

## **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

Table of contents page 3M's Cubitron<sup>™</sup> II and general purpose discs to always have in your bag 2 A full view of 3M's sanding discs organized by backing type and weight 3 Dial in sanding disc performance by selecting the right backup pad and tool 4 Common sanding applications with recommended disc, backup pad and tool to serve as a starting point Availability Guide.....10-12 5 Disc availability by grade and attachment type

Abrasive Disc

### **Sanding Made Simple** > Always have these in your bag

#### **732U** 784F **Premium Series** For quality and growth-minded sanding process owners, who are focused on optimization, product 3M<sup>™</sup> Cubitron<sup>™</sup> II 3M<sup>™</sup> Cubitron<sup>™</sup> II 3M<sup>™</sup> Cubitron<sup>™</sup> II performance, and are continuously Film Disc 775L Paper Disc 732U Cloth Disc 784F Starting point for all applications Starting point for paper Starting point for cloth looking to improve their operations. Precision-shaped ceramic Precision-shaped ceramic Precision-shaped ceramic 3 mil film C-weight paper YF-weight cloth ▶ 80+-400+ grades ▶ 80+-220+ grades ▶ 36+-120+ grades 375L **321U** 341D

### **Advanced Series**

For the sanding process owner looking for improved performance over a Standard product and a wider grade range than the PSG Premium series.



### **Standard Series**

For the sanding process owner who focuses on volume over guality and who cannot, or does not, recognize the value of a Premium or Advanced product.



General purpose; all applications Aluminum oxide C-weight paper

3M<sup>™</sup> Paper Disc 236U

P80 – P500 grades

**216U** 

#### 3M<sup>™</sup> Paper Disc 216U

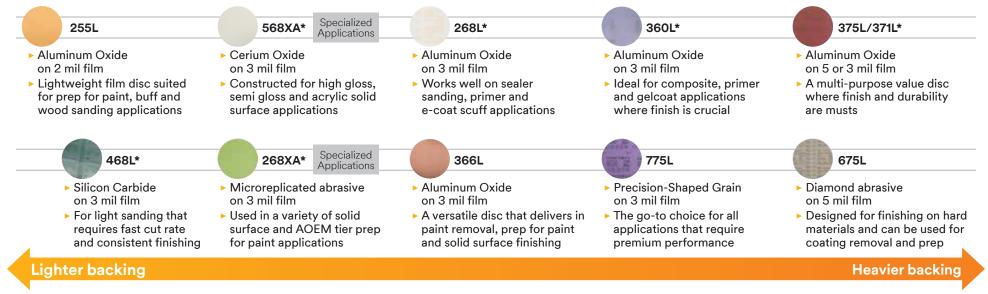
- General purpose; all applications
- Aluminum oxide
- A-weight paper
- ▶ P80 P800 grades

Film/Paper Backed
 Cloth Backed/Non-woven

## Random Orbital Sanding Portfolio The entire 3M portfolio

### Film backed sanding discs

Best for a uniform consistent finish. Have good tear resistance and durability. Longer life than paper.



### Paper backed sanding discs

Most versatility and most common backing type. Have good flexibility. Performance can range from value to top tier.

216U/210U*	401Q*/431Q*		732U	363i*
luminum Oxide on -weight paper or light sanding and prep vork on primers, paints, elcoats and sealers	<ul> <li>Silicon Carbide on A or C-weight paper</li> <li>Can be run wet or dry prep for buff or paint a in polishing applicatio</li> </ul>	in ► A pre and appli	ision-Shaped Grain -weight paper emium choice for all ications that require cut and long life	<ul> <li>Aluminum Oxide on F-weight paper</li> <li>A value disc designed for demanding applications on wood, composite and metal</li> </ul>
426U	236U	321U Blue	752i*	763U*
Silicon Carbide on A-weight paper A value product for wood sanding and applications where finish is critical	<ul> <li>Aluminum Oxide on C-weight paper</li> <li>The multi-purpose, multi-application value disc</li> </ul>	<ul> <li>Ceramic and Aluminum Oxide blend</li> <li>A high performing general purpose price-value disc</li> </ul>	<ul> <li>Aluminum Oxide and Ceramic blend on E-weight paper</li> <li>A great option for prep for paint in metal or deflashing/ surface prep on composites</li> </ul>	<ul> <li>Aluminum Oxide and Ceramic blend on F-weight Paper</li> <li>A robust disc ideal for heavy stock removal and refining metal scratches</li> </ul>

