English

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Technical Data Sheet

3M™ Hook Fastener SJ3506

Product Details

Regulatory Info/SDS

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 hook fastener consists of a thin strip of small hooks that can engage with many loop materials. This forms a quick fastening attachment system. The thin loop is designed to easily engage with the 3M™ Scotchmate™ Thin Reclosable Fastener SJ3506 hook and possibly other small hooks. Simply pull the strips apart by hand to disengage.

The hook side is covered with tiny, pliable hooks, about 1400 per square inch (9032/cm².). The polyester loop is covered with thousands of soft, pliable loops, providing for a limited number of openings and closings (cycles).

These hook and loop fasteners have an acrylic pressure sensitive adhesive on the backside which provides easy removal from many surfaces.

Technical Information Note

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

Typical Physical Properties

Attribute Name	Test Condition	Value
Color		White
Material		Fastener: Polypropylene Adhesive: Acrylic
Weight (Without liner)		0.023 g/cm² (0.005 oz/in²)
Thickness	Unmated	0.59 mm (23 mil) [1]
Engaged Thickness		0.84 mm (33 mil) [1]
Liner		83# Polykraft liner with green 3M printing
Extended Liner		Available on all products widths, except 8"
Primary Liner Color		Brown
Thickness Tolerance		± 15 %

[1] Thickness depends upon the amount of compression load on the pieces.

Typical Performance Characteristics

Attribute Name	Test Method	Temperature	Substrate	Value
90° Peel Adhesion	ASTM D5170	22 °C (72 °F)	Flexible to Flexible	410 N/cm (2.3 lb/in width) [1]
Overlap Shear Strength			Rigid to Rigid	29.3 N/cm² (42.4 lb/in²) [2]
T-Peel Adhesion	ASTM D5170		Flexible to Flexible	25 g/cm width (0.4 lb/in width) [3]
Dynamic Tensile (Engage)			Rigid to Rigid	< 0.69 N/cm² (< 1.0 lb/in²) [1]

Attribute Name	Test Method	Temperature	Substrate	Value
Dynamic Tensile (Disengage)			Rigid to Rigid	4.9 N/cm² (7.1 lb/in²) [1]
Cleavage Strength	ASTM D5170		Flexible to Flexible	820 N/cm (4.6 lb/in width) [3]

[1] 12 in/min (300 mm/min)

[2] 1'' x 1'' overlap; engaged with firm pressure and disengaged, peeled or cleaved at the rate of 12 inches (305 mm) per minute.

[3] System performance tests are determined by measuring 2 aluminum plates joined together with the indicated fasteners. Engaged with firm pressure and cleaved at the rate of 12 inches (305 mm) per minute.

Static Shear

Temperature	Environmental Condition	Value
38 °C (100 °F)		10,000 min [1]
38 °C (100 °F)	100%RH	10,000 min [1]
49 °C (120 °F)		250 min [1]
70 °C (158 °F)		50 min [1]

[1] Holds 1.1 lb/in2 (77.5 g/cm2) for given time and temp. 4in2/lb static load is suggested. External conditions can affect long term performance. Fasteners may slip or creep when subjected to static loads at temps or weights greater than indicated.

Static Tensile

Temperature	Environmental Condition	Value
38 °C (100 °F)		10,000 min [1]
38 °C (100 °F)	100%RH	10,000 min [1]
49 °C (120 °F)		10,000 min [1]
70 °C (158 °F)		1,500 min [1]

[1] Holds 0.22lb/in² (15.5 g/cm²) for indicated time and temperature

Attribute Name	Value
Cycle Life	25 [1]
Long Term Temperature Resistance	70 °C (158 °F) [2]

[1] Cycle life is the number of cycles (openings and closings) that the fastener is subjected to while maintaining 50% or greater of the 2nd closure peel values. Initial peels are slightly higher

[2] Long Term (day, weeks)

Typical Environmental Characteristics

Chemical and Environmental Exposure

Solvent Resistance: The polypropylene hook and polyester loop resist incidental attack by most common solvents and alkaline solutions. Acid solutions may cause deterioration of the loop. The adhesive on 3M™ Scotchmate™ Thin Reclosable Fasteners SJ3506 and SJ3507 has not been tested after exposure to many common organic solvents and transportation fluids (gasoline, motor oil, etc.).

