



Bumpon™ Protective Products

Resilient Rollstock

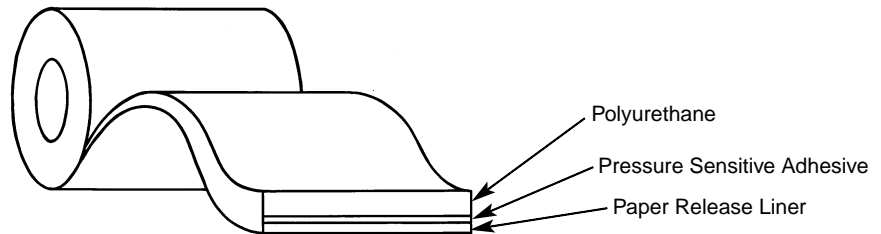
SJ-5800 • SJ-5900 • SJ-6000 • SJ-6200 Series

Technical Data

Product Description

3M™ Bumpon™ Resilient Rollstock Products are polyurethane sheet materials produced with aggressive pressure-sensitive adhesives.

3M™ Bumpon™ Resilient Rollstock Product	Thickness		Polyurethane Hardness, Shore A	Polyurethane Surface Finish	Adhesive Type
	Inches	mm			
SJ-5382	1/32	0.8	65	matte	R-30 (natural rubber)
SJ-5816	1/16	1.6			
SJ-5808	1/8	3.2			
SJ-5916	1/16	1.6	32 (foam)	matte	A-20 (acrylic)
SJ-5908	1/8	3.2			
SJ-5904	1/4	6.4			
SJ-6032	1/32	0.8	65	matte	A-20 (acrylic)
SJ-6016	1/16	1.6			
SJ-6008	1/8	3.2			
SJ-6232	1/32	0.8	65	matte	R-25 (synthetic rubber)
SJ-6216	1/16	1.6			
SJ-6208	1/8	3.2			



Features

- Can be die cut to a variety of shapes and sizes.
- Excellent skid-resistance, high coefficient of friction.
- Excellent resistance to marring or staining.*
- Long aging resiliency – will not crack or harden.*
- Excellent cushioning properties.
- Excellent abrasion resistance.
- Vibration and shock damping.
- Easy application – pressure-sensitive backing.

*Resulting from a urethane composition which contains no plasticizers.

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Application Ideas

- Die cut to circles or squares for use as skid-resistant feet on computers, calculators, electric housewares, electronic equipment, desk top equipment, etc.
- Die cut for gasket application.
- Skid-resistant surface on floor.
- Cushions or spacers within electronic devices.
- Selective masking for sandblast operation.
- Anti-chafe protection.
- Door kick pads.
- Corner protection strips.
- Roll covering for textile industry and other web feed machinery.

Product Constructions

	3M™ Bumpon™ Resilient Rollstock Series												
	SJ-5800			SJ-5900			SJ-6000			SJ-6200			
Elastomer	Polyurethane			Polyurethane Foam			Polyurethane			Polyurethane			
Elastomer Finish	matte			matte			matte			matte			
Release Liner	White 60 lb./ream silicone coated paper, printed 3M Logo			White 80 lb./ream silicone coated paper, printed 3M Logo			White 80 lb./ream silicone coated paper, printed 3M Logo			White 60 lb./ream silicone coated paper, printed 3M logo			
Adhesive	R-30 (natural rubber)			A-20 (acrylic)			A-20 (acrylic)			R-25 (synthetic rubber)			
	3M™ Bumpon™ Resilient Rollstock Product												
	SJ-5832	SJ-5816	SJ-5808	SJ-5916	SJ-5908	SJ-5904	SJ-6032	SJ-6016	SJ-6008	SJ-6232	SJ-6216	SJ-6208	
Color	Black Brown	Black Brown	Black Brown	Black	Black	Black	Black Brown	Black Brown	Black Brown	Black	Black	Black	
Thickness*	in. 0.031 (0.8)	1/16 0.062 (1.6)	1/8 0.125 (3.2)	1/16 0.062 (1.6)	1/8 0.125 (3.2)	1/4 0.250 (6.4)	1/32 0.031 (0.8)	1/16 0.062 (1.6)	1/8 0.125 (3.2)	1/32 0.031 (0.8)	1/16 0.062 (1.6)	1/8 0.125 (3.2)	
Thickness Tolerance	± in. ± (mm)	0.005 (0.13)	0.007 (0.18)	0.010 (0.25)	0.010 (0.25)	0.015 (0.38)	0.020 (0.50)	0.005 (0.13)	0.007 (0.18)	0.010 (0.25)	0.005 (0.13)	0.007 (0.18)	0.010 (0.25)
Roll Length	yd.	72	36	36	36	36	18	72	36	36	72	36	36
Roll Width**													
Standard	in. (mm)	4.5 (114.3)	4.5 (114.3)	4.5 (114.3)	4.5 (114.3)	4.5 (114.3)	4.5 (114.3)	4.5 (114.3)	4.5 (114.3)	4.5 (114.3)	4.5 (114.3)	4.5 (114.3)	4.5 (114.3)
Minimum	in. (mm)	0.5 (12.7)	0.5 (12.7)	1 (25.4)	0.5 (12.7)	0.5 (12.7)	1 (25.4)	0.5 (12.7)	0.5 (12.7)	1 (25.4)	0.5 (12.7)	0.5 (12.7)	1 (25.4)
Maximum	in. (mm)	13.5 (342.9)	13.5 (342.9)	13.5 (342.9)	13.5 (342.9)	13.5 (342.9)	13.5 (342.9)	13.5 (342.9)	13.5 (342.9)	13.5 (342.9)	9 (228.6)	9 (228.6)	9 (228.6)
Slitting Tolerance	± in. ± (mm)	1/32 0.031 0.8			1/32 0.031 0.8			1/32 0.031 0.8			1/32 0.031 0.8		