\*Stearate-free

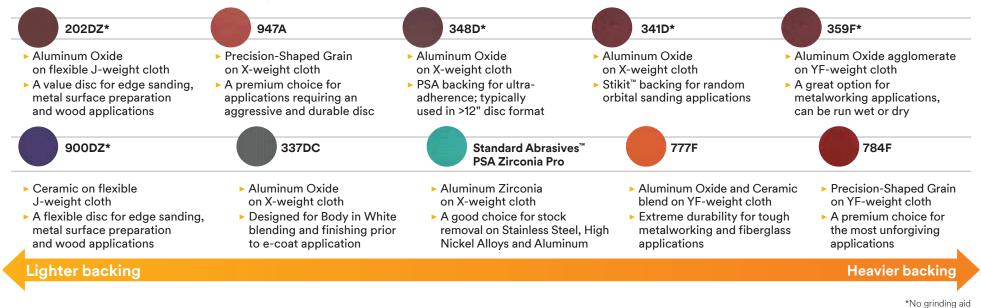
Film/Paper Backed

Cloth Backed/Non-woven

### Random Orbital Sanding Portfolio The entire 3M portfolio

### **Cloth backed sanding discs**

For coarse grade sanding and heavy stock removal. Excellent tear resistance and durability. Choose from flexible to stiff.



### Non-woven finishing discs

Fine

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

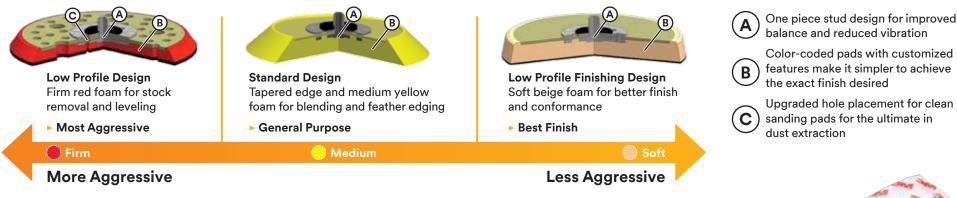


Sanding System Solutions

 Tool/Backup Pad Orbit

### **Sanding System Solutions**

### Select the right backup pad.



### Select the right tool.

- ► Available in 3", 5" and 6" diameters
- Can be used with Hookit<sup>™</sup> and Stikit<sup>™</sup> backup pads



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



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



3M<sup>™</sup> 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

Sanding System Solutions

Material removal

Tool/Backup Pad ► Orbit

### Select the right orbit.

3/16" Diameter Orbit

5/16" Diameter Orbit

Aggressive sanding\*

3/8" Diameter Orbit

Most aggressive sanding\*

General purpose sanding

Silver Lever

Black Lever

Gold Lever





#### Why choose 3/32" orbit?

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

#### Why choose 3/16" orbit?

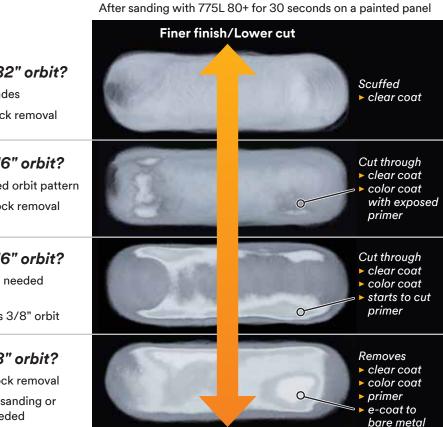
- Most commonly used orbit pattern
- Good balance of stock removal and finish

