Bumpon™ Protective Products

Molded Shapes Series

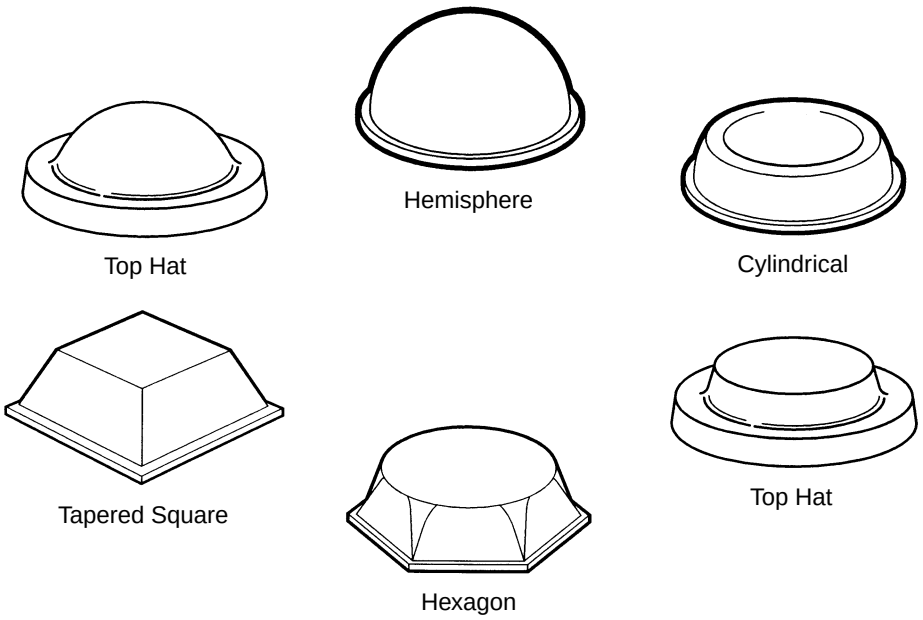
SJ-5000 • SJ-5200 • SJ-5300 • SJ-5400
SJ-5500 • SJ-5700 • SJ-6100

Technical Data **January, 2003**

Product Description

3M™ Bumpon™ Protective Products are pressure sensitive adhesive-backed polyurethane products that can be used as feet, stops, spacers, and protectors in many applications.

The urethane is a durable, resilient elastomer. The aggressive, high tack pressure sensitive adhesive is protected with a release liner making application fast and easy.



Features

Bumpon Protective Products feature a plasticizer-free urethane composition which exhibits:

- Excellent skid resistance
- Long aging resiliency – will not crack or harden
- Abrasion resistance
- Resistance to marring and staining

Application Ideas

Use almost anywhere slamming, scratching, nicking, scuffing, marring, sliding, vibration, or noise could be a problem for your product.

- **Feet** on the bottom of blenders, desk top calculators, electronic cabinetry, telephones, keyboards, foot pedals, scales, clocks, speakers, dispensers, and computers.
- **Stops** for cabinet doors, lids, and drawers.
- **Spacers** for picture frames to provide alignment; for auto glass as an aid in assembly.
- **Protectors** for stacked glass and metal sheets.

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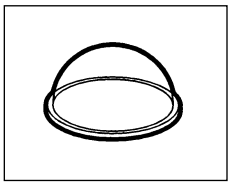
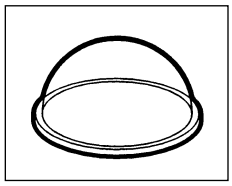
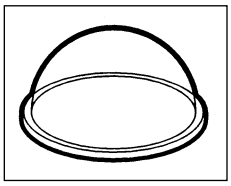
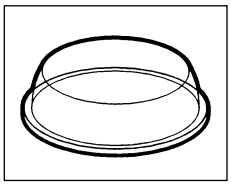
Transparent and True White