*ASTM D-3767 procedure A (3.2 psi) measured without liner. **Non-standard sizes may be subject to minimum order requirements.

Special Products of the Design-A-Bump Program

Custom Thickness: 3M can customize thickness to your specifications.

Note: The capability range for Bumpon resilient rollstock series SJ-5800, SJ-6000, and SJ-6200 is 1/32 in. minimum and 1/4 in. maximum.

The capability range for Bumpon resilient rollstock series SJ-5900 is 1/16 in. minimum and 5/16 in. maximum.

Custom Color: 3M can match most colors to your specifications.

Note: Special products require a qualifying minimum and one-time color matching charge. Call your local 3M Industrial Adhesives and Tapes Division Sales Representative for more information about special products of the Design-A-Bump Program.

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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.

Property	Test Method	3M™ Bumpon™ Resilient Rollstock Series			
		SJ-5800	SJ-5900	SJ-6000	SJ-6200
Hardness, Shore A	ASTM-D-2240	70	36	70	70
Approximate Density, lb./ft. ³ (g/cm ³)		80 (1.3)	40 (0.64)	80 (1.3)	80 (1.3)
Resilience, %	ASTM-D-2632 (0.125 in. sample)	28 - 34	18 - 20	28 - 34	28 - 34
Kinetic Coefficient of Friction*	ASTM-D-1894				
	Stainless Steel	> 1	> 1	> 1	> 1
	Glass	> 1	> 1	> 1	> 1
	Formica® laminate	0.9 - 1.4	0.8 - 1.4	0.9 - 1.4	0.9 - 1.4
	Wood	0.9 - 1.4	0.8 - 1.4	0.9 - 1.4	0.9 - 1.4
*Two important laws of friction applicable to Bumpon resilient rollstock are: (1) Friction is independent of the area of contact between solids. (2) Friction is proportional to the load between solid surfaces. Thus, if the load (weight) is doubled, the force required to cause surface sliding is also doubled. This is expressed mathematically as follows: Sliding force = (kinetic coefficient of friction) x (weight)					
Abrasion Resistance Taber H 18, 1 kg, g/1000 cycles	ASTM-C-501	1.7 - 1.9	1.8 - 2.0	1.7 - 1.9	1.7 - 1.9
Tensile lb./in. ² (kPa)	ASTM-D-412, Die A	600 (4140)	120 (830)	600 (4140)	600 (4140)
Elongation, %	ASTM-D-412, Die A	100	100	100	100
Compression Set, %	ASTM-D-1056 (50% deflection)	-	12	-	-
		-	14	-	-
	ASTM-D-395 (25% deflection)	3	-	3	3
		4	-	4	4
Dielectric Strength, volts/mil	ASTM-D-1000	200	140	200	200
Stain Resistance	3M - 24 hrs. @ 158°F against white paint, 7 days exposed to UV	No staining observed			
Flammability Listing	UL94HB	UL recognized (except SJ-5916 product)			
Ozone and Oxygen Resistance	3M - 30 days @ 50 ppm ozone	No visual deterioration			
Solvent and Fuel Resistance	3M - 24 hr. 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 effect (swelling)			
	Heptane	Slight effect (swelling)			
	Toluol	Considerable effect (swelling)			
Lacquer Thinner	Considerable effect (swelling)				

Load Tolerance The "recommended" maximum load which Bumpon resilient rollstock series SJ-5800, and SJ-6000 will support is 100 psi (690 kPa) at 70°F (21°C) to 120°F (49°C).