Plasticizer Resistance: The adhesive on Scotchmate thin reclosable fasteners SJ3506 and SJ3507 has good resistance to plasticizers found in common flexible vinyl and other materials, resulting in retained adhesive strength and performance with time compared to rubber based adhesives. 3M™ Scotchmate™ Reclosable Fasteners SJ3522 and SJ3523 plus many of our 3M™ Dual Lock™ products can also be evaluated to determine if the adhesive performance meets the desired level of plasticizer resistance for the end use applications.

Flammability Resistance: Scotchmate thin reclosable fasteners SJ3506 and SJ3507 will not pass common flammability tests when tested unattached to a adherend. If you need 3M™ Reclosable Fasteners to 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 the publication selection guide “3M™ Flame Resistant Reclosable Fasteners.”

Environmental Effects: Temperatures down to -20°F (-29°C) increases the typical closure strengths. The Scotchmate thin reclosable fasteners SJ3506 and SJ3507 adhesive is formulated to withstand typical indoor conditions of temperature, humidity and ultraviolet exposure conditions. Scotchmate thin reclosable fasteners SJ3506 and SJ3507

have not been tested per performance to typical outdoor environments.

Water (Humidity) Resistance: Closure strength should be minimally affected by high humidity conditions. Our polyester hook and loop Scotchmate and Dual Lock Reclosable fasteners have good resistance to water (humidity). Review the product selection guide 3M™ Scotchmate™ Polyester Hook and Loop Reclosable Fasteners or 3M™ Dual Lock™ Reclosable Fasteners for products with greater resistance of the closure to moisture. 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 usage within spacecraft. Generally products with acrylic or no adhesive have lower volatile outgassing values. Scotchmate thin reclosable fasteners SJ3506 and SJ3507 have not been tested to ASTM E595. Products tested at the Goddard Space Flight Center can be found at the following web site: http://outgassing.nasa.gov/

Sterilization/Autoclaving: Scotchmate thin reclosable fasteners SJ3506 and SJ3507 have not been tested to performance after gas or steam sterilization, or autoclaving.

Washing and Dry Cleaning: Washing or dry cleaning of these products is not recommended due to the potential for adhesive softening that could transfer adhesive residues to other materials, or reduce long term performance.

Fungus Resistance: Scotchmate thin reclosable fasteners SJ3506 and SJ3507 have not been tested for growth rates of common fungal organisms.
Static Discharge: Scotchmate thin reclosable fasteners SJ3506 and SJ3507 have not been tested for static charge released during liner removal, closure opening nor adhesive removal from the adherend once a fastener has been applied. If your application requires use of these fasteners in areas where static discharge is of a concern, the fasteners should be tested under expected use conditions.

Handling/Application Information

Directions for Use

The following information is intended to assist the designer considering the use of adhesively coated 3M™ Scotchmate™ Thin Reclosable Fasteners. System product performance depends upon a number of factors, including the fastener (material, adhesive, and area), application method, adherend surface characteristics (material, texture and cleanliness), environmental conditions (moisture, ultraviolet and temperature exposure) plus the time it is expected to support a given load. 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.

Design Considerations: As a general rule, four square inches of fastener area per pound (57.3 square centimeters per kilogram) 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.

Rounding the corners, slightly recessing the product into the adherend or providing raised edges around the reclosable fastener can reduce the possibility of edge lifting and improve the overall appearance of the fastener on the finished product. Mechanically securing the corners of the fastener with rivets, staples, screws, etc. may also reduce the possibility of edge lifting, but may reduce the closure performance.

The two most common techniques for attaching 3M™ Scotchmate™ Reclosable Fasteners to various surfaces are summarized on page 5. Complete details on techniques and options for attaching 3M™ Scotchmate™ or Dual Lock™ Reclosable Fasteners are available in the technical bulletin "Attachment of 3M™ Scotchmate™ and Dual Lock™ Reclosable Fasteners".

1) Pressure Sensitive Adhesive attachment: The use of pressure sensitive adhesives eliminates or reduces the need for sewing, solvent activation, dielectric or ultrasonic bonding or bulk adhesive bonding. This can result in simplicity and lower installation costs. Pressure sensitive adhesive products can be applied manually or automatically using a variety of equipment choices. Contact your 3M sales representative or 3M authorized distributor to discuss automated equipment options.

Adherend Surface Preparation: Highly textured adherend surfaces may reduce the ultimate adhesion levels and care should be given to minimize the surface texture or roughness. Adhesive backed 3M™ Scotchmate™ Reclosable Fasteners should be applied to surfaces that are clean, dry and free of oil, grease, dust, mold release agents or surface contaminants that could reduce adhesion. It is recommended to remove any surface contaminants that may reduce adhesion by using a method suited for the type and quantity of surface contaminants present.