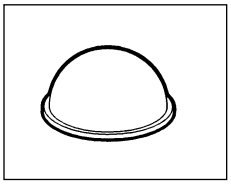
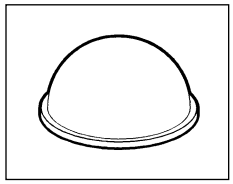
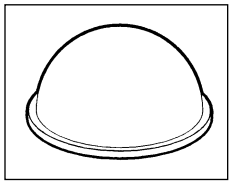
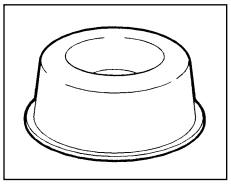
3M™ Bumpon™ Protective Products

Product Number	Bumpon SJ-5302, SJ5402*	Bumpon SJ-5306, SJ-5406*	Bumpon SJ-5303	Bumpon SJ-5312, SJ-5412*
Colors	Transparent, True White*	Transparent, True White*	Transparent	Transparent, True White*
Width inches (mm)	0.312 (7.9)	0.375 (9.5)	0.44 (11.1)	0.50 (12.7)
High inches (mm)	0.085 (2.2)	0.150 (3.8)	0.20 (5.0)	0.14 (3.5)
Form	17x24 Matrix (Bumpon SJ-5302) 8x18 Matrix (Bumpon SJ-5402)	6x9 Matrix	8x7 Matrix	8x7 Matrix

*Use Bumpon SJ-5400 Series to identify true white products.

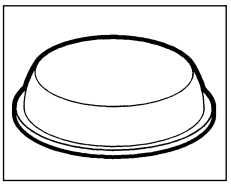
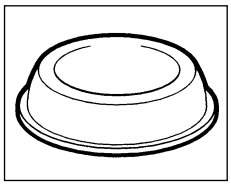
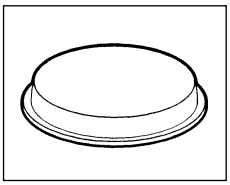
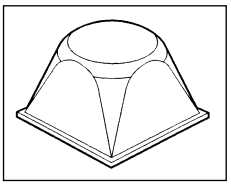
Hemisphere

Product Number	Bumpon SJ-5003	Bumpon SJ-5027, SJ-5327**	Bumpon SJ-5017, SJ-5317**	Bumpon SJ-5009, SJ-5309**
Colors	White, Gray, Brown, Black	White, Gray, Brown, Black, Transparent**	White, Gray, Brown, Black, Transparent**	White, Gray, Brown, Black, Transparent**
Width inches (mm)	0.44 (11.1)	0.63 (16.0)	0.75 (19.0)	0.88 (22.3)
High inches (mm)	0.20 (5.0)	0.31 (7.9)	0.38 (9.6)	0.40 (10.1)
Form	8x7 Matrix	5x8 Matrix	4x10 Matrix	3x8 Matrix

**Use Bumpon SJ-5300 Series to identify transparent products.

Cylindrical

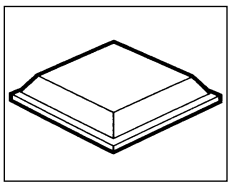
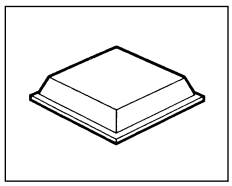
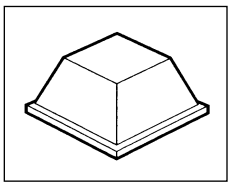
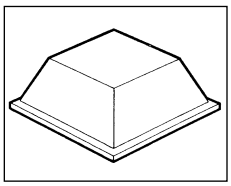





Product Number	Bumpon SJ-5012	Bumpon SJ-5001, SJ-5301**	Bumpon SJ-5744, SJ-5344**	Bumpon SJ-5514
Colors	White, Gray, Brown, Black	Black, Gray, Transparent**	Black, Transparent**	White, Gray, Brown, Black,
Width inches (mm)	0.50 (12.7)	0.50 (12.7)	0.75 (19)	0.81 (20.6)
High inches (mm)	0.14 (3.5)	0.14 (3.5)	0.16 (4.0)	0.52 (13.1)
Form	8x7 Matrix	5x8 Matrix	4x10 Matrix	4x1 Matrix

**Use Bumpon SJ-5300 Series to identify transparent products.

Note: All dimensions ±0.02 inches or ±0.5 mm measured without the adhesive liner.

