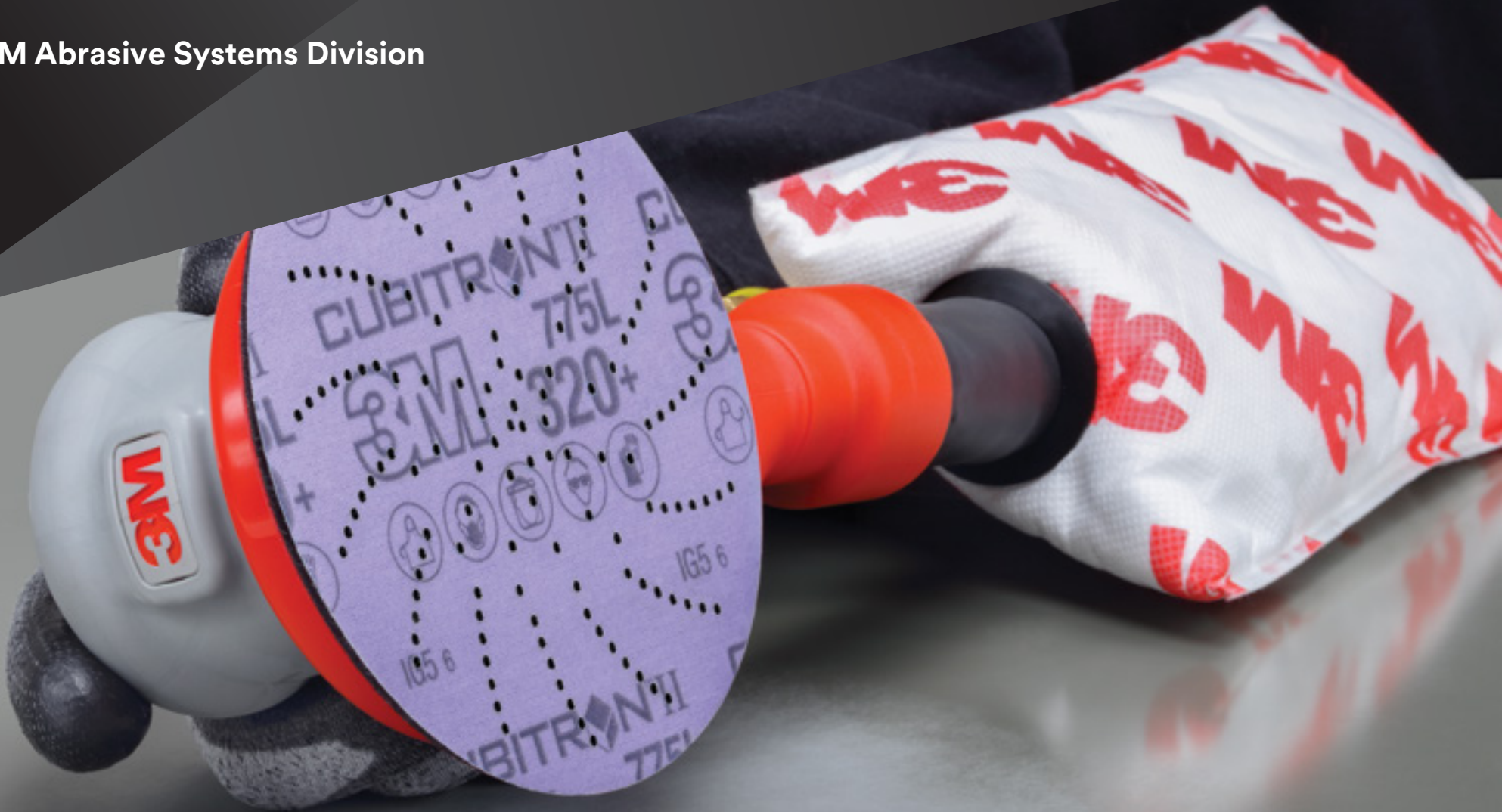


3M Science.
Applied to Life.™

Random Orbital Sanding Guide

Abrasive Discs and System Solutions

3M Abrasive Systems Division



In Random Orbital Sanding, it's all about putting together the optimal system.

