



# Scotchmate™ Reclosable Fasteners

## SJ3576 (polyester hook)

## SJ3577 (polyester loop)

Technical Data

October, 2002

### Product Description

3M™ Scotchmate™ Reclosable Fasteners offer advanced closure alternatives to zippers, screws, snaps, hooks and more. They offer greater design flexibility, faster product assembly, smoother and cleaner exterior surfaces and improved product performance in many applications. The Scotchmate hook and loop fasteners consist of two strips of polyester 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 a thousand 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 temperature acrylic pressure sensitive adhesive designed to function over a range of temperatures and humidity. This adhesive is especially suited for attachment to bare metals and a variety of substrates. For attachment to powder coated paints or other low surface energy substrates such as polyethylene or polypropylene, surface priming may be necessary or you can evaluate our line of Scotchmate fasteners with rubber based adhesives.

### Product Construction

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

<b>Fastener Products</b>		SJ3577 (Loop) SJ3576 (Hook)
<b>Material of Construction</b>	Hook Loop Adhesive	Polyester Polyester Acrylic
<b>Standard Colors<sup>a</sup></b>		Black, White, Beige
<b>Thickness<sup>b</sup> max. unmated</b>	Hook Loop	0.070" (1.8 mm) 0.065" (1.65 mm)
<b>Selvage Edge</b> In. (mm) ± 1/32" (0.8 mm)		3/32" (2.4 mm)
<b>Weight<sup>b</sup></b>	Hook Loop	0.013 oz/in <sup>2</sup> (0.06 g/cm <sup>2</sup> ) 0.014 oz/in <sup>2</sup> (0.06 g/cm <sup>2</sup> )
<b>Liner</b>		Clear polypropylene film with white embossed 3M logo (4.0 mil)

a) Other colors are available as special orders. 3M recommends the user to 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) Thickness depends upon the amount of compression load or separation force on the pieces. All thickness and weight values are with the liner removed.

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## Typical Closure and System Performance Physical Properties and Performance Characteristics

Typical performance characteristics shown below were measured under controlled laboratory conditions of 72°F (22°C) and 50% Relative Humidity to obtain maximum reliability. The user should evaluate products in the actual application to ensure suitable performance for the intended use.

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

System Performance		
	SJ3577 Loop engaged to SJ3576 Hook	SJ3577 Loop engaged to Dual Lock SJ3560 <sup>a</sup>
<b>TENSILE (Rigid to Rigid Substrates)</b>	lbs <sub>f</sub> /sq inch (kNewtons/m <sup>2</sup> ):	
Dynamic Tensile Engagement Strength	< 1.0 (6.9)	< 1.0 (6.9)
Dynamic Tensile Disengagement <sup>b</sup>	10.7 (73.8)	39.8 (274.6)
Static Tensile Holding Power	Holds 2.2#/in <sup>2</sup> (155 grams/cm <sup>2</sup> ) for indicated time and temperature	
200°F	17,000 minutes	17,000 minutes
100°F/100% RH	10,000 minutes	10,000 minutes
<b>SHEAR (Rigid to Rigid Substrates)</b>	lbs <sub>f</sub> /sq inch (kNewtons/m <sup>2</sup> ):	
Dynamic Shear (1" x 1" overlap) <sup>b</sup>	18 (124)	45.6 (315)
Static Shear Holding Power	Holds 2.2#/in <sup>2</sup> (155 grams/cm <sup>2</sup> ) for indicated time and temperature	
220°F	17,000 minutes	17,000 minutes
100°F/100% RH	10,000 minutes	10,000 minutes
<b>PEEL AND CLEAVAGE<sup>b</sup></b>	Pounds/inch width (grams/cm width)	
Peel Strength ("T" Peel, Flexible to Flexible)	1.2 (205.3)	3.0 (527.9)
Peel Strength (90° Peel, Flexible to Rigid)	1.8 (321.3)	4.6 (821.4)
Cleavage Strength (Rigid to Rigid)	4.6 (821)	—
<b>ENGAGED THICKNESS<sup>c</sup></b>	Inches (mm) ± Tolerance	
(Nominal without liner)	0.14 (3.6) ± 15%	0.17 (4.3) ± 20%
<b>CLOSURE CYCLE LIFE<sup>d</sup></b>	1,000	50
<b>SHELF LIFE<sup>e</sup></b>	Two Years	Two Years

**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) The use of Scotchmate engaged to 3M™ Dual Lock Reclosable Fasteners provides increased strength over standard 3M™ Scotchmate™ Reclosable Fasteners. Scotchmate to Dual Lock combinations provide fewer reclosures compared with Scotchmate only systems. Due to the higher strength of Scotchmate mated to Dual Lock, 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 upon disengagement.
- b) 3M™ Scotchmate™ Reclosable Fasteners SJ3576 and SJ3577 and 3M™ Dual Lock™ SJ3560 are engaged with firm pressure and disengaged, peeled or cleaved at the rate of 12 inches (305 mm) per minute.
- c) Engaged thickness is highly dependent upon the compression loading or separation forces during use.
- d) Cycle Life is the number of peel cycles (openings and closings) that the fastener is subjected to while maintaining 50% or greater of the original peel values.
- e) Shelf life is from date of manufacture when stored in original packaging at 72°F (21°C) and 50% relative humidity.