Environmental Performance Bumpon resilient rollstock is intended for interior applications where resilience and all other physical properties will remain unchanged. When exposed to UV light for extended periods, some discoloration may occur. Bumpon resilient rollstock may be used outdoors in a protected area with some discoloration and chalking possible.

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Relative Adhesive Performance Characteristics

The following table provides relative adhesive performance characteristics of the adhesive systems used in the construction of 3M™ Bumpon™ Resilient Rollstock.

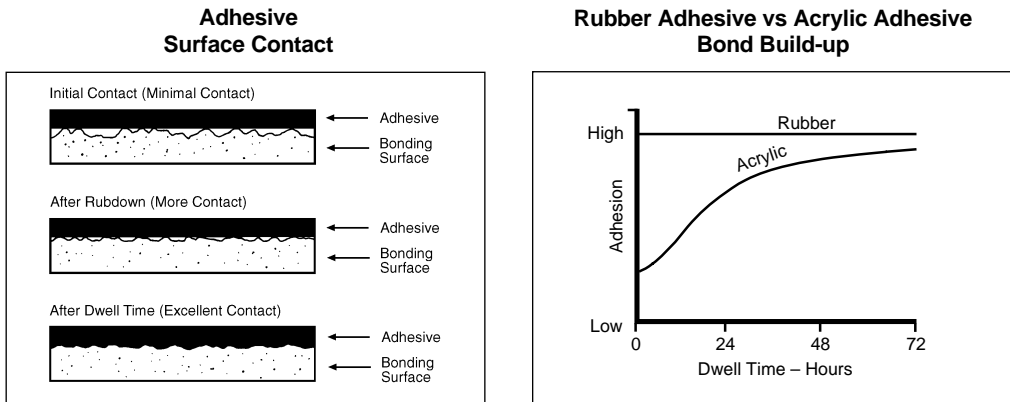
	3M™ Bumpon™ Resilient Rollstock		
	SJ-5800 Series	SJ-5900 Series SJ-6000 Series	SJ-6200 Series
Adhesive:	Natural Rubber R-30	Acrylic A-20	Synthetic Rubber R-25
Adhesion (Peel)			
Low Surface Energy:	Good	Poor	Excellent
High Surface Energy:	Good	Good	Excellent
Static Shear			
75°F (25°C):	Excellent	Excellent	Excellent
120°F (49°C):	Fair	Excellent	Good
158°F (70°C):	Poor	Excellent	Fair
Initial Adhesion			
Low Surface Energy:	Good	Poor	Excellent
High Surface Energy:	Good	Fair	Excellent
Solvent Resistance:	Good	Excellent	Good
Age Life:	Good	Excellent	Good

Application Techniques

Application Temperature: 40°F (5°C) to 125°F (52°C)
Service Temperature: -30°F (-34°C) to 150°F (66°C)
 225°F (107°C) intermittent exposure

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



Note: Product selection is ultimately the responsibility of the user and should conduct their own tests under actual use and storage conditions to determine whether product is fit for a particular purpose and user's method of application.

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Adhesive Description

Natural Rubber (R-30) – Used in the construction of 3M™ Bumpon™ Resilient Rollstock SJ-5800 Series products. This high tack adhesive system provides excellent initial adhesion and 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 (see figure below on Static Shear Strength).

Acrylic (A-20) – Used in construction of 3M™ Bumpon™ Resilient Rollstock SJ-5900 and SJ-6000 Series products. 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 (ie, polypropylene, polyethylene, etc.) acrylic-based adhesives do not perform as well as rubber-based adhesives.

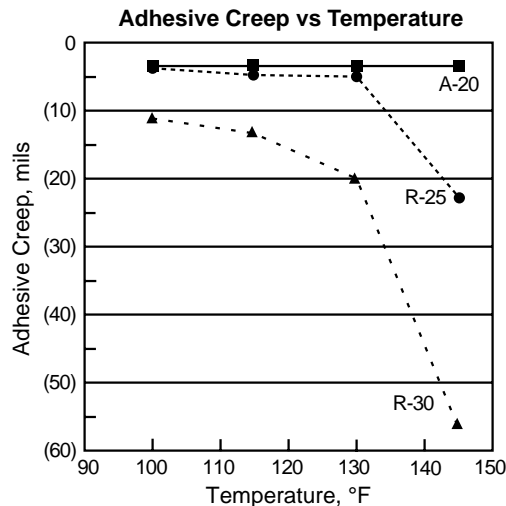
Synthetic Rubber (R-25) – Used in the construction of 3M™ Bumpon™ Resilient Rollstock SJ-6200 Series products. This very high tack adhesive system provides excellent initial adhesion and has the capability of providing excellent adhesion to a wide variety of surfaces including many low surface energy surfaces such as polypropylene, polyethylene and powder coated paints. This adhesive system shows reduced shear properties at elevated temperatures (see figure below on Static Shear Strength).