Here's how it's done:

Find the best abrasive disc for the job

Match with the right backup pad to enhance sanding disc performance

Choose the random orbital sander to optimize the system

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Abrasive Disc



Backup Pad



Sander



Random Orbital Sanding
Total System Solution



Sanding Made Simple

Always have these in your bag

Film backing

- Best for a uniform consistent finish
- Good tear resistance, good durability
- Longer life than paper
- Best applications: aluminum, paint, primer, gelcoat, wood and solid surface



Paper backing

- Most versatility and most common backing type
- Good flexibility
- Performance can range from value to top tier
- Best applications: light sanding to heavy stock removal, multi-purpose



Cloth backing

- For coarse grade sanding and heavy stock removal
- Excellent tear resistance, excellent durability
- From flexible to stiff
- Best applications: stainless, mild steel and heavy wood sanding



Lead with 3M™ Cubitron™ II



- 3M™ Cubitron™ II Film Disc 775L**
- ▶ Starting point for all applications
 - ▶ Precision-shaped ceramic grain and aluminum oxide blend
 - ▶ 3 mil film
 - ▶ 80+ – 400+ grades



- 3M™ Cubitron™ II Paper Disc 732U**
- ▶ Starting point for paper
 - ▶ Precision-shaped ceramic grain and aluminum oxide blend
 - ▶ C-weight paper
 - ▶ 80+ – 220+ grades



- 3M™ Cubitron™ II Cloth Disc 947A**
- ▶ Starting point for cloth backing
 - ▶ Precision-shaped ceramic grain and aluminum oxide blend
 - ▶ X-weight cloth
 - ▶ 40+ – 120+ grades

General Purpose Alternative Options



- 3M™ Film Disc 375L**
- ▶ Widest film grade range
 - ▶ Aluminum oxide
 - ▶ 5 mil film (60 – P400 grades)
 - ▶ 3 mil film (>P400 grades)
 - ▶ 60 – P1500 grades



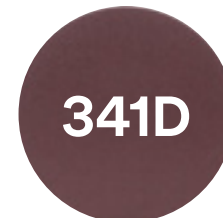
- 3M™ Film Disc 360L**
- ▶ For finishing applications
 - ▶ Aluminum oxide
 - ▶ 3 mil film
 - ▶ P220 – P1000 grades



- 3M™ Paper Disc 236U**
- ▶ General purpose; all applications
 - ▶ Aluminum oxide
 - ▶ C-weight paper
 - ▶ P80 – P500 grades



- 3M™ Paper Disc 216U**
- ▶ Widest paper grade range
 - ▶ Aluminum oxide
 - ▶ A-weight paper
 - ▶ P80 – P800 grades



- 3M™ Cloth Disc 341D**
- ▶ For heavy duty sanding
 - ▶ Aluminum oxide
 - ▶ X-weight cloth
 - ▶ 36 – P180 grades













- 3M™ Cloth Disc 202DZ**
- ▶ Durable disc with antistatic coating
 - ▶ Aluminum oxide
 - ▶ J-weight cloth
 - ▶ 80 – P220 grades

- ▶ Film/Paper Backed
- ▶ Cloth Backed/Non-woven

Random Orbital Sanding Portfolio

The entire 3M portfolio

Film backed sanding discs









 <p>255L</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide on 2 mil film ▶ Lightweight film disc suited for prep for paint, buff and wood sanding applications 	 <p>568XA*</p> <p>Specialized Applications</p> <ul style="list-style-type: none"> ▶ Cerium Oxide on 3 mil film ▶ Constructed for high gloss, semi gloss and acrylic solid surface applications 	 <p>268L*</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide on 3 mil film ▶ Works well on sealer sanding, primer and e-coat scuff applications 	 <p>360L*</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide on 3 mil film ▶ Ideal for composite, primer and gelcoat applications where finish is crucial 	 <p>375L/371L*</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide on 5 or 3 mil film ▶ A multi-purpose value disc where finish and durability are musts
 <p>468L*</p> <ul style="list-style-type: none"> ▶ Silicon Carbide on 3 mil film ▶ For light sanding that requires fast cut rate and consistent finishing 	 <p>268XA*</p> <p>Specialized Applications</p> <ul style="list-style-type: none"> ▶ Microreplicated abrasive on 3 mil film ▶ Used in a variety of solid surface and AOEM tier prep for paint applications 	 <p>366L</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide on 3 mil film ▶ A versatile disc that delivers in paint removal, prep for paint and solid surface finishing 	 <p>775L</p> <ul style="list-style-type: none"> ▶ Precision-Shaped Grain on 3 mil film ▶ The go-to choice for all applications that require premium performance 	 <p>675L</p> <ul style="list-style-type: none"> ▶ Diamond abrasive on 5 mil film ▶ Designed for finishing on hard materials and can be used for coating removal and prep

