



Bumpon™ Protective Products

Resilient Rollstock

SJ-5800 • SJ-5900 • SJ-6000

SJ-6200 Series

FOD# 1511

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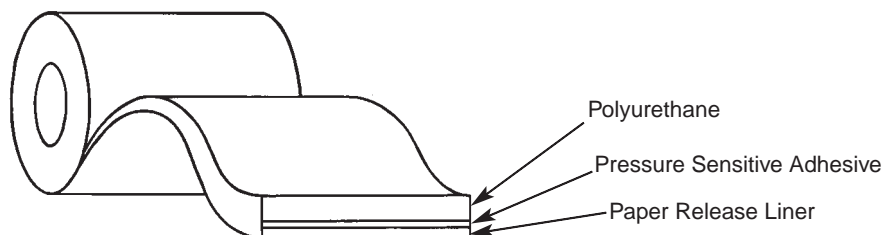
Technical Data

October 1, 1998

Product Description

Bumpon Resilient Rollstock Products are polyurethane sheet materials produced with aggressive pressure sensitive adhesives.

Series	Products	Thickness		Polyurethane Hardness, Shore A	Polyurethane Surface Finish	Adhesive Type
		inches	mm			
SJ-5800	SJ-5832	1/32	0.8	65	matte	R-30 (natural rubber)
	SJ-5816	1/16	1.6			
	SJ-5808	1/8	3.2			
SJ-5900	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-6000	SJ-6032	1/32	0.8	65	matte	A-20 (acrylic)
	SJ-6016	1/16	1.6			
	SJ-6008	1/8	3.2			
SJ-6200	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.

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

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)		
Products	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. in. (mm)	1/32 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 ± in. Tolerance ± (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 ± in. 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 SJ-5800, SJ-6000, and SJ-6200 series Rollstock is 1/32 in. minimum and 1/4 in. maximum.

The capability range for SJ-5900 series Rollstock 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 Tape and Specialties 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	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 - 1.1	0.9 - 1.4	0.9 - 1.4
	Wood	0.9 - 1.4	0.8 - 1.0	0.9 - 1.4	0.9 - 1.4

*Two important laws of friction applicable to Bumpon brand Rollstock 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 is to cause surface sliding is also doubled. This is expressed mathematically as follows:

$$\text{Sliding force} = (\text{kinetic coefficient of friction}) \times (\text{weight})$$

Abrasion Resistance	ASTM-C-501	1.7 - 1.9	1.8 - 2.0	1.7 - 1.9	1.7 - 1.9
Taber H 18, 1 kg, g/1000 cycles					
Tensile	lb./in. ² (kPa)	ASTM-D-412, Die A	600 (4140)	120 (830)	600 (4140)
Elongation, %	ASTM-D-412, Die A	100	100	100	100
Compression Set, %	ASTM-D-1056	22 hrs. @ 70°F	—	12	—
	(50% deflection)	22 hrs. @ 158°F	—	14	—
	ASTM-D-395	22 hrs. @ 70°F	3	—	3
	(25% deflection)	22 hrs. @ 158°F	4	—	4
Dielectric Strength	volts/mil	ASTM-D-1000	200	140	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 SJ-5800 and SJ-6000 series Rollstock will support is 100 psi (690 kPa) at 70°F (21°C) to 120°F (49°C).				
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.				
Environmental Performance	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. Resilient Rollstock may be used outdoors in a protected area with some discoloration and chalking possible.				

Relative Adhesive Performance Characteristics

The following table provides relative adhesive performance characteristics of the adhesive systems used in the construction of SJ-5800, SJ-5900, SJ-6000 and SJ-6200 series Rollstock products.

	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	Excellent	Excellent	Excellent
120°F	Fair	Excellent	Good
158°F	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 Information

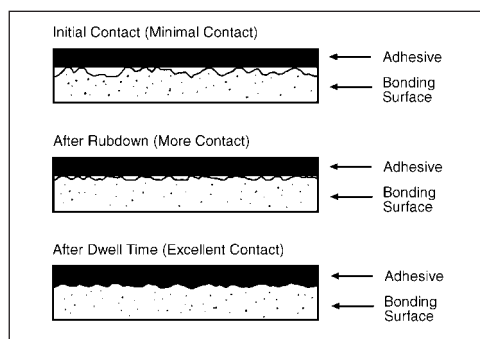
Application Temperature: 40°F (5°C) to 125°F (52°C)

Service Temperature: -30°F (-34°C) to 150°F (66°C)
225°F (107°C) intermittent exposure

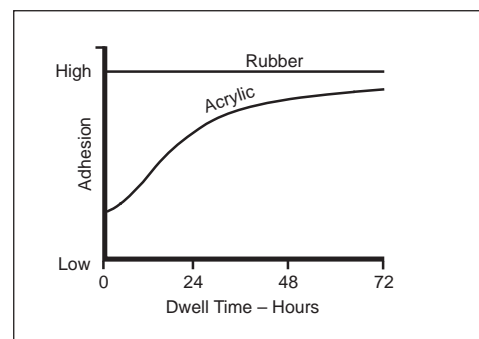
To obtain maximum adhesion, surfaces must be unified, dry, and free of contaminants. Surface contact is essential to adhesive performance. To maximize contact on a substrate:

- 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).