#### Why choose 5/16" orbit?

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

#### Why choose 3/8" orbit?

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



Coarser finish/Increased cut

\*Not recommended for woodworking applications

### Basic sanding technique.



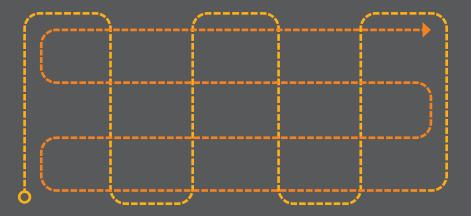
4

Start the sander ON the surface and stop OFF the surface. This will help to avoid swirl marks.

Apply light hand pressure on the tool and allow the backup pad to orbit freely. Let the tool do the work.

Run the tool flat on the work piece to prevent gouging.

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	775L	375L	180 - 400	Low Profile Finishing	3/16"	Sanding workpiece for consiste scratch prior to paint						
Coating Removal	775L	3210	80-240	Red Low Profile	3/8"	Removing coatings from workpiece prior to application of primers and paints						
Surface Refining/ Flattening	7320	202DZ	80 - 220	Red Low Profile	3/16"	Smoothing and leveling workpiece prior to paint for consistent paint adhesion						
Deflashing Plastic	784F	341D	60 - 120	Red Low Profile	3/16"	Removing excessive plastic flas by knocking off sharp edges						
Gelcoat Sanding	775L	360L	240 - 1000	Low Profile Finishing	3/16"	Flattening or removing defects gelcoat while refining for follow buff and polish or paint step						
Removing Parting Lines	775L	321U	180 - 320	Red Low Profile	3/16"	Removing raised lines in manufacturing to blend surface geometry						
Shaping	784F	341D	36 - 220	Yellow Standard	5/16"	Incremental steps of cutting and shaping refinement for composite fabrication						
Whitewood Sanding	7320	426U	150 - 220	Red Low Profile	3/16"	Leveling or smoothing wood surface and removing machinin marks from saw cuts or routers						
Sealer Sanding	775L	426U	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	775L	202DZ	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	7320	375L	80 - 120	Red Low Profile	5/16"	Identifying defects in metal par caused by upstream handling						
Edge Deburring	784F	341D	60–120	Yellow Standard	5/16"	Removing sharp edges on sheared metal						

Menu Sanding Made Simple Random Orbital Sanding Portfolio Sanding System Solutions Application Guide Availability Guide

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

#### Menu Sanding Made Simple Random Orbital Sanding Portfolio Sanding S

**Sanding System Solutions** 

System ► Clean Sand

**Application Guide** 

# Optimize your sanding system with 3M<sup>™</sup> Cubitron<sup>™</sup> II and 3M<sup>™</sup> Clean Sanding Systems

### **Create a Safer and Cleaner Workspace**

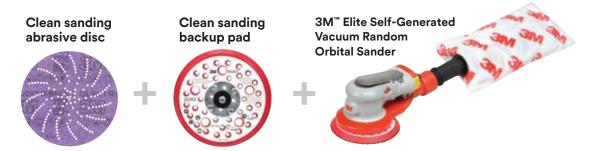
Sanding debris is removed directly from the workpiece as an operator sands with the system. With a convenient and efficient dust free system, the work environment is cleaner and more comfortable for all workers.

### **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.

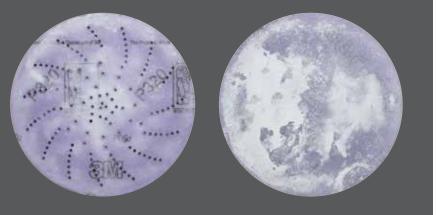
### Save \$\$\$ on Abrasives and Improve Productivity

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.