Tapered Square

Product Number	Bumpon SJ-5007, SJ-5307**	Bumpon SJ-5008, SJ-5308**	Bumpon SJ-5018, SJ-5318**	Bumpon SJ-5023, SJ-5323**
Colors	Black, Transparent**	White, Gray, Brown, Black, Transparent**	White, Gray, Brown, Black, Transparent**	White, Gray, Brown, Black, Transparent**
Width inches (mm)	0.40 (10.2)	0.50 (12.7)	0.50 (12.7)	0.81 (20.5)
High inches (mm)	0.10 (2.5)	0.12 (3.1)	0.23 (5.8)	0.30 (7.6)
Form	6x9 Matrix	8x10 Matrix	8x10 Matrix	4x9 Matrix

**Use Bumpon SJ-5300 Series to identify transparent products.

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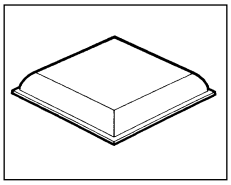
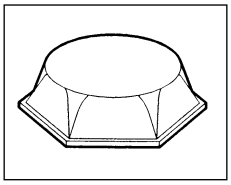
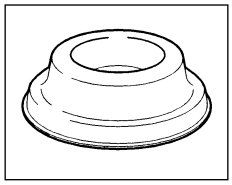
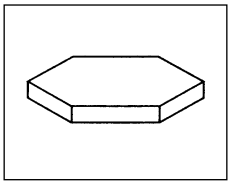
Others

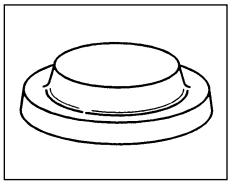
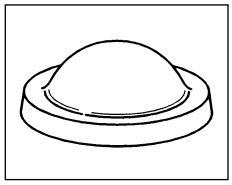
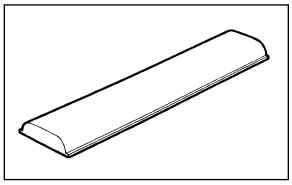
3M™ Bumpon™ Protective Products

				
Product Number	**Bumpon SJ-5705**	**Bumpon SJ-5077, SJ-5377**	**Bumpon SJ-5532**	**Bumpon SJ-5201‡, SJ-5202***
Colors	Black	Black, Transparent	White, Gray, Brown, Black	Light Brown
Width inches (mm)	1.2 (31.75)	0.65 (16.5)	1.88 (47.7)	0.433 (11.0)
High inches (mm)	0.24 (6.1)	0.16 (4.0)	0.66 (16.7)	0.125 (3.2) (Bumpon SJ-5201) 0.063 (1.6) (Bumpon SJ-5202)
Form	Separate Parts	Pads of 39	Separate Parts	11x12 Matrix

*Bumpon SJ-5201 and Bumpon SJ-5202 are die cut parts from Bumpon SJ-5200 Series Rollstock.

Note: Above dimensions ±0.02 inches or ±0.5 mm measured without the adhesive liner.

Top Hat

			
Product Number	**Bumpon SJ-6115**	**Bumpon SJ-6125**	**Bumpon SJ-5510 Continuous Strip***
Colors	Black	Black	Brown, White, Gray, Black
Diameter of Brim, inches (mm)	0.625 (15.9)	0.625 (15.9)	Width, inches (mm): 0.50 (12.7)
Height of Brim, inches (mm)	0.093 (2.36)	0.093 (2.36)	Height, inches (mm): 0.15 (3.88)
Total Height, inches (mm)	0.187 (4.75)	0.250 (6.35)	
Form	5x8 Matrix	5x8 Matrix	50' rolls, 5 rolls per case*

Note: Dimensions for Bumpon SJ-6115 and Bumpon SJ-6125 ±0.005 inches (±0.13 mm) for diameter ±0.015 inches (±0.38 mm) for height measured without adhesive liner.

*Continuous strip can be cut by the customer to a specific length. The surface has lines that appear every 9" on the strip.

Special Products

Custom Shape and Color

3M can match most colors and customize shapes to your specifications. Call your local 3M sales rep to discuss Bumpon Protective Products to meet your needs.

