



Scotchmate™ Reclosable Fasteners

SJ3530 and SJ3531

Nylon Hook and Loop

Technical Data

March, 2008

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 ensure maximum dimensional stability and flatness.

These hook and loop fasteners are coated on the backside with an aggressive and tacky rubber based pressure sensitive adhesive designed to function over a 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.

Products		3M™ Scotchmate™ Reclosable Fasteners SJ3530 (Hook) and SJ3531 (Loop) SJ3530P (Hook) and SJ3531P (Loop)
Material of Construction		
	Hook	nylon 6
	Loop	nylon 6,6
	Backing	nylon 6,6
	Adhesive	Rubber
Standard Colors^a		Black, White, Beige
Thickness^b max. unmated	Hook	0.091" (2.4 mm)
	Loop	0.125" (3.2 mm)
Selvedge Edge		0.094" (2.4 mm)
In. (mm) ± 1/32" (0.8 mm)		0.125" (3.2 mm) for 4" wide
Weight^b oz/in² (g/cm²)	Hook	0.014 oz/in ² (0.062 g/cm ²)
	Loop	0.015 oz/in ² (0.066 g/cm ²)
Liner		Yellow Polypropylene film (3 mil) SJ3530P and SJ3531P - Diecuttable Paper

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 should be considered representative or typical only and should not be used for specification purposes.		
	Products	System Performance	
	3M™ Scotchmate™ Reclosable Fastener SJ3531 engaged to 3M™ Scotchmate™ Reclosable Fastener SJ3530	3M™ Scotchmate™ Reclosable Fastener SJ3531 engaged to 3M™ Dual Lock™ ^a Reclosable Fastener SJ3540	
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	9 (64)	32 (218)	
Static Tensile Holding Power	Holds minimum 1#/in ² (75 grms/cm ²) for indicated time and temperature		
	100°F/100% RH	3,000 minutes	3,000 minutes
	100°F	9,000 minutes	9,000 minutes
	120°F	2,500 minutes	3,500 minutes
	158°F	20 minutes	20 minutes
SHEAR (Rigid to Rigid Substrates)	lbs _F /sq inch (kNewtons/m ²):		
Dynamic Shear (1" x 1" overlap) ^b	8 (55)	TBD	
Static Shear Holding Power	Holds minimum 1#/in ² (75 grms/cm ²) for indicated time and temperature		
	100°F/100% RH	4,500 minutes	9,000 minutes
	100°F	7,000 minutes	10,000 minutes
	120°F	1,300 minutes	1,100 minutes
	158°F	28 minutes	15 minutes
PEEL AND CLEAVAGE^b	Pounds/inch width (grams/cm width)		
Cleavage Strength (Rigid to Rigid)	0.35 (62)	1.3 (232)	
Peel Strength ("T" Peel, Flexible to Flexible)	2.5 (446)	3.9 (696)	
Peel Strength (90° Peel, Flexible to Rigid)	4.4 (786)	6.1 (1,089)	
ENGAGED THICKNESS^b	Inches (mm) ± Tolerance		
(Nominal without liner, no load)	0.17 (4.3) ± 15%	0.22 (5.6) ± 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.

- 3M™ Scotchmate™ Loop engaged to 3M™ Dual Lock™ Reclosable Fastener provides increased strength over standard 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.
- 3M™ Scotchmate™ Reclosable Fasteners SJ3530, SJ3531 and 3M™ Dual Lock™ Reclosable Fastener SJ3540 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 direction and amount of applied load.
- 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.
- Shelf life is from date of manufacture when stored in original packaging at 72°F (21°C) and 50% relative humidity.
- 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.

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Additional Performance Characteristics

Note: The following information is not product release requirements, nor product specifications. Rather this data represent typical performance using standard test methods. This is intended for use as a guide to assist in selection of 3M™ Scotchmate™ Reclosable Fasteners for further evaluation. Customer specifications should not be based solely on the data presented in this document.

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 3M™ Scotchmate™ Reclosable Fasteners SJ3530 and SJ3531 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 3M™ Scotchmate™ Reclosable Fasteners SJ3571, SJ3572 or many of our 3M™ Dual Lock™ Reclosable Fastener products.

Plasticizer Resistance: The adhesive on Scotchmate reclosable fasteners SJ3530 and SJ3531 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 Scotchmate reclosable fasteners SJ3522 and SJ3523 or many of our 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™ Scotchmate™ Reclosable Fasteners Flame Resistant Products Product Selection Guide* (70-0707-3992-8).