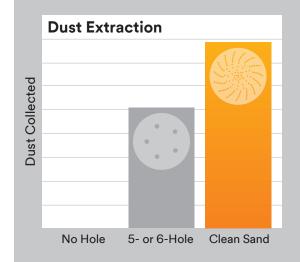


### Clean Sand vs. No Hole

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 **ROS Portfolio** Multi Packs

### **Availability Guide: Sanding Made Simple**

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

															Gr	ade										
	3M ID	Backing	Attachment	Forms	24	36	40	50	60	80	100	120	150	180	220	240	280	320	360	400	500	600	800	1000	1200	1500
				No Hole						Δ		Δ	Δ	Δ	Δ	Δ		Δ		Δ						
			Hookit™	Dust Free						Δ			Δ	Δ	Δ	Δ		Δ		Δ						
	775L	Film		Clean Sanding						▲			▲			▲		Δ		Δ						
Premium Series			Stikit™	No Hole						▲		▲	Δ	Δ	Δ	▲		Δ		Δ						
ě			Otikit	Dust Free						▲		▲	▲	Δ	Δ	Δ		Δ		Δ						
رن ج				No Hole						▲			▲	▲												
2			Hookit™	Dust Free						Δ		Δ	Δ	Δ	Δ											
Ĕ	7320	Paper		Clean Sanding						Δ		▲	A	Δ	Δ											
Ľ			Stikit™	No Hole						Δ		Δ	Δ	Δ	Δ											
			Stikit	Dust Free						▲		▲	A	A	Δ											
				No Hole		₽			Δ	▲																
	784F	Cloth	Hookit™																							
				Dust Free				<b>A</b>	Δ	A																
				No Hole					Δ	Ρ	Р	P	Р	Р	Р	Р		Р		Р	P	Р	Р	P	Р	P
			Hookit™	Dust Free					Δ	Ρ	Р	Р	Р	Р	Р	Ρ		Р		Р	Р	Р	Ρ	Р	Ρ	F
	375L	Film		Clean Sanding					Δ	Р	Р	Р	Р	Р	Р	Р		Р		Р						
<u>e</u>			C+:L::+™	No Hole					Δ	Ρ	Р	Р	Р	Р	Ρ	Ρ		Р		Р	Ρ	Р	Ρ	Р	Ρ	P
ē			Stikit™	Dust Free					Δ	Ρ	Р	Р	Р	Р	Р	Р		Р		Р	Р	Р	Р		Ρ	P
0) 10				No Hole						A						A		A					A			
ů V			Hookit™				•																			
aD	3210	Paper		Multi-hole						Δ				Δ				Δ		۵						
Advanced Series			Stikit™	No Hole			A			A		Δ				A		A		A			A			
∢				No Hole		Δ		Δ	Δ	Δ	P	P		Р												
	341D	Cloth	Stikit™	NO HOLE		•			•																	
				Dust Free		Δ			Δ	A	Ρ	Р		Ρ												
				No Hole						Р	P	P	P	Р	Р	Р		Р		Р	P					
S			Hookit™	Dust Free						P	Р	P	P	P	P	Р		Р		P	P					
Standard Series	236U	Paper		Clean Sanding						Р	Р	Р	Р	Р	Р	Р		Р		Р	P					
0				No Hole						P	Р	P	Р	Р	Р	P		Р		P	P					
ō			Stikit™	Dust Free						Р	P	Р	Р	Р	Р	P		Р		Р	P					
dar				No Hole									P	P	P			Р		P		P	P			
Č .			Hookit™	Dust Free									P	Р	Р			Р		P		Р	Р			
Ž	216U	Paper		Clean Sanding									P	P	P			Р		P		P	Р			
			Stikit™	No Hole						Р	Р	P	Р	P	P	Р	Р	Р	P	P	P	Р	P			
			Cunt																							