Adhesive for Special Applications

Foam tape and other special adhesives are available for many custom applications.

Special Easy Strip Packaging

Packaged into strips or die cut and perforated pads can help simplify some assembly operations. Product currently available:

- 3M™ Bumpon™ SJ-5518 die cut perforated on pads of 64
- 3M™ Bumpon™ SJ-5508 die cut and perforated on pads of 64
- 3M™ Bumpon™ SJ-5523 4x1 matrix separated by perforations
- 3M™ Bumpon™ SJ-5514 4x1 matrix separated by perforations

Note: Custom Bumpon products may require a qualifying minimum and/or a one time set-up charge. Call your local 3M sales representative for more information.

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Molded Shapes Series

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Typical Physical Properties and Performance Characteristics

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

3M™ Bumpon™ Protective Product Series

	3M Test Method	Bumpon SJ-5000 Bumpon SJ-5500 Bumpon SJ-5700	Bumpon SJ-5300 Bumpon SJ-5400	Bumpon SJ-5200	Bumpon SJ-6100
Hardness, Shore A	ASTM-D2240	70	75	25	70
Resilience, %	ASTM-D2632, 0.125" sample	30	5	20	30
Kinetic Coefficient of Friction (Mk) (Dependent on Test Surface)[1]	ASTM-D1894				
	Stainless Steel	>1	>1	—	>1
	Glass	>1	>1	—	>1
	Formica® laminate	0.9-1.4	0.9-1.4	—	0.9-1.4
	Wood	0.9-1.4	0.9-1.4	—	0.9-1.4
Abrasion Resistance (Taber H18, 1kg) g/1000 cycles[2]	ASTM-C501	1.7-1.9	0.13	—	0.13
Tensile, lbs/in^2 (MPa)[2]	ASTM-D412, Die A	600 (4.1)	740 (5.1)	120 (0.8)	600 (4.1)
Elongation,%[2]	ASTM-D412, Die A	100	65	100	100
Dielectric Strength, volts/mil[2]	ASTM-D1000	200	370	—	200
Stain Resistance	3M-24 hours @ 158°F against white paint 7 days exposed to UV.	No Staining	No Staining	No Staining	No Staining
Flammability Listing	UL-94HB	Pass; UL Recognized	Pass; Not UL Recognized[3]	Not UL Recognized	Pass; UL Recognized (color black only)
Application Temperature		40°F (5°C) to 125°F (52°C)			
Service Temperature	Constant:	-30°F (-34°C) to 150°F (66°C)			
	Intermittent:	Up to 225°F (107°C)			
Solvent and Fuel Resistance	24 hour immersion				
	• 5% Detergent in water	No Apparent Effect			
	• 25% Ammonia in water	No Apparent Effect			
	• Bleach	No Apparent Effect			
	• Hydrochloric Acid (1 Normal Solution)	No Apparent Effect			
	• Diesel Fuel	No Apparent Effect			
	• Auto Oil	No Apparent Effect			
	• Isopropyl Alcohol	Slight Swelling			
	• Heptane	Slight Swelling			
	• Toluol	Considerable Swelling			
	• Lacquer Thinner	Considerable Swelling			

Notes:

[1]Two important laws of friction applicable to Bumpon products are: (1) Friction is independent of the area of contact between solids and (2) friction is proportional to the load between solid surfaces. Thus, if the load (weight) is doubled the force required to cause sliding is also double. This is expressed mathematically as follows: Sliding Force = M_k x weight.

[2]These properties were run on sheet material from the same materials as the individual Bumpon products

[3]Bumpon SJ-5300 Series products are not UL listed.

