



Bumpon™ Protective Products

Top Hat Design

SJ-6115 • SJ-6125

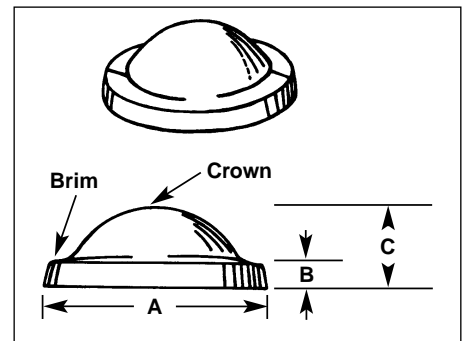
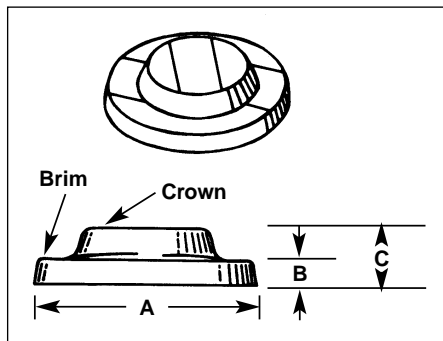
Technical Data

January, 2003

Product Description

3M™ Bumpon™ Protective Product SJ-6115 and SJ-6125 are pressure-sensitive adhesive-backed polyurethane products that can be used as feet, stops, spacers, and protectors in many applications. These products have a very high tack adhesive system (synthetic rubber, R-25) which has the capability of providing excellent adhesion to a wide variety of substrates including many low surface energy substrates such as polypropylene, polyethylene, and powder coated paints.

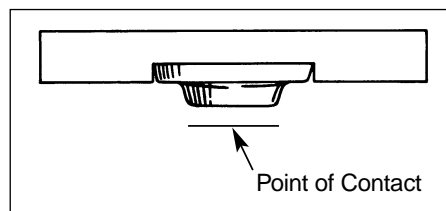
Construction



Product Number	Bumpon SJ-6115	Bumpon SJ-6125
Crown Shape	cylindrical	hemisphere
Color	black	black
Pad Form	5 x 8 matrix	5 x 8 matrix
Dimensions		
A - Diameter of Brim, inches (mm)	0.625 (15.9)	0.625 (15.9)
B - Height of Brim, inches (mm)	0.093 (2.36)	0.093 (2.36)
C - Total Height, inches (mm)	0.187 (4.75)	0.250 (6.35)
Dimension Tolerances	Diameter ± 0.005 in. (± 0.13 mm), Height ± 0.015 inches (± 0.38 mm) measured without the adhesive liner.	
Elastomer	polyurethane	polyurethane
Adhesive	synthetic rubber (R-25)	synthetic rubber (R-25)

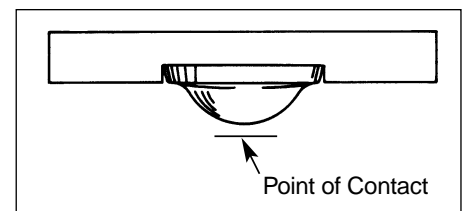
Top Hat Design Product Selection Considerations

The point of contact provides either a large contact area or a very small (point) contact area depending on the shape of the crown of the 3M™ Bumpon™ Product.



Cylindrical Crown

- Increased load capacity.
- Better wear resistance.



Hemisphere Crown

- Increased sound dampening.
- Increased energy absorption.

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Typical Physical Properties

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™ Protective Products SJ-6115 • SJ-6125
Hardness, Shore A	ASTM-D-2240	70
Approximate Density, lb./ft. ³ (gm/cm ³)		80 (1.3)
Resilience, %	ASTM-D-2632 (0.125 in. sample)	28-34
Kinetic Coefficient of Friction*	ASTM-D-1894	
	Stainless Steel	> 1
	Glass	> 1
	Formica® laminate	0.9 - 1.4
Wood	0.9 - 1.4	
*Two important laws of friction applicable to 3M™ Bumpon™ 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 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
Tensile lb./in. ² (kPa)	ASTM-D-412, Die A	600 (4140)
Elongation, %	ASTM-D-412, Die A	100
Dielectric Strength, volts/mil	ASTM-D-1000	200
Stain Resistance	3M - 24 hrs. @ 158°F against white paint, 7 days exposed UV	no staining observed
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)
Flammability Listing	UL-94HB	Pass; UL recognized (color black only)
Service Temperature		-30°F (-34°C) to 150°F (66°C); 225°F (107°C) intermittent exposure.
Application Temperature		40°F (5°C) to 125°F (52°C)

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Relative Adhesive Performance Characteristics

The following table provides relative adhesive performance characteristics of the synthetic rubber (R-25) adhesive system used in the construction of 3M™ Bumpon™ Protective Product SJ-6115 and SJ-6125 in comparison to the standard R-30 and A-20 Bumpon adhesive systems used in the construction of the 3M™ Bumpon™ Protective Product Series 5000, 5500, 5300, and 5400.