Adhesive Surface Contact



Rubber Adhesive vs. Acrylic Adhesive Bond Build Up



Note: Product selection is ultimately the user's responsibility. Users 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.

Adhesive Description

Natural Rubber (R-30) – Used in the construction of 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).

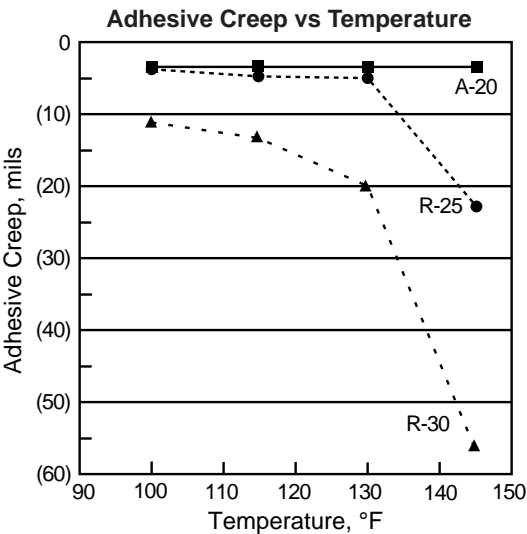
Acrylic (A-20) – Used in construction of SJ-5900 and SJ-6000 series products. This high strength adhesive system provides excellent shear strength properties. The adhesive has the capability of providing excellent adhesion to many high surface energy substrates such as metals, ABS, polycarbonate, and acrylic. When adhesion is required on low surface energy substrates (e.g., polypropylene, polyethylene, etc.) acrylic-based adhesives do not perform as well as rubber-based adhesives.

Synthetic Rubber (R-25) – Used in the construction of 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 SJ-5800, SJ-5900, SJ-6000 and SJ-6200 series Rollstock products.

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 SJ-5816, SJ-6016, and SJ-6216 Rollstock products. 2 lb. load per 1/2 inch diameter die cut. Measured time of creep: 15 minutes.

90° Peel Adhesion

Peel Force, oz. per 1/2 inch

Substrate	Peel Force, oz. per 1/2 inch		
	SJ-5800 series	SJ-5900 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 SJ-5816, SJ-6016, and SJ-6216 Rollstock products.

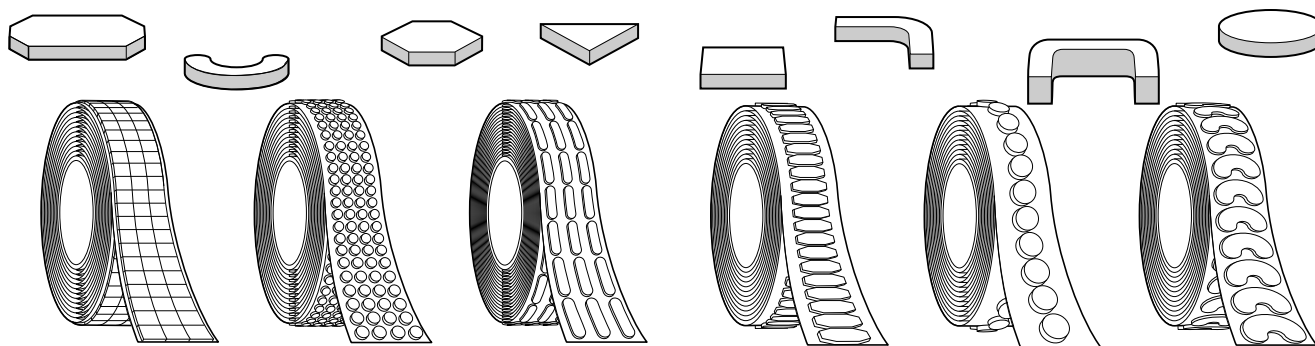
Note: This technical information and data should be considered representative or typical only and should not be used for specification purposes.

Die Cutting Considerations

- It is 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 probable 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 temperatures (greater than the recommended storage temperature of 60°F to 80°F) in combination with time and pressure will increase the tendency of re-welding.

Die Cut Examples

Bumpon Rollstock products can be die cut to a variety of shapes and sizes. The following examples illustrate just a few of the possibilities.



Technical Information and Data

The technical information and data, recommendations, and other statements provided are based on tests or experience which 3M believes to be reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use

Please remember that many factors can affect the use and performance of a 3M product in a particular application. The materials to be bonded with the product, the surface preparation of those materials, the product selected for use, the conditions in which the product is used, and the time and environmental conditions in which the product is expected to perform are among the many factors that can affect the use and performance of a 3M product. Given the variety of factors that can affect the use and performance of a 3M product, some of which 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.

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ISO 9002



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