Resistance to Environmental Exposure: Temperature down to -20°F (-29°C) increases the typical closure strength. If products will be exposed to outdoor weathering or ultraviolet exposure then black is suggested and preferably 3M™ Scotchmate™ Reclosable Fasteners SJ3571, SJ3572, SJ3576, SJ3577 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 (3M™ Scotchmate™ Reclosable Fasteners SJ3576, SJ3577, SJ3586 or SJ3587) 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. Scotchmate reclosable fastener SJ3530 and SJ3531 have not been tested for outgassing. Products tested at the Goddard Space Flight Center can be found at the following web site: <http://outgassing.nasa.gov/>

Sterilization/Autoclaving: Typically plainback 3M™ Scotchmate™ Reclosable Fasteners SJ3401 or SJ3402 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

Standard Widths ^a in. ± 1/16" (mm) ± 1.6	3M™ Scotchmate™ Reclosable Fasteners SJ3530 (Hook) and SJ3531 (Loop)				SJ 3530P (Hook) SJ 3531P (Loop)
	Roll Length Yards (Meters)	Selvage Edge ^b	Extended Liner ^b		
1/2" (12.7 mm)	50 yds. (45.7 meters)	One Side	One Side	—	
5/8" (15.9 mm)	25 yds. (22.8 meters)	One Side	One Side	—	
	50 yds. (45.7 meters)				
3/4" (19 mm)	25 yds. (22.8 meters)	One Side	One Side	—	
	50 yds. (45.7 meters)				
1" (25.4 mm)	25 yds. (22.8 meters)	One Side	One Side	1" (25.4 mm)	
	50 yds. (45.7 meters)			100 yds (91.4 meters)	
1 1/4" (31.8 mm)	50 yds. (45.7 meters)	Both Sides	Both Sides	—	
1 1/2" (38.1 mm)	50 yds. (45.7 meters)	Both Sides	Both Sides	1 1/2" (38.1 mm)	
				100 yds (91.4 meters)	
2" (50.8 mm)	27 yds. (24.6 meters)	Both Sides	Both Sides	2" (50.8 mm)	
	50 yds. (45.7 meters)	Both Sides	Both Sides	100 yds (91.4 meters)	
4" (101.6 mm)	50 yds. (45.7 meters)	Both Sides	Both Sides	—	

a) All 3M™ Scotchmate™ Reclosable Fasteners SJ3530 and SJ3531 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 selvage 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 techniques for attaching Scotchmate reclosable fasteners SJ3530 and SJ3531 are summarized below. For complete details on techniques and options for attaching 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.

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Attachment Techniques (continued)

It is recommended to wipe 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.

Heat (Press) Bonding: 3M™ Scotchmate™ Reclosable Fasteners SJ3530 (Hook) and SJ3531 (Loop) can be attached to many fabric and foam articles by press bonding. The fastener is adhered to the article and bond strength is increased by applying heat and pressure for a given time period.

Mechanical Attachment: The bond strength of Scotchmate reclosable fasteners SJ3530 and SJ3531 can be increased by mechanically attaching it to difficult to adhere to surfaces such as textured plastics and wood by using staples.

Application Ideas

Scotchmate reclosable fasteners SJ3530 and SJ3531 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	

Scotchmate reclosable fasteners SJ3530 and SJ3531 has shown to be useful for:

Anti-Scratch Surface	Vibration and Sound Dampening Control
Name Plate Attachment	Disposable Industrial Applications
Point of Purchase Displays	

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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, these 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 an article under the Toxic Substances Control Act and therefore, are exempt from inventory listing requirements.

Mil Spec. MIL-F-21840: 3M™ Scotchmate™ Reclosable Fastener SJ3531 meets the physical requirements of Mil spec. MIL-F-21840, Type II, Class 1. 3M™ Scotchmate™ Reclosable Fastener SJ3530 meets the physical requirements of MIL-F-21840, Class 1. MIL-F-21840, Type II, Class 5 requirements are met by engaging Scotchmate reclosable fastener SJ3530, or any of our nylon Scotchmate loop products, to any polyester Scotchmate hook product such as SJ3476, SJ3486FR, SJ3576 or SJ3586FR.

GM 2743M Type II: Scotchmate reclosable fasteners SJ3530 and SJ3531 meet the requirements of GM 2743 Type II.

GM 3618M Scotchmate reclosable fasteners SJ3530 and SJ3531 meet the requirements of GM 3618.

FMVSS-302: Scotchmate reclosable fasteners SJ3530 and SJ3531 pass FMVSS-302 when tested attached to a thin metal panel.

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 - ISO/TS 16949:2002

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