3M™ Bumpon™ Protective Product Series

	Bumpon SJ-5000 Bumpon SJ-5500	Bumpon SJ-5300 Bumpon SJ-5400	Bumpon SJ-6115 Bumpon SJ-6125 Bumpon SJ-6100
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
Impact Resistance			
Low Surface Energy	Excellent	Poor	Good
High Surface Energy	Excellent	Good	Good
Dynamic Shear	Good	Excellent	Good
Initial Adhesion			
Low Surface Energy	Good	Poor	Excellent
High Surface Energy	Good	Fair	Excellent
Adhesion Buildup	Some	Gradual	Some
Solvent Resistance	Good	Excellent	Good
Age Life	Good	Excellent	Good

Environmental Performance

3M™ Bumpon™ Products are intended for interior applications where resilience and other physical properties will remain unchanged. Exposure to UV light for extended periods may cause slight discoloration or yellowing. Bumpon products may be used outdoors in a protected area with possible discoloration and chalking. Simultaneous exposure to high humidity and temperature may degrade (soften) the product composition.

Features

- Ideal for many permanent applications
- Virtually impossible to remove when attached in recess cavity
- Extremely difficult to remove when not attached in recess cavity

Application Techniques

To obtain maximum adhesion, surfaces must be unified, dry, and free of contaminants. Clean surfaces with low strength solvents such as isopropyl alcohol (rubbing alcohol) or heptane.* Apply firm pressure to help increase the contact of the adhesive with the substrate.

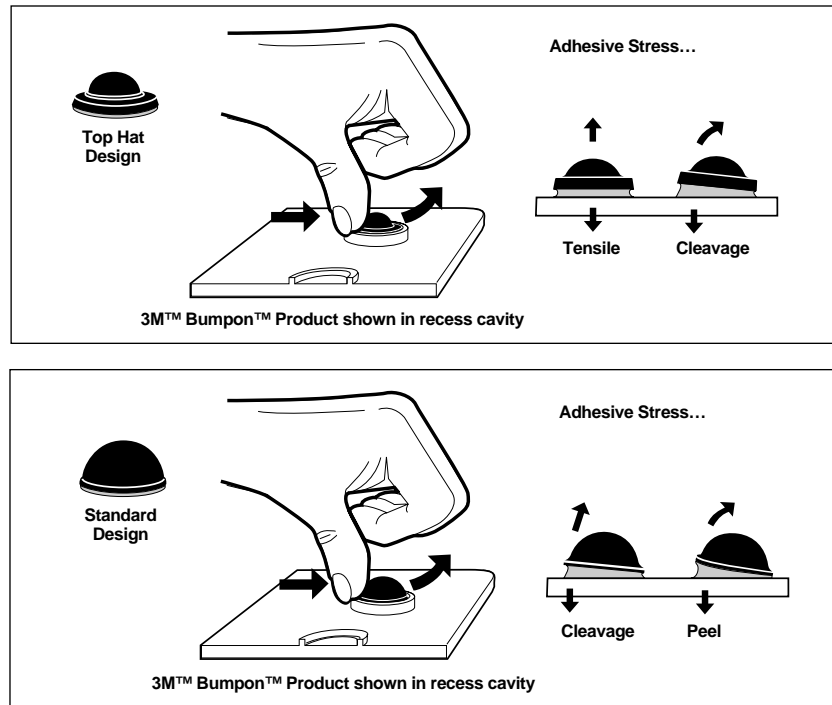
***Note:** Be sure to follow the manufacturer’s precautions and directions for use when using solvents.

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Adhesive Stress – Top Hat Design versus Standard Design



Top Hat Design versus Standard Design – Note from the diagram that the adhesive stress on the Top Hat design is a combination of tensile and cleavage versus the adhesive stress on the standard design which is a combination of cleavage and peel. As a result of the Top Hat design which decreases leverage, more of the adhesive is contributing to the overall strength at one time.

Adhesive Stress - Types and Definitions

Tensile: Forces are perpendicular to the bond plane. Stress is distributed over the entire bond area. All the adhesive contributes to the bond strength.