Note: It is important the customer follow all manufacturer's precautions and directions for use as well as any specific government regulations or customer requirements for the method(s) used to remove any contamination on the surface of the adherend or preparing the surface for attaching the fastener(s).

In exceptional cases, especially when removing silicone mold release agents or on rough, porous surfaces, it may be necessary to lightly abrade the surface, use an adhesion promoter or a surface sealer to optimize the adhesive bond to the adherend. The selection of abrasion, priming or sealing methods will depend upon the adherends and the environmental conditions the product will be exposed to during use.

Attachment Procedure: To obtain an optimum bond to any surface, both the fasteners and the target surfaces should

have equilibrated for a minimum of 1 hour at temperatures between 68°F (20°C) to 100°F (38°C) before application. The liner protecting the adhesive is removed and preferably without touching the adhesive, the fastener is applied to the adherend to obtain initial surface contact between the adhesive and adherend. Exposure of the adhesive to ambient conditions without the protective liner, before applying to the surface, should be minimized as initial adhesive tack may decrease. Flexible adherends should be lying on a hard flat surface so as to permit uniform adhesive contact with the surface. Use of a rubber hand roller, press platen or similar device is recommended to ensure full adhesive contact with the adherend surface. Approximately 4.5 pounds of force per square inch (310 grams per square centimeter), is recommended to increase adhesive contact, improving bond strength. For all adhesive applications, it is important to ensure that the edges are rolled down to reduce the change of edge lifting.

Dwell Time before Handling or Applying a Load: Parts with properly chosen and applied pressure sensitive adhesive reclosable fasteners can be handled immediately. As the adhesive further wets-out the adherend surface, adhesive bond strength increases after application with time, pressure and/or temperature. Once attached to the adherend, a 1-day minimum dwell time is recommended before applying a load or disengaging these Scotchmate reclosable fasteners. This dwell time is important for achieving a firm adhesive bond before applying a load or using. The adhesive on 3M™ Scotchmate™ Thin Reclosable Fasteners SJ3506 and SJ3507 achieves approximately 50% of the ultimate bond strength within 1 hour, 90% after 1 day and the ultimate bond strength of properly applied fasteners is obtained within 3 days at 72°F (22°C) and 50% relative humidity. Primers or adhesion promoters may reduce the time required to achieve the ultimate bond strength.

2) Mechanical Attachment: 3M™ Scotchmate™ Thin Reclosable Fasteners SJ3506 and SJ3507 may also be mechanically attached to difficult to adhere to surfaces such as textured plastics and wood by using staples. The head of the staple should be flat and large enough to resist pull through when the fastener is disengaged. The head of the standard staples may interfere with (dis)engagement properties, thus compromising the overall closure system performance.

The use of resin coated chisel divergent staples appear to provide excellent attachment to thick sections of soft and hardwood substrates.

Application Examples

Scotchmate thin reclosable fasteners SJ3506 and SJ3507 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 purpose and suitable for the user's method of application.
Plastics
Sealed Wood Bare and painted Metal Acrylic ABS
Glass Rigid PVC (Kydex®, Sintra®) Polycarbonate Polystyrene
Laminates Bare and painted brick Flexible & Rigid Vinyl Plasticized plastics
Closed cell polyethylene foams Polypropylene Polyethylene
Display graphics

Scotchmate thin reclosable fasteners SJ3506 and SJ3507 may be useful for:
• Attaching Exhibit and Display Graphics
- Hook engaged to loop fabrics
• Anti-scratch surface (loop)
• Attaching lightweight items to vertical fabrics (hooks)
•Vibration and sound dampening control
•Temporary securing protective foam

Storage and Shelf Life

24 months from date of manufacturing when stored in original packaging at 72°F (21°C) and 50% relative humidity.

Recognition/Certification

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.

Automotive Disclaimer

Select Automotive Applications: This product is an industrial product and has not been designed or tested for use in certain automotive applications, such as automotive electric powertrain battery or high voltage applications, which may require the product to be manufactured in a IATF certified facility, meet a Ppk of 1.33 for all properties, undergo an automotive production part approval process (PPAP), or fully adhere to automotive design or quality system requirements (e.g., IATF 16949 or VDA 6.3). Customer assumes all responsibility and risk if customer chooses to use this product in these applications.

Information

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ISO Statement

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001:2000 and ISO/TS 16949:2002 standards.

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