Availability Guide

Sanding Made Simple

► ROS Portfolio Multi Packs

RO	ROS Portfolio							Grade																							
Backing	GI MS	Weight	Mineral	Grinding Aid or Stearate	Stikit <sup>™</sup> tt	Hookit <sup>™</sup>	ent VSA	24	30	36	40	50	60	80	100	120	150	180	220	240	280	320	360	400	500	600	800	1000	1200	1500	2000
	202DZ	J	AO	6	•	T									P	P	P	P	P												
	341D	X	AO		•					Α		Α	Δ		P	P	-	P													
	348D	X	AO		<b> </b>		•	Δ						Δ	P	P	Р	P		Р											
	Standard Abrasives <sup>™</sup> PSA Zirconia Pro	x	AZ	~			•	•																							
Cloth	359F	YF	AO			•								Δ		Р		Р													
	777F	YF	C/AO	~			•									Р															
	784F	YF	PSG		•	•				Δ	_	Δ	Δ			Δ															
	900DZ	J	С		•	•				_		_			Р	P	Р	Р	Р												
	947A	Х	PSG	~	1	•					Δ		Δ	Δ		Δ															
	210U	A	AO		•	•	•								1			Р	Р	Р		Р	1	Р	Р	Р	Р				
	216U	A	AO	~	•	•								Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р				
	236U	С	AO	~	•	•								Р	Р	Р	Р	Р	Р	P		Р		Р	Р	_					
	321U	C/D	C/AO	~	•	•					Δ															Α	Δ				
	363i	F	AO		•	•	•								Р	P	Р	P								-					
Paper	401Q	A	SC		1	•	•						_																Δ	Δ	Α
	426U	A	SC	~	•	•																									
	431Q	С	SC				•										-	Δ						-		Δ					
	732U	С	PSG	~	•	•										A	A									-					
	752i	E	С			•				Р		Р																			
	763U	F	C/AO		•	•									Р	Р															
	255L	2 mil	AO	~	•	•								Р	Р	Р	Р	Р	Р	Р	Р	Р		Р	Р						
	360L	3 mil	AO		•	•													Р	Р	Р	Р		Р	Р	Р	Р	Р			
Film	371L	5 mil	AO			•								Р	Р	Р	Р	Р	Р	Р		Р		Р							
	375L	5/3 mil	AO	~	•	•								Р	Р	Р	Р	Р	Р	Р		Р		Р	Р	Р	Р	Р	Р	Р	
	775L	3 mil	PSG	~	•	•								▲		Δ	Δ							Δ							
									_										Mie	ron Gr	ade _										
	268L	3 mil	AO			•	•									100	80		INIC	and an	aue 60		50		4	0	30	20		15	9
	366L	3 mil	AO	~	-	•	•	220	o I	180	150	0		12		100	80	_			60		50		4		30	20	_	15	3
Film	468L	3 mil	SC			•	•									100	80	_		70	60				4		30			15	
	675L	5 mil	D			•	٠						125						74					45			30	20			9
																			зм <u>™ т</u>	rizact™	Grade										
Cloth	337DC	X	AO	~		•	•	A	300		A160		A1	00		465		A45				A30									
Film	268XA	3 mil	AO			•	٠													A35				A20		A1	0	A	\5		
	568XA	3 mil	CO			•	•																							No	one
		_													N	linor	'al						6	rad	<u> </u>						

Backing	3M ID	Mineral	Attachment	Scotch-Brite <sup>™</sup> Grade		
	3M <sup>™</sup> Finesse-it <sup>™</sup> Refining 3000	AO		3000		
	Scotch-Brite <sup>™</sup> 7448 PRO	AO		Ultra Fine		
Non-	Scotch-Brite <sup>™</sup> Clean & Finish	AO	Hookit™	Oltra Fine		
woven	Scotch-Brite <sup>™</sup> 7447 PRO	AO	ΠΟΟΚΙΙ	Very Fine		
	Scotch-Brite <sup>™</sup> Production Clean & Finish	AO		very Fine		
	Scotch-Brite <sup>™</sup> 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<sup>™</sup> Cubitron<sup>™</sup> 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.