Lighter backing

Heavier backing

*Stearate-free

Paper backed sanding discs

 <p>216U/210U*</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide on A-weight paper ▶ For light sanding and prep work on primers, paints, gelcoats and sealers 	 <p>401Q*/431Q*</p> <ul style="list-style-type: none"> ▶ Silicon Carbide on A or C-weight paper ▶ Can be run wet or dry in prep for buff or paint and in polishing applications 	 <p>732U</p> <ul style="list-style-type: none"> ▶ Precision-Shaped Grain on C-weight paper ▶ A premium choice for all applications that require fast cut and long life 	 <p>363i*</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide on F-weight paper ▶ A value disc designed for demanding applications on wood, composite and metal
 <p>426U</p> <ul style="list-style-type: none"> ▶ Silicon Carbide on A-weight paper ▶ A value product for wood sanding and applications where finish is critical 	 <p>236U</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide on C-weight paper ▶ The multi-purpose, multi-application value disc 	 <p>752i*</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide and Ceramic blend on E-weight paper ▶ A great option for prep for paint in metal or deflashing/surface prep on composites 	 <p>763U*</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide and Ceramic blend on F-weight Paper ▶ A robust disc ideal for heavy stock removal and refining metal scratches

Lighter backing

Heavier backing










*Stearate-free

Film/Paper Backed
▶ Cloth Backed/Non-woven

Random Orbital Sanding Portfolio

The entire 3M portfolio

Cloth backed sanding discs

 <p>202DZ*</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide on flexible J-weight cloth ▶ A value disc for edge sanding, metal surface preparation and wood applications 	 <p>947A</p> <ul style="list-style-type: none"> ▶ Precision-Shaped Grain on X-weight cloth ▶ A premium choice for applications requiring an aggressive and durable disc 	 <p>348D*</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide on X-weight cloth ▶ PSA backing for ultra-adherence; typically used in >12" disc format 	 <p>341D*</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide on X-weight cloth ▶ Stikit™ backing for random orbital sanding applications 	 <p>359F*</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide agglomerate on YF-weight cloth ▶ A great option for metalworking applications, can be run wet or dry
 <p>900DZ*</p> <ul style="list-style-type: none"> ▶ Ceramic on flexible J-weight cloth ▶ A flexible disc for edge sanding, metal surface preparation and wood applications 	 <p>337DC</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide on X-weight cloth ▶ Designed for Body in White blending and finishing prior to e-coat application 	 <p>Standard Abrasives™ PSA Zirconia Pro</p> <ul style="list-style-type: none"> ▶ Aluminum Zirconia on X-weight cloth ▶ A good choice for stock removal on Stainless Steel, High Nickel Alloys and Aluminum 		 <p>777F</p> <ul style="list-style-type: none"> ▶ Aluminum Oxide and Ceramic blend on YF-weight cloth ▶ Extreme durability for tough metalworking and fiberglass applications

Lighter backing

Heavier backing

*No grinding aid

Non-woven finishing discs

Use on irregular, rounded work surfaces requiring a highly conformable abrasive. Load resistant and good for imparting a bright final finish.

