



Scotchmate™ Reclosable Fasteners

SJ 3526 and SJ 3527

Nylon Hook and Loop

Technical Data

February, 2001

(Supersedes: June 1997, March 1996)

Product Description

3M™ Scotchmate™ Reclosable Fasteners offer advanced closure alternatives to zippers, screws, snaps, hooks, bolts and more. They offer greater design flexibility, faster product assembly, smoother and cleaner exterior surfaces and improved product performance in many applications. The hook and loop fasteners consist of two strips of nylon fabric which engage to form a quick fastening attachment. Simply pull the strips apart by hand to disengage.

The woven hook is covered with tiny, stiff hooks, about 300 hooks per square inch (46/sq. cm.). The woven loop is covered with thousands of soft, pliable napped loops, providing for thousands of openings and closings (cycles). The hook and loop are preshrunk to insure maximum dimensional stability and flatness.

These hook and loop fasteners are coated on the backside with a high performance rubber based pressure sensitive adhesive designed to function over a wide range of temperatures and humidity. This permits these fasteners to be easily and conveniently attached to a variety of substrates.

Product Construction

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

Fastener Products	Hook Loop	SJ 3526/SJ 3526P SJ 3527/SJ 3527P	MP 3526/27 (Hook & Loop)
Material of Construction	Hook Loop Backing Adhesive		nylon 6 nylon 6,6 nylon 6,6 Rubber
Standard Colors^a		Black, White, Beige	Black, White
Thickness^b unmated	Hook Loop		0.091" (2.3 mm) 0.125" (3.2 mm)
Selvedge Edge In. (mm) ± 0.031" (0.8 mm)			0.094" (2.4 mm)
Weight^b oz/in² (g/cm²)	Hook Loop		0.013 oz/in ² (0.057 g/cm ²) 0.014 oz/in ² (0.062 g/cm ²)
Liner		White High Density Polyethylene (3 mil) with red 3M Scotchmate Logo Diecuttable Paper for SJ 3526P and SJ 3527P	

a) Other colors are available as special orders. The adhesive may produce a yellow tint to some light colored hook and loop products. Therefore, 3M recommends the user evaluate the products to see if it meets their color requirements. See your 3M authorized distributor or 3M representative for color selection guide and minimum requirements.

b) All thickness and weight values are with the liner removed.

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Typical System Performance Physical Properties and Performance Characteristics^e

Note: The following technical information and data is intended as a user guide representing typical performance and should not be used for specifications.

	System Performance	
	SJ 3527 engaged to SJ 3526	SJ 3527 engaged to SJ 3540 Dual Lock™ ^a
TENSILE (Rigid to Rigid Substrates)	lbs _F /sq inch (kNewtons/m ²) @ 72°F/50% RH	
Dynamic Tensile Engagement Strength	< 1.0 (< 6.9)	< 1.0 (< 6.9)
Dynamic Tensile Disengagement ^b	12 (83)	122 (840)
Static Tensile Holding Power	Holds minimum 1#/in ² (75 grms/cm ²) for indicated time and temperature ^f	
100°F/100% RH	10,000 minutes	10,000 minutes
120°F	10,000 minutes	10,000 minutes
158°F	450 minutes	400 minutes
SHEAR (Rigid to Rigid Substrates)	lbs _F /sq inch (kNewtons/m ²):	
Dynamic Shear (1" x 1" overlap) ^b	8 (55.1)	25 (172)
Static Shear Holding Power	Holds minimum 1#/in ² (75 grms/cm ²) for indicated time and temperature ^f	
100°F/100% RH	10,000 minutes	10,000 minutes
120°F	10,000 minutes	10,000 minutes
158°F	275 minutes	225 minutes
PEEL AND CLEAVAGE^b	Pounds/inch width (grams/cm width)	
Peel Strength ("T" Peel, Flexible to Flexible)	2 (350)	4.5 (790)
Peel Strength (90° Peel, Flexible to Rigid)	2.7 (475)	5.3 (950)
ENGAGED THICKNESS^b (Nominal without liner)	Inches (mm) ± Tolerance	
	0.17 (4.4) ± 15%	0.17 (4.4) ± 15%
CLOSURE CYCLE LIFE^c	5,000	50
SHELF LIFE^d	18 months	18 months

Note: Long Term Static Load: Conditions such as temperature variations, engagement area, closure pressure and vibrations or side to side movement after engagement or exposure to prolonged periods of moisture or other environmental factors can affect the closure strength and long term static load performance. Fasteners may slip or creep in the direction of the static load forces when subjected to static loads at temperatures or weights greater than indicated. The user is responsible for designing the amount of fastening area based upon the specific conditions for the application. Four square inches of fastening area per pound of static load is suggested as a starting point for such evaluations.