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Relative Adhesive Performance Characteristics

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

3M™ Bumpon™ Protective Product Series

	Bumpon SJ-5000 Bumpon SJ-5550 Bumpon SJ-5700*	Bumpon SJ-5200 Bumpon SJ-5300 Bumpon SJ-5400	Bumpon SJ-6100
Adhesive	Natural Rubber (R-30)[1]	Acrylic (A-20)[2]	Synthetic Rubber (R-25)[3]
Initial Adhesion			
Low Surface Energy	Good	Poor	Excellent
High Surface Energy	Good	Fair	Excellent
Adhesion (Peel)			
Low Surface Energy	Good	Poor	Excellent
High Surface Energy	Good	Good	Excellent
Static Shear			
75°F (25°C)	Excellent	Excellent	Excellent
120°F (49°C)	Good	Excellent	Good
158°F (70°C)	Poor	Excellent	Fair
Impact Resistance			
Low Surface Energy	Excellent	Poor	Good
High Surface Energy	Excellent	Good	Good
Dynamic Shear	Good	Excellent	Good
Solvent Resistance	Good	Excellent	Good
Age Life	Good	Excellent	Good

*Some Bumpon SJ-5700 Series custom products may use other adhesives in their construction.

1) **Natural Rubber (R-30)** - Used in the construction of 3M™ Bumpon Protective Product Series SJ-5000, SJ-5500, and SJ-5700, this high tack adhesive provides excellent initial adhesion. The adhesive has the capability of providing excellent adhesion to a wide variety of surfaces, including many low surface energy surfaces such as polypropylene, polyethylene, and powder coated paints. This adhesive system shows reduced shear properties at elevated temperatures.

2) **Acrylic (A-20)** - Used in the construction of 3M™ Bumpon Protective Product Series SJ-5200, SJ-5300, and SJ-5400, this high strength adhesive system provides excellent shear strength properties. The adhesive has the capability of providing excellent adhesion to many high surface energy substrates such as metals, ABS, polycarbonate, and acrylic. When adhesion is required on low surface energy/substrates (e.g., polypropylene, polyethylene, etc.), acrylic-based adhesives do not perform as well as rubber-based adhesives.

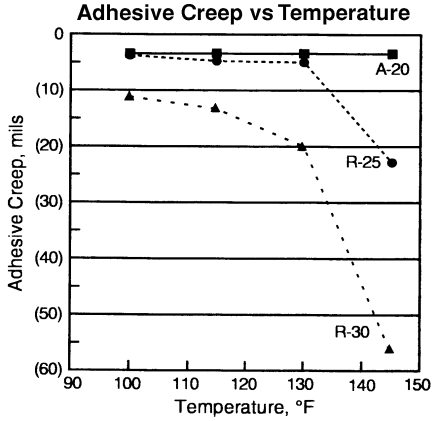
3) **Synthetic Rubber (R-25)** - Used in the construction of 3M™ Bumpon Protective Product Series SJ-6100, this very high tack adhesive system provides excellent initial adhesion. The adhesive has the capability of providing excellent adhesion to a wide variety of surfaces, including many low surface energy surfaces such as polypropylene, polyethylene, and powder coated paints. This adhesive system shows reduced shear properties at elevated temperatures.

Adhesive Performance

Static Shear Strength

This figure on static shear illustrates typical performance characteristics of the adhesive systems used on molded Bumpon products

3M Test Method-Inclined Plane Static Shear Test Method; 30° incline, tested on ABS using Bumpon SJ-5312 (A-20), Bumpon SJ-6112 (R-25) and Bumpon SJ-5012 (R-30) products.
2 lb. load per Bumpon products.
Measured time of creep: 15 minutes.



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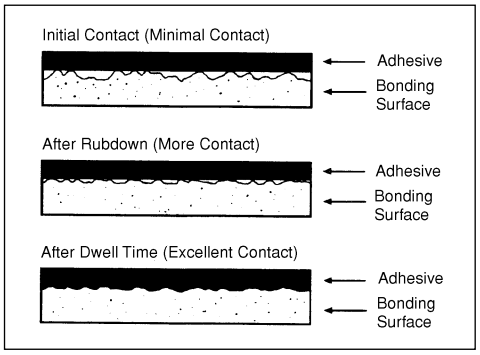
Application Techniques

To obtain maximum adhesion, surfaces must be unified, dry, and free of contaminants. Surface contact is essential to adhesive performance. To maximize contact on a substrate:

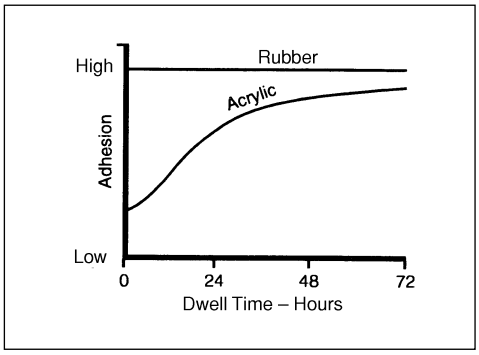
- Clean surfaces with low strength solvent such as isopropyl alcohol (rubbing alcohol) or heptane.*
- Apply firm pressure to help increase the cold flow and contact of the adhesive with the substrate.
- Allow time (dwell) to increase the surface contact and adhesion (see illustrations below).

***Note:** Be sure to follow the manufacturer's precautions and directions for use when using solvents.

Adhesive Surface Contact



Rubber Adhesive (R-30) vs. Acrylic Adhesive (A-20) Bond Build Up



Environmental Exposure

Colored and transparent 3M™ Bumpon™ Protective Products are intended for interior applications where resilience and other physical properties will remain unchanged. When exposed to UV light for extended periods some slight discoloration or yellowing may occur.

Bumpon products may be used outdoors in a protected area with some discoloration possible; colored Bumpon products may chalk.

Simultaneous exposure to high humidity and temperature may degrade (soften) the Bumpon product urethane.

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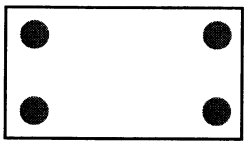
Product Selections Considerations

Alignment

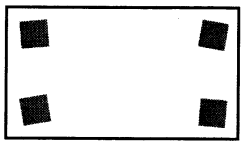
Alignment is more difficult with a rectangular shaped 3M™ Bumpon™ Product when no recess is provided.

Circular shaped product



(top view)

Rectangular shaped product

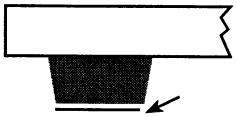


(top view)

Point of Contact

The point of contact provides either a large contact area or a very small (point) contact area depending on the shape of the Bumpon product.

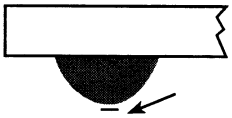
Flat



(side view)

- Increased load capacity
- Better wear resistance

Hemisphere



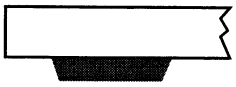
(side view)

- Increased sound dampening
- Increased energy absorption

Profile

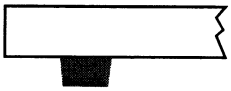
The profile is defined by the height and the diameter (or width) of the Bumpon product.

Low Profile



- Increased load capacity
- Less susceptible to being sheared off substrate

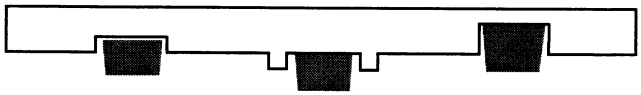
High Profile



- Better hear dissipation
- Not recommended if sideways shearing is possible

Recess

A recess is not necessary; however, there are several benefits to providing a recess.



- Provides target area for the Bumpon product during attachment process
- Improves adhesion performance: impact absorption and shear strength
- Provides neater appearance
- Provides uniform location

Shelf Life

Shelf life is 18 months from date of manufacture when stored in original cartons at 60-80°F (15-27°C) and 40-50% relative humidity.

3M™ Bumpon™ Protective Products

Molded Shapes Series

SJ-5000 • SJ-5200 • SJ-5300 • SJ-5400 • SJ-5500 • SJ-5700 • SJ-6100

Precautionary Information

Refer to Product Label and Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, call 1-800-364-3577 or (651) 737-6501.

For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-800-362-3550 or visit www.3M.com/industrialtape. Address correspondence to: 3M Industrial Adhesives and Tapes Division, Building 21-1W-10, 900 Bush Avenue, St. Paul, MN 55106. Our fax number is 651-733-9175. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.

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ISO 9002

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9002 standards.

3M

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St. Paul, MN 55106

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40% pre-consumer
10% post-consumer

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