 <p>3M™ Finesse-it™ Refining Disc 3000</p> <ul style="list-style-type: none"> ▶ Non-woven with Silicon Carbide ▶ For refining 1200/1500 scratch marks in prep for buff and large area repair 	 <p>Scotch-Brite™ Hookit™ 7448 PRO</p> <ul style="list-style-type: none"> ▶ Non-woven with Silicon Carbide ▶ For light cleaning, blending and scratch refinement on metal and solid surfaces 	 <p>Scotch-Brite™ Hookit™ 7447 PRO</p> <ul style="list-style-type: none"> ▶ Non-woven with Aluminum Oxide ▶ For cleaning, scuffing, and finishing on metals and plastic substrates 	 <p>Scotch-Brite™ Hookit™ Cut & Polish</p> <ul style="list-style-type: none"> ▶ Non-woven with Aluminum Oxide ▶ For heavier non-woven blending applications where fast scratch removal is required
 <p>Scotch-Brite™ Hookit™ Clean & Finish</p> <ul style="list-style-type: none"> ▶ Non-woven with Silicon Carbide ▶ For light cleaning and blending on metal substrates 		 <p>Scotch-Brite™ Hookit™ Production Clean & Finish</p> <ul style="list-style-type: none"> ▶ Non-woven with Aluminum Oxide ▶ For a uniform finish prior to coating primer, metal and solid surfaces 	

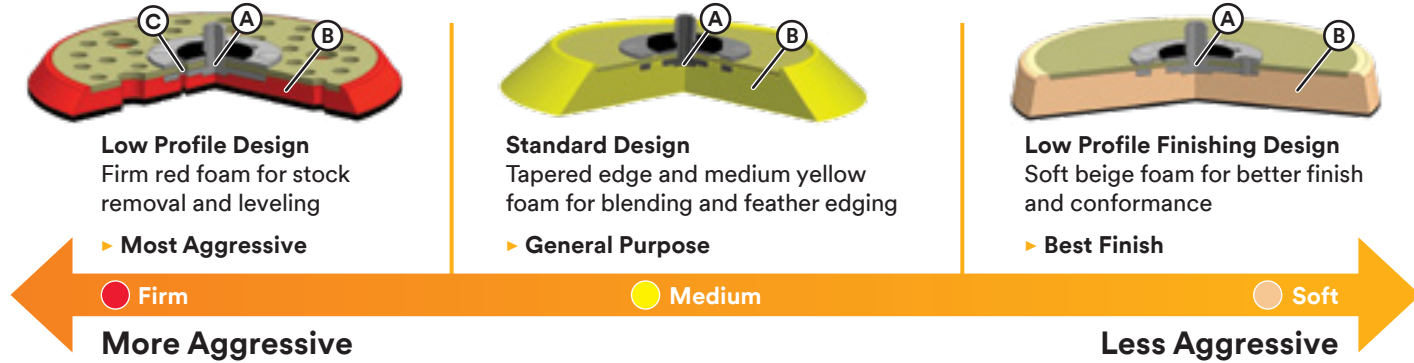
Fine

Coarse

► Tool/Backup Pad Orbit

Sanding System Solutions

Select the right backup pad.



Low Profile Design
Firm red foam for stock removal and leveling

► **Most Aggressive**

Standard Design
Tapered edge and medium yellow foam for blending and feather edging

► **General Purpose**

Low Profile Finishing Design
Soft beige foam for better finish and conformance

► **Best Finish**

● Firm ● Medium ● Soft
← **More Aggressive** **Less Aggressive** →

A One piece stud design for improved balance and reduced vibration

B Color-coded pads with customized features make it simpler to achieve the exact finish desired

C Upgraded hole placement for clean sanding pads for the ultimate in dust extraction

Select the right tool.

- Available in 3", 5" and 6" diameters
- Can be used with Hookit™ and Stikit™ backup pads



3M™ Elite Non-Vacuum Random Orbital Sanders
For work environments where dust extraction is not required



3M™ Elite Central-Vacuum-Ready Random Orbital Sanders
Attaches to existing central vacuum systems for dust extraction



3M™ Elite Self-Generated Vacuum Random Orbital Sanders
Featuring 3M patented Clean Sanding System and 3M Filter Bag

Factors affecting performance checklist.