- a) Scotchmate™ loop engaged to 3M™ Dual Lock™ provides increased strength over standard Scotchmate™ reclosable fasteners. Due to this increased strength, extra care should be given to ensure the maximum bond strength is obtained to the substrates being joined. Failure to obtain bond strengths sufficiently high to the substrate may cause the fastener to release from the substrate.
- b) Scotchmate™ Reclosable Fasteners SJ 3526, SJ 3527 and Dual Lock™ SJ 3540 are engaged with firm pressure and disengaged, peeled or cleaved at the rate of 12 inches (305 mm) per minute. The engaged thickness is dependent upon the applied load.
- c) Cycle Life is the number of cycles (openings and closings) that the fastener is subjected to while maintaining 50% or greater of the original tensile value.
- d) Shelf life is from date of manufacture when stored in original packaging at 72°F (21°C) and 50% relative humidity.
- e) Typical performance characteristics were measured under controlled laboratory conditions of 72°F (22°C) and 50% Relative Humidity. The user should evaluate products in the actual application to ensure suitable performance for the intended use before producing production quantities of materials.
- f) All testing after 10,000 minutes is discontinued.

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Additional Performance Characteristics

Solvent Resistance: The nylon components resist attack by most common solvents and alkaline solutions. Acid solutions may cause deterioration of the fastener. The adhesive on SJ 3526 and SJ 3527 may be affected by many common laboratory solvents and transportation fluids (gasoline, motor oil, etc.). If solvent resistance is desired, it is suggested that the customer evaluate SJ 3571, SJ 3572 or many of our 3M™ Dual Lock™ reclosable fastener products.

Plasticizer Resistance: The adhesive on SJ 3526 and SJ 3527 may be affected by plasticizers found in many common flexible vinyls or other materials containing high levels of plasticizing materials. This may result in softening or loss of adhesion indicative of plasticizer migration. If plasticizer resistance is desired SJ 3522 and SJ 3523 or many of our Dual Lock™ reclosable fastener products can be evaluated.

Flammability Resistance: If you need 3M™ Reclosable Fasteners to meet standard flammability tests (such as FAR 25.853, FMVSS-302, ASTM E-162, ASTM E-662, BSS-7239 and others), it is suggested that you refer to the publication “3M™ Dual Lock™ and Scotchmate™ Flame Resistant Reclosable Fasteners” 70-0707-3992-8.

Environmental Effects: Temperature down to -20°F (-29°C) increases the typical closure strength. The functional side of nylon hook and loop Scotchmate reclosable fasteners should be protected from extended exposure to direct sunlight due to effects of ultraviolet aging. For best results these products should be placed between two opaque or UV resistant surfaces. If products will be exposed to outdoor weathering or ultraviolet exposure then black is suggested and preferably SJ 3571, SJ 3572, SJ 3576, SJ 3577 or many of our Dual Lock™ reclosable fastener products.

Water (Humidity) Resistance: Closure strength of nylon hook and loop fasteners decreases after prolonged exposure to water due mainly to water absorption by the cut nylon ends for hook products. Closure strength is regained when dried. Improved water resistance of the closure can be obtained by using polyester hook and loop (SJ 3576, SJ 3577, SJ 3586 or SJ 3587) or our polyolefin based Dual Lock™ reclosable fasteners. Once bonded the adhesive has high resistance to moisture under typical use conditions.

Volatile Outgassing: Volatile outgassing, as per ASTM E595, is one important test in determining the suitability of materials for spacecraft. Generally 3M reclosable fasteners with acrylic or no adhesive have lower volatile outgassing values. Products tested at the Goddard Space Flight Center can be found at the following web site: <http://epims.gsfc.nasa.gov/og-cgi/sectionb/sectionb.html.sh>.

Sterilization/Autoclaving: Typically plainback SJ 3401 or SJ 3402 can be gas or steam sterilized, or autoclaved with most common systems.

Washing and Dry Cleaning: Plainback products sewn to fabrics will typically shrink less than 4% after washing or dry cleaning, unless the fabric has greater shrinkage amounts.

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Available Sizes ^a	SJ 3526 (Hook) and SJ 3527 (Loop)				SJ 3526P (Hook) SJ 3527P (Loop)
	Standard Width ^a	Roll Length	Selvedge Edge ^b	Extended Liner ^b	
	in. ± 1/16" (mm) ± 1.6	Yards (Meters)			
	1/2" (12.7 mm)	50 yds. (45.7 meters)	One Side	One Side	—
	5/8" (15.9 mm)	50 yds. (45.7 meters)	One Side	One Side	—
	3/4" (19 mm)	50 yds. (45.7 meters)	One Side	One Side	—
	1" (25.4 mm)	25 yds. (22.8 meters) 50 yds. (45.7 meters)	One Side	One Side	100 yds (91.4 meters)
	1 1/2" (38.1 mm)	50 yds. (45.7 meters)	Both Sides	Both Sides	100 yds (91.4 meters)
	2" (50.8 mm)	50 yds. (45.7 meters)	Both Sides	Both Sides	100 yds (91.4 meters)

a) All SJ 3526 and SJ 3527 products are available on 3" core. Not all roll lengths may be available in all standard widths or colors. Contact your 3M authorized distributor or 3M representative for details on supplying special sizes.

b) Standard selvedge edges and extended liner availability. Other configurations may be possible as a special order. 3M™ Reclosable Fasteners can be fabricated in many custom shapes and sizes to fit your product design and manufacturing process. Contact your local 3M authorized converter or 3M representative for additional options, configurations and ordering information.