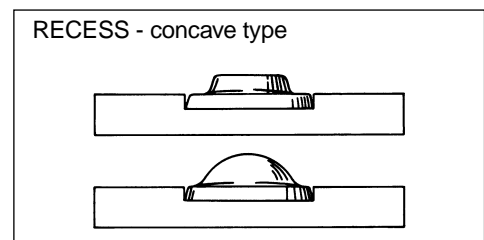
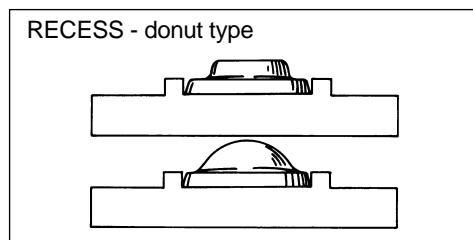
Cleavage: Forces are concentrated at the edge of the bond. Not all the bond area is contributing to the overall strength at one time.

Peel: Forces are confined to the edge of the bond. At least one surface is flexible. Even less adhesive contributes to the bond strength than in cleavage.

Shear: Forces are parallel to the bond plane. As with tensile, stress is distributed over the entire bond area. Shear is typically not a factor when 3M™ Bumpon™ Products are attached in a recess cavity.

Benefits of Providing Recess

- Improves adhesive performance – shear strength and impact absorption.
- Provides neat appearance.
- Provides target area for 3M™ Bumpon™ Product during production.
- Provides uniform location.



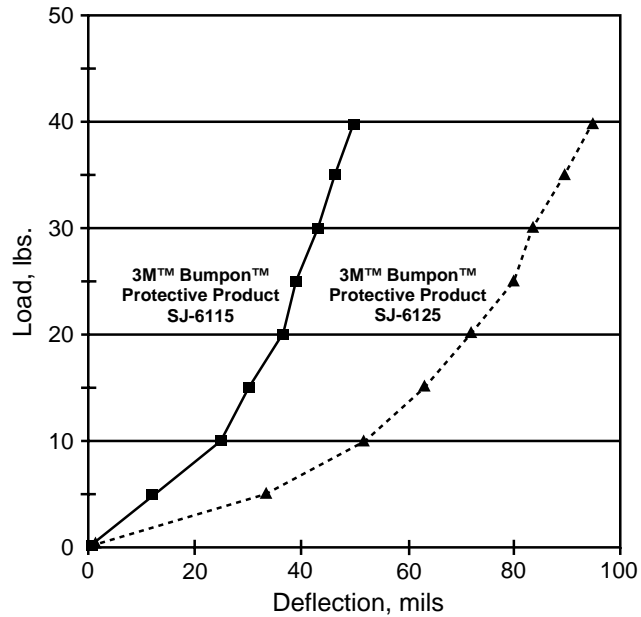
To obtain best results with the Top Hat Design Products, the depth of the recess cavity should be equal to or slightly deeper than the height of the brim of the Bumpon product.

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Compression Force Deflection Curves



Load Tolerance The recommended maximum loads which 3M™ Bumpon™ Protective Products will support under a continuous load are 15 lbs. and 10 lbs., respectively, per Bumpon product.

Custom Top Hat Design Products through the Design-A-Bump Program

Custom Shapes

3M can customize Top Hat Design Products for your specific requirements.

Top Hat Design Custom Shape Suggestions

If the product is placed in a recessed cavity:

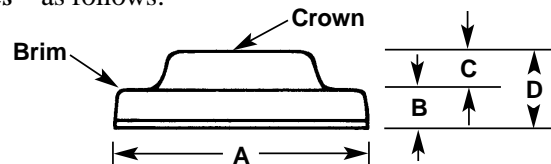
- The depth of the recess cavity should be equal to or slightly deeper than the height of the brim of the 3M™ Bumpon™ Product.
- The base diameter of the crown should be approximately 60-80% of the diameter of the brim of the Bumpon product.

Custom Colors

3M can match most colors to your specifications.

Top Hat Design Dimension Tolerances

Dimension tolerances for Top Hat Design Products are as follows:



A	Diameter of Brim, inches (mm)	± 0.005 (0.13)
B	Height of Brim, inches (mm)	± 0.015 (0.38)
C	Height of Crown, inches (mm)	± 0.005 (0.13)
D	Total Height, inches (mm)	± 0.015 (0.38)

Note: 3M™ Bumpon™ Custom Molded Protective Product “design-a-bump” products may require a qualifying minimum order quantity and a one-time set-up charge. Call your local 3M sales representative for more information about capabilities and special requirements for this custom program.

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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.

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



Industrial Business
Industrial Adhesives and Tapes Division
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Recycled Paper
40% pre-consumer
10% post-consumer

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