Abrasive

- Follow basic sanding technique
- Frequently inspect discs for tears, folds or loading
- Make sure work surface is debris-free before moving on to finer grade disc

Backup Pad

- Match backup pad to the job (i.e., low profile for stock removal)
- Confirm that tool and disc pad are the same diameter
- Inspect for damaged pad — adhesion loss, worn foam
- If increased conformability is needed attach a 3M foam interface pad

Tool

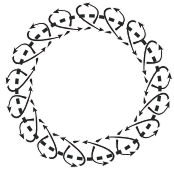
- Check tool lubrication schedule (1–3 drops of tool lubricant daily is recommended)
- Ensure that the speed control adjusted to 3/MAX
- Test that the lever is undamaged and muffler is not clogged

Air Pressure

- Check your gauge to make sure tools is running at 90 PSI
- Use minimum length of air hose necessary — no more than 25 ft.
- Ensure inside air line diameter is at a minimum 3/8"
- Check airline fittings: 9/32" is best, 3/16" is marginal

Tool/Backup Pad
▶ Orbit

Select the right orbit.

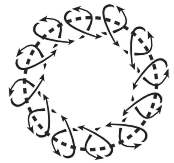


3/32" Diameter Orbit Chrome Lever
Fine finish sanding



Why choose 3/32" orbit?

- ▶ To use with finer grades
- ▶ Least amount of stock removal



3/16" Diameter Orbit Silver Lever
General purpose sanding



Why choose 3/16" orbit?

- ▶ Most commonly used orbit pattern
- ▶ Good balance of stock removal and finish

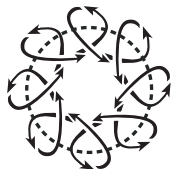


5/16" Diameter Orbit Black Lever
Aggressive sanding*



Why choose 5/16" orbit?

- ▶ More stock removal needed than 3/16" orbit
- ▶ Not as aggressive as 3/8" orbit



3/8" Diameter Orbit Gold Lever
Most aggressive sanding*



Why choose 3/8" orbit?

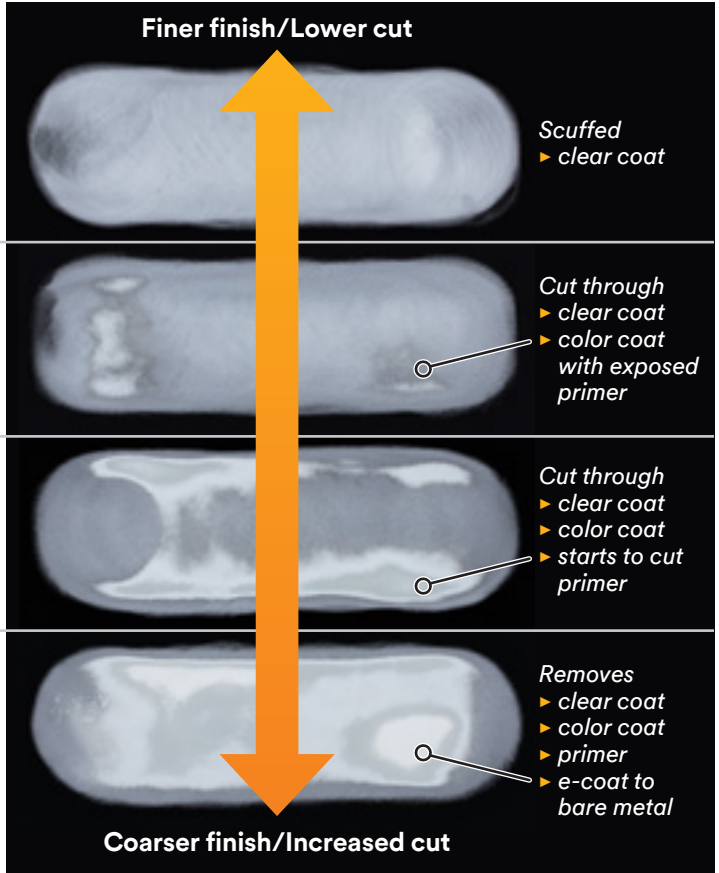
- ▶ Most aggressive stock removal
- ▶ Good for large area sanding or if high cut rate is needed

*Not recommended for woodworking applications

Material removal

After sanding with 775L 80+ for 30 seconds on a painted panel

Finer finish/Lower cut



Coarser finish/Increased cut








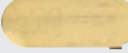



























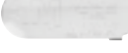












Basic sanding technique.