Attachment Techniques

The following information is intended to assist the designer considering the use of 3M™ Scotchmate™ Reclosable Fasteners. Final product performance depends on actual conditions, including the fastener selected, the conditions in which the fastener is applied and the time and environmental conditions in which it is expected to perform. Because many of these factors are uniquely within the user’s knowledge and control, it is required 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 and desired end use.

As a general rule, four square inches of fastener area per pound of static load to be supported is suggested as a starting point for evaluation. More or less area may be needed depending on specific conditions or end use applications.

The most important technique for attaching SJ 3526 and SJ 3527 to various substrates is pressure sensitive adhesive attachment and is summarized below. For complete details on this and other techniques and options for attaching Scotchmate or Dual Lock Reclosable Fasteners please see the technical bulletin “Attachment of 3M™ Scotchmate™ and Dual Lock™ Reclosable Fasteners.”

Pressure Sensitive Adhesive attachment: The fasteners and surfaces should have equilibrated for a minimum of 1 hour at temperatures of 68°F (20°C) or greater before application. Generally these adhesive backed fasteners should be applied to surfaces that are smooth, dry and free of oils, mold release agents or other surface contaminants.

It is recommended to clean the surface with a solvent such as isopropanol/water solution (50:50) and allow to dry. **NOTE:** Be sure to follow the manufacturer’s precautions and directions for use when using solvents. The liner is removed and without touching the adhesive, the fastener is applied to the surface using firm roller pressure to help ensure complete adhesive contact to the substrate.

The pressure-sensitive adhesive bonds on contact and parts can be handled immediately. Adhesive bond strength increases with time, pressure and temperature. A minimum of one hour dwell is recommended before applying a load or disengaging. Recommended time to achieve maximum bond strength is 24 hours.

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Application Ideas

SJ 3526 and SJ 3527 Scotchmate™ Reclosable Fasteners can provide a firm adhesive bond to a wide variety of surfaces, including, but not limited to those listed below. Because product performance will depend on actual conditions within any specific application, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular material purpose and suitable for the user's method of application.

				Plastics	
Paper	Cardboard	Acrylic		Polypropylene	
Glass	Sealed Wood	Polycarbonate		Polystyrene	
Fabrics	Bare and Painted Metal	Polyethylene		Rigid Vinyl	

SJ 3526 and SJ 3527 has shown to be useful for:

Anti-Scratch Surface	Attaching Accessories and Equipment
Box Closures	Vibration and Sound Dampening Control
Medical Braces	Foam Pad Attachment in Helmets
Sample Books	Water Bottles on Bicycles
Name Plate Attachment	Holding Table Covers to Table Edges

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For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-800-362-3550. Address correspondence to: 3M Bonding Systems Division, 3M Center, Building 220-7E-01, St. Paul, MN 55144-1000. Our fax number is 651-733-9175. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-809-750-3000. In Mexico, phone: 5-728-2180. Visit our web site at: www.3M.com/bonding.

Certification/ Recognition

MSDS: 3M has not prepared a MSDS for these products which are not subject to the MSDS requirements of the Occupational Safety and Health Administration's Hazard Communication Standard, 29 C.F.R. 1910.1200(b)(6)(v). When used under reasonable conditions or in accordance with the 3M directions for use, the products should not present a health and safety hazard. However, use or processing of the products in a manner not in accordance with the directions for use may affect their performance and present potential health and safety hazards.

TSCA: These products are defined as articles under the Toxic Substances Control Act and therefore, are exempt from inventory listing requirements.

Mil Spec. MIL-F-21840: SJ 3526 and SJ 3527 meet the physical requirements of Mil Spec. MIL-F-21480, Type IA, II and III Class 3. Note that Class 5 requirements are met by mating SJ 3527 to SJ 3576 or SJ 3586.

Mil Spec. A-A-55126: Mil Spec. A-A-55126 supersedes Mil-F-21840. SJ 3526 and SJ 3527 meet the physical requirements of Mil Spec. A-A-55126, Type II, Class 1.

Important Notice

3M MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of application. Please remember that many factors can affect the use and performance of a 3M Bonding System Division (BSD) 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 BSD product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

Limitation of Remedies and Liability

If the 3M product is proved to be defective, THE EXCLUSIVE REMEDY, AT 3M'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE 3M PRODUCT. 3M shall not otherwise be liable for loss or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including, but not limited to, contract, negligence, warranty, or strict liability.

ISO 9002 QS 9000

This Bonding Systems Division product was manufactured under a 3M quality system registered to ISO 9002 and QS 9000 standards

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