Sanding Made Simple **ROS Portfolio** ► Multi Packs

Size Discs

15/pack

15/pack

15/pack

15/pack

Discs

8/pack

12/pack

Discs

15/pack

### Get ready to demo with 3M<sup>™</sup> Cubitron<sup>™</sup> II Random Orbital Sanding Multi Packs

Once your customers try highperformance 3M<sup>™</sup> Cubitron<sup>™</sup> II products, you can bet they'll be back for more! Now available in 5" and 6" discs.

Start demonstrating, sampling and selling 3M's newest random orbital discs today!

775L	Grades	UPC Number	Size	Discs		732U	Grades		UPC Number	Size	
82227 CLEITTONI But Takabara Markan	3M <sup>™</sup> Cubitron <sup>™</sup> II	Stikit <sup>™</sup> Film Discs	775L			77366 CUBITRÓNII Mar'sen Bartan Maring Marine Cas Anner Cas Anner Cas Anner	3M <sup>™</sup> C	ubitron <sup>™</sup> II S	Stikit <sup>™</sup> Paper Disc	s 732U	
80+ 180+ 120+ 220+ 150+		051125-87337-6 5"		15/pack		CLEAR TABLE		80+ 20+	638060-77306-2	5"	15
							638060-77556-1	6"	15		
SM 87328 CLEFTR®NII Intr®ina lange fas Jans 78. MARINA MARININI MARINA MARINA MARININA MARININA MARINA MARINA MARI	3M <sup>™</sup> Cubitron <sup>™</sup> II Film Discs 775L	Hookit <sup>™</sup> Clean Saı	nding			3M 77307 CUEITR®NII Wati Paul Mati Baul Mati Baul Mati Baul Mati Baul		ubitron <sup>™</sup> II ∣ Discs 732U	Hookit <sup>™</sup> Clean Saı	nding	
120	80+ 180+	051125-87338-6	5"	15/pack		Constant of the second		80+	638060-77307-9	5"	15
	120+ 220+ 150+	638060-77554-7	6"	15/pack		Can Find	120+ 2 150+	20+	638060-77557-8	6"	15
				947A	Grades		UPC Number	Size			
	3M <sup>™</sup> Cubitron <sup>™</sup> II					SM 87242 CLIBITR NII Mar Car Ban With Mar Car Ban With Mar Car Ban With Mar Car Ban With	3M™ C	cs 947	Α		
3M 77552 CUBITR N II Mar film Dar 755 77751 0	240+ 320+ 400+	051125-87430-4	5"	15/pack							
Maki Pak Brazer Lini Looper Casalisei Folder	240+ 320+ 400+	638060-77552-3	6"	12/pack		3M 77558 CUBITRONII Hear Can be 84		80+	051125-87342-0	5"	8
	3M <sup>™</sup> Cubitron <sup>™</sup> II	Hookit <sup>™</sup> Clean Saı	nding			Enh Ranger Line State Constant Alake Constant Alake Constant Alake Constant Alake	60+ 1	20+	638060-77558-5	6"	12
	Film Discs 775L					784F	Grades		UPC Number	Size	
3M 7755 CUBIR®NII Haur Canadag No Da 7%. 7751.0	240+ 320+ 400+	051125-87435-9	5"	15/pack		3M 77559 CLUBITRONII Patr Calabar 107 7846 Pass	3M <sup>™</sup> C	ubitron <sup>™</sup> II ∣	Hookit <sup>™</sup> Cloth Dis	cs 784	F
Construction for the second se	2401 3201 4001	638060-77555-4	6"	15/pack		Carallel Control Contr		60+ 120+ 80+	638060-77559-2	5"	15



Product Selection and Use: Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. As a result, customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment and reviewing all applicable regulations and standards (e.g., OSHA, ANSI, etc.). Failure to properly evaluate, select, and use a 3M product and appropriate safety products, or to meet all applicable safety regulations, may result in injury, sickness, death, and/or harm to property.