- 1 Start the sander ON the surface and stop OFF the surface. This will help to avoid swirl marks.
- 2 Apply light hand pressure on the tool and allow the backup pad to orbit freely. Let the tool do the work.
- 3 Run the tool flat on the work piece to prevent gouging.
- 4 Follow a set pattern when sanding. This ensures that previous scratches are removed and a uniform finish is reached.



Application Guide

The 3M recommendations below are starting points for the ideal system solutions. Be sure to conduct trials to find the right system for the application.

Application	Recommended Disc	Alternative Disc	Common Grades	Suggested Backup Pad	Suggested Tool Orbit	Process
Primer Sanding			180 – 400	Low Profile Finishing 	3/16" 	Sanding workpiece for consistent scratch prior to paint
Coating Removal			80 – 240	Red Low Profile 	3/8" 	Removing coatings from workpiece prior to application of primers and paints
Surface Refining/ Flattening			80 – 220	Red Low Profile 	3/16" 	Smoothing and leveling workpiece prior to paint for consistent paint adhesion
Deflashing Plastic			60 – 120	Red Low Profile 	3/16" 	Removing excessive plastic flash by knocking off sharp edges
Gelcoat Sanding			240 – 1000	Low Profile Finishing 	3/16" 	Flattening or removing defects in gelcoat while refining for following buff and polish or paint step
Removing Parting Lines			180 – 320	Red Low Profile 	3/16" 	Removing raised lines in manufacturing to blend surface geometry
Shaping			36 – 220	Yellow Standard 	5/16" 	Incremental steps of cutting and shaping refinement for composite fabrication
Whitewood Sanding			150 – 220	Red Low Profile 	3/16" 	Leveling or smoothing wood surface and removing machining marks from saw cuts or routers
Sealer Sanding			320 – 400	Low Profile Finishing 	3/32" 	Leveling orange peel and scuffing for adhesion of next layer of coatings or finish
Prep for Paint on Steel			80 – 120	Red Low Profile 	3/16" 	Refining a fiber disc scratch used in stock removal for an even scratch prior to paint
Removing Handling Scratches			80 – 120	Red Low Profile 	5/16" 	Identifying defects in metal parts caused by upstream handling
Edge Deburring			60 – 120	Yellow Standard 	5/16" 	Removing sharp edges on sheared metal

For applications needing a bright final finish, follow up with a Scotch-Brite™ Non-woven finishing disc.

Optimize your sanding system with 3M™ Cubitron™ II and 3M™ Clean Sanding Systems

Create a Safer and Cleaner Workspace

Sanding debris is removed directly from the workpiece as an operator sands with the system. With a convenient and efficient dust free system, the work environment is cleaner and more comfortable for all workers.

Improve Sanding Disc Performance

A disc loads less when the dust it generates is vacuumed away. Less loading means more of the disc's abrasive surface is in direct contact with the workpiece. More direct disc contact provides better cut rate and less disc loading equals longer life.

Save \$\$\$ on Abrasives and Improve Productivity

With longer life and a faster cut rate, less discs are used to complete a job. Not only can disc consumption be reduced, each job can be done faster, improving a shop's overall productivity.

Clean sanding abrasive disc



+

Clean sanding backup pad



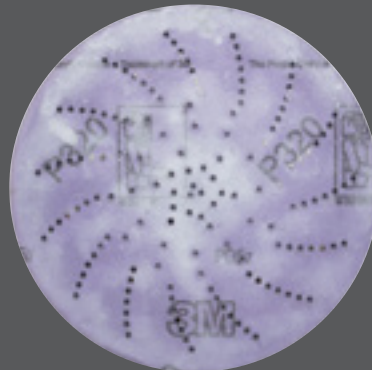
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3M™ Elite Self-Generated Vacuum Random Orbital Sander