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## Additional Performance Characteristics

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

**Solvent Resistance:** The polyester components resist attack by occasional contact with most common solvents and alkaline solutions. Acid solutions may cause deterioration of the fastener. The adhesive on 3M™ Scotchmate™ Reclosable Fastener SJ3576 and SJ3577 is resistant to many common laboratory solvents and transportation fluids (gasoline, motor oil, etc.).

**Plasticizer Resistance:** The adhesive on Scotchmate SJ3576 and SJ3577 has good resistance to plasticizers found in many common flexible vinyls or other materials containing high levels of plasticizing materials. If greater plasticizer resistance is desired 3M™ Scotchmate™ SJ3522 or SJ3523 or many of our 3M™ Dual Lock™ products can be evaluated.

**Flammability Resistance:** If you need 3M™ Scotchmate™ Reclosable Fasteners that meet many of the 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 our Flame Resistant Reclosable Fasteners Product Selection Guide (70-0707-3992-8).

**Environmental Effects:** Temperature down to -20°F (-29°C) increases the typical closure strengths. Scotchmate's SJ3576 and SJ3577 adhesive has been formulated to withstand typical outdoor temperature, humidity and ultraviolet exposure conditions. Many of our Dual Lock products also provide good to excellent performance in outdoor conditions.

**Water (Humidity) Resistance:** Closure strength of polyester hook and loop fasteners is maintained after prolonged exposure to water (humidity). Our Dual Lock self mating fasteners also provide retained closure strength when exposed to prolonged periods of water (humidity). 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 products 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>

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Available Sizes <sup>a</sup>	SJ3577 (Loop) and SJ3576 (Hook)		
	Standard Widths <sup>a</sup> in. ± 1/16" (mm) ± 1.6	Selvage Edge <sup>b</sup>	Extended Liner <sup>b</sup>
	1/2" (12.7 mm)	One Edge	One Edge
	1" (25.4 mm)	One Edge	One Edge
	2" (50.8 mm)	Two Edges	Two Edges
<b>Roll Lengths<sup>a</sup></b> 50 yards (45.7 meters)			
<b>Fabricated Forms<sup>c</sup></b>			

- a) All of the Scotchmate SJ3576 and SJ3577 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) Selvage edges and extended liner availability. Other configurations may be possible as a special order.
- c) 3M™ Scotchmate™ 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 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.

There are typically six different methods for attaching 3M™ Scotchmate™ to various surfaces. For complete details on techniques and options for attaching Scotchmate or Dual Lock Reclosable Fasteners please see technical bulletin (70-0709-3929-6). The most important techniques for Scotchmate SJ3576 and SJ3577 are summarized below.

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

The substrate should be cleaned to remove any surface contaminants with an appropriate cleaning method for the customer's substrate, type and quantity of surface contaminants that need to be removed. **Note:** Be sure to follow all government regulations and the manufacturer's precautions and directions for use when using solvents or other cleaning methods.

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## Attachment Techniques (continued)

After the substrate is clean, the liner is removed from the fastener and without touching the adhesive, the fastener is applied to the surface using firm roller pressure to help ensure complete adhesive contact to substrate. Adhesive bond strength increases with time, as the adhesive flows into the substrate structure. Handling strength is achieved immediately. Approximately 50% of ultimate bond strength is achieved at room temperature in the first 20 minutes, 90% after about 24 hours and 100% after about 72 hours.

**Heat (Press) Bonding:** Because of the higher temperature rating of the adhesive on Scotchmate SJ3576 (Hook) and SJ3577 (Loop) the use of press bonding to gain improved strength the fabrics and similar substrates may have limited success and should be thoroughly evaluated before use in production.

**Mechanical Attachment:** The bond strength of Scotchmate SJ3576 and SJ3577 can be increased by mechanically attaching it to difficult to adhere to surfaces such as textured plastics and wood by using staples, or similar mechanical attachment methods.

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## Application Ideas

3M™ Scotchmate™ Reclosable Fasteners SJ3576 and SJ3577 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

CARC Paint	Alkyd Enamel Paint	Acrylic	ABS
Glass	Sealed Wood	Polycarbonate	Polystyrene
Fabrics	Bare Metal		Rigid Vinyl

**Not suggested for powder coated paints or low surface energy materials.**

Scotchmate SJ3576 and SJ3577 has shown to be useful for:

Anti-scratch surface	Attaching accessories and equipment
Automotive interiors	Vibration and sound dampening control
Medical Braces	Watercraft and Marine applications
Truck Tonneau covers	

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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 or visit [www.3M.com/adhesives](http://www.3M.com/adhesives). Address correspondence to: 3M Industrial Adhesives and Tapes 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: 1-787-750-3000. In Mexico, phone: 52-70-04-00.

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## Certification/Recognition

**MSDS:** 3M has not prepared a MSDS for this product which is 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 product should not present a health and safety hazard. However, use or processing of the product in a manner not in accordance with the directions for use may affect its performance and present potential health and safety hazards.

**TSCA:** This product is defined as an article under the Toxic Substances Control Act and therefore, it is exempt from inventory listing requirements.

**Military Spec. MIL-F-21840:** SJ3576 and SJ3577 meet the physical requirements of MIL-F-21840, Type IA, II and III Class 1. Note that Class 5 requirements are met by mating SJ3571 to SJ3576 or SJ3586FR.

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## 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 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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## 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 Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9002 and QS 9000 standards



### Industrial Adhesives and Tapes Division

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