Adhesive Performance

The following figure on static shear and table on peel adhesion provide representative performance characteristics of the adhesive systems used in the construction of Bumpon resilient rollstock SJ-5800, SJ-5900, SJ-6000, and SJ-6200 series products.

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

Static Shear Strength



3M Test Method – Inclined Plane Static Shear Test Method; 30° incline, tested on ABS using 1/2 inch diameter die cuts from 3M™ Bumpon™ Resilient Rollstock Products SJ-5816, SJ-6016, and SJ-6216. 2 lb. load per 1/2 inch diameter die cut. Measured time of creep: 15 minutes.

90° Peel Adhesion

Substrate	Peel Force, oz. Per 1/2 inch		
	3M™ Bumpon™ Resilient Rollstock		
	SJ-5800 Series	SJ-6000 Series	SJ-6200 Series
	Natural Rubber R-30	Acrylic A-20	Synthetic Rubber R-25
Polypropylene	25	3	52
Polystyrene	25	11	55
ABS	25	25	55
Stainless Steel	22	25	55
Aluminum	22	25	55

3M Test Method TM-2011; 72 hour dwell, 1/2 inch wide samples pulled at 12 inches per minute. Testing completed using Bumpon resilient rollstock products SJ-5816, SJ-6016, and SJ-6216

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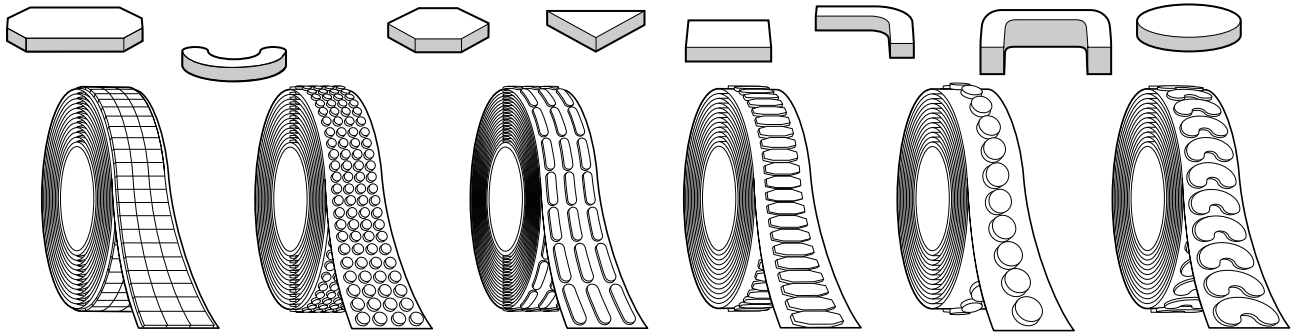
SJ-5800 • SJ-5900 • SJ-6000 • SJ-6200 Series

Die Cut Considerations

- Very important that knives be sharp.
- Although rotary die cutting can be used for thicker materials ($\geq 1/16$ inches), distortion in the die cut shape is probably using this die cutting method. Flat bed die cutting is recommended for thicker materials.
- The R-25 (synthetic rubber) adhesive system is very firm (tough). It can be more difficult to die cut versus the R-30 and A-20 adhesive systems. Also, the R-25 adhesive system is inherently stringy; as a result, if the adhesive is not thoroughly cut, the adhesive may have a tendency to string-out when the die cut parts are removed from the release liner quickly or by using a snapping motion. The adhesive string-out will not diminish the performance of the product.
- Some re-welding (tendency of the adhesive system to flow back together after die cutting) is possible with the R-25 adhesive system. Exposure to high temperature (greater than the recommended storage temperature of 60° to 80°F [16° to 27°C]) in combination with time and pressure will increase the tendency of re-welding.

Die Cut Examples

3M™ Bumpon™ Resilient Rollstock Products can be die cut to a variety of shapes and sizes. The following examples illustrate just a few of the possibilities.



Storage

Store in original cartons at 60° to 80°F (16° to 27°C) and 40 to 50% relative humidity.

Shelf Life

To obtain best performance, use this product within 18 months from date of manufacture.

Product Use

All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

Warranty and Limited Remedy

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ISO 9001:2000

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001:2000 standards.

Industrial Business Industrial Adhesives and Tapes Division

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Printed in U.S.A.
©3M 70-0709-4504-6 (2001/5/05)