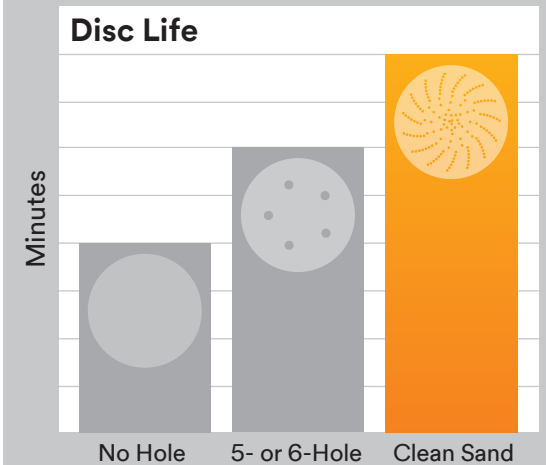
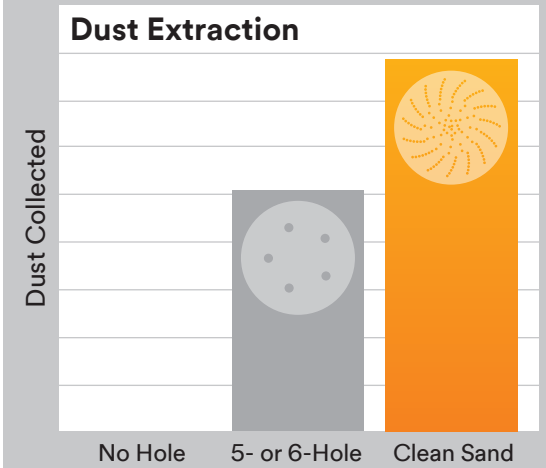


Clean Sand vs. No Hole

After sanding on cured gelcoat for 30 seconds. The clean sand disc has not loaded. This means a longer abrasive disc life.



Clean sanding discs remove more dust and last longer than 5- and 6-hole discs of a similar diameter.



Test results are based on dry sanding applications. Results will vary by application, material being sanded and tool used.

Availability Guide: Sanding Made Simple

▲ = 3M™ Cubitron™ II or Precision-Shaped Grain grade
 A = ANSI (American National Standards Institute) grades
 P = FEPA (Federation of the European Producers of Abrasives) grades

			Grade																						
			24	36	40	50	60	80	100	120	150	180	220	240	280	320	360	400	500	600	800	1000	1200	1500	
Film Backing	775L	Hookit™	No Hole						▲		▲	▲	▲	▲	▲		▲		▲						
			Clean Sanding						▲		▲	▲	▲	▲	▲		▲		▲						
			Dust Free						▲		▲	▲	▲	▲	▲		▲		▲						
		Stikit™	No Hole						▲		▲	▲	▲	▲	▲		▲		▲						
			Clean Sanding						▲		▲	▲	▲	▲	▲		▲		▲						
			Dust Free						▲		▲	▲	▲	▲	▲		▲		▲						
	375L	Hookit™	No Hole					A	P	P	P	P	P	P	P		P		P	P	P	P	P	P	P
			Clean Sanding					A	P	P	P	P	P	P	P		P		P		P	P	P	P	P
			Dust Free					A	P	P	P	P	P	P	P		P		P		P	P	P	P	P
		Stikit™	No Hole					A	P	P	P	P	P	P	P		P		P	P	P	P	P	P	P
			Clean Sanding					A	P	P	P	P	P	P	P		P		P		P	P	P	P	P
			Dust Free					A	P	P	P	P	P	P	P		P		P		P	P	P	P	P
360L	Hookit™	No Hole												P	P	P	P		P	P	P	P	P	P	
		Clean Sanding												P	P	P	P		P	P	P	P	P	P	
		Dust Free												P	P	P	P		P	P	P	P	P	P	
	Stikit™	No Hole												P	P	P	P		P	P	P	P	P	P	
		Clean Sanding												P	P	P	P		P	P	P	P	P	P	
		Dust Free												P	P	P	P		P	P	P	P	P	P	
Paper Backing	732U	Hookit™	No Hole						▲		▲	▲	▲	▲											
			Clean Sanding						▲		▲	▲	▲	▲											
			Dust Free						▲		▲	▲	▲	▲											
		Stikit™	No Hole						▲		▲	▲	▲	▲											
			Clean Sanding						▲		▲	▲	▲	▲											
			Dust Free						▲		▲	▲	▲	▲											
	236U	Hookit™	No Hole						P	P	P	P	P	P	P		P		P	P					
			Clean Sanding						P	P	P	P	P	P	P		P		P	P					
			Dust Free						P	P	P	P	P	P	P		P		P	P					
		Stikit™	No Hole						P	P	P	P	P	P	P		P		P	P					
			Clean Sanding						P	P	P	P	P	P	P		P		P	P					
			Dust Free						P	P	P	P	P	P	P		P		P	P					
216U	Hookit™	No Hole						P				P	P			P		P		P	P				
		Clean Sanding						P				P	P			P		P		P	P				
		Dust Free						P				P	P			P		P		P	P				
	Stikit™	No Hole						P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
		Clean Sanding						P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
		Dust Free						P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
Cloth Backing	947A	Hookit™	No Hole			▲		▲	▲		▲														
			Dust Free			▲		▲	▲		▲														
	341D	Stikit™	No Hole		A		A	A	A	P	P		P												
			Dust Free		A		A	A	A	P	P		P												
	202DZ	Stikit™	No Hole						A	P	P	P	P	P											
			Dust Free						A	P	P	P	P	P											

Sanding Made Simple
► ROS Portfolio

ROS Portfolio

ROS Portfolio						Grade																														
Backing	3M ID	Weight	Mineral	Grinding Aid or Stearate	Attachment			24	30	36	40	50	60	80	100	120	150	180	220	240	280	320	360	400	500	600	800	1000	1200	1500	2000					
					Stikit™	Hookit™	PSA																													
Cloth	202DZ	J	AO																																	
	341D	X	AO																																	
	348D	X	AO																																	
	Standard Abrasives™ PSA Zirconia Pro	X	AZ	✓																																
	359F	YF	AO																																	
	777F	YF	C/AO	✓																																
	900DZ	J	C																																	
947A	X	PSG	✓																																	
Paper	210U	A	AO																																	
	216U	A	AO	✓																																
	236U	C	AO	✓																																
	363i	F	AO																																	
	401Q	A	SC																																	
	426U	A	SC	✓																																
	431Q	C	SC																																	
	732U	C	PSG	✓																																
752i	E	C																																		
763U	F	C/AO																																		
Film	255L	2 mil	AO	✓																																
	360L	3 mil	AO																																	
	371L	5 mil	AO																																	
	375L	5/3 mil	AO	✓																																
	775L	3 mil	PSG	✓																																
Film							Micron Grade																													
	268L	3 mil	AO																																	
	366L	3 mil	AO	✓																																
	468L	3 mil	SC																																	
675L	5 mil	D																																		
						3M™ Trizact™ Grade																														
Cloth	337DC	X	AO	✓																																
Film	268XA	3 mil	AO																																	
	568XA	3 mil	CO																																	None

Backing	3M ID	Mineral	Attachment	Scotch-Brite™ Grade
Non-woven	3M™ Finesse-it™ Refining 3000	AO	Hookit™	3000
	Scotch-Brite™ 7448 PRO	SC		Ultra Fine
	Scotch-Brite™ Clean & Finish	AO		Very Fine
	Scotch-Brite™ 7447 PRO	SC		
	Scotch-Brite™ Production Clean & Finish	SC		
	Scotch-Brite™ Cut & Polish	AO		
				Medium

Mineral

- AO = Aluminum Oxide
- AZ = Aluminum Zirconia
- C = Ceramic
- CO = Cerium Oxide
- D = Diamond
- PSG = Precision-Shaped Grain
- SC = Silicon Carbide

Grade

- ▲ = 3M™ Cubitron™ II or Precision-Shaped Grain
- ⓐ = ANSI (American National Standards Institute)
- ⓑ = FEPA (Federation of the European Producers of Abrasives)

Product and grade availability subject to change.
Visit 3M.com/Abrasives to confirm current product grade and form offering.

For more information visit: [3M.com/Abrasives](https://www.3M.com/Abrasives)



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