December, 2003

3M™ Dual Lock™ Low Profile Reclosable Fastener SJ4580

Product Description



3M™ Dual Lock™ Low Profile Reclosable Fastener SJ4580 has a clear 15 mil acrylic adhesive system with approximately 705 stems per square inch (109 stems/cm²). Dual Lock low profile reclosable fasteners can reduce the number of or replace conventional fasteners such as screws, clips, rivets, snaps and bolts in many applications.

Dual Lock low profile reclosable fasteners consist of continuous plastic strips with stems protruding from a plastic backing with mushroom shaped tops. When two pieces of Dual Lock low profile reclosable fasteners are pressed together, the mushroom heads interlock with one another giving an audible snap, providing a fast reclosable attachment system. To open, simply pull or peel apart.

Dual Lock low profile reclosable fastener SJ4580 is designed to function over a range of temperatures and humidity. The 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, 3M™ Dual Lock™ Low Profile Reclosable Fastener SJ4570 and 3M™ Dual Lock™ SJ3540 family of products or our line of 3M™ Scotchmate™ Reclosable Fasteners with a rubber based adhesive should be evaluated.

Dual Lock low profile reclosable fasteners can be mated to each other forming a reusable attachment system. In some cases, this fastener may be mated with 3M™ Scotchmate™ Loop Fasteners giving high peel and very high shear strength, but with fewer cycles than self-mated Dual Lock low profile reclosable fastener.

Product Features

• Easy Alignment: Dual Lock fasteners engage in any direction or position. The mushroom stems slide into position until they are engaged by snapping together applying firm pressure, this eliminates concerns about misalignment or spontaneous engagement.
• Positive Locking: Dual Lock fasteners engage/fasten with an audible snap and detectable movement assuring complete and secure closure.
• Reclosability: Dual Lock fasteners can be opened and closed for multiple closure applications (high cycle life).
• Blind Attachment: Dual Lock fasteners can be attached on the backside of substrate (i.e. trim piece) where it will not interrupt the show surface.
• Rattle-Free: Dual Lock fasteners will not rattle loose.
• Ease of Assembly: Dual Lock fasteners can be used to attach components before they enter the final assembly plant, reducing the number of parts and the assembly time. No tools are required.
• Adjustable Strength: By selecting different combinations of the various stem densities of the Dual Lock the fastener can be designed to meet the strength needs of the designer.
• Product Forms: Dual Lock fasteners come in a variety of forms: Backed with Pressure Sensitive adhesive, Non-woven, Rigid backed, Die Cut Shapes, and low profile.
• Attachment Methods: The wide varieties of Dual Lock fasteners allow a design engineer flexibility to be able use and attach Dual Lock to just about any substrate or application. Peel and stick pressure sensitive adhesive backed is quick and easy yet strong and secure. Non-woven backed can be used with a variety of adhesive choices such as hot melt, liquid, epoxies, sealants, etc. We have parts that can be attached with a screw or rivet; rigid and plain backed for developing your own special device.

3M™ Dual Lock™ Low Profile Reclosable Fastener SJ4580

General Information

This product is half the thickness of standard 3M™ Dual Lock™ Reclosable Fasteners, providing a low profile attachment. An alternative to screws and bolts, this hidden fastener provides a snug fit and smooth aesthetic appearance.

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

Property	Values	
Color	Clear	
Thickness Tolerance	± 15 %	
Material	Polypropylene	
Backing	Polypropylene	
Adhesive	High Temperature Acrylic	
Liner	Red, non-silicone liner	
Extended Liner	None	
Weight (Without liner)	0.057 g/cm²	0.013 oz/in²

Thickness		Test Condition	Notes
2.997 mm	118 mil	Engaged	
1.88 mm	74 in	Maximum unmated without liner	Thickness depends upon the amount of compression load on the pieces.

Property: Thickness

Note

Typical performance characteristics shown below were measured under controlled laboratory conditions of 72°F (22°C) and 50% Relative Humidity when adhered to 1/16 in. aluminum panels unless stated otherwise to obtain maximum reliability The user should evaluate products in the actual application to ensure suitable performance for the intended use.

Typical Performance Characteristics

Static Tensile	Test Condition
10,000 min	93°C (200°F)
10,000 min	104°C (220°F)
10,000 min	38°C (100°F)/100% R.H.

Property: Static Tensile
notes: Holds 0.22lb/in² (15.5 g/cm²) for indicated time and temperature

Typical Performance Characteristics (continued)

Static Shear	Test Condition	Notes
10,000 min	93°C (200°F)	Holds 2.2 lb/in² (155 g/cm²) for indicated Time and Temperature
10,000 min	104°C (220°F)	Holds 2.2 lb/in² (155 g/cm²) for indicated Time and Temperature
10,000 min	38°C (100°F)/100% R.H.	Holds 2.2 lb/in² (155 g/cm²) for indicated Time and Temperature If no failure at 10,000 minutes, test is discontinued

Property: Static Shear

Property	Values		Substrate	Notes
Dynamic Tensile (Engage)	18.6 N/cm²	27 lb/in²	Rigid to Rigid	Engaged with firm pressure and disengaged, peeled or cleaved at the rate of 12 inches (305 mm) per minute.
Dynamic Tensile (Disengage)	27.6 N/cm²	40 lb/in²	Rigid to Rigid	Engaged with firm pressure and disengaged, peeled or cleaved at the rate of 12 inches (305 mm) per minute.
Dynamic Shear	28.2 N/cm²	41 lb/in²	Rigid to Rigid	1" x 1" overlap; engaged with firm pressure and disengaged, peeled or cleaved at the rate of 12 inches (305 mm) per minute.
Cleavage Strength	700 g/cm width	4.0 lb/in width	Rigid to Rigid	
T-Peel Adhesion	80 g/cm width	0.5 lb/in width	Flexible to Flexible	12 inches (305mm) per minute
90° Peel Adhesion	300 g/cm width	1.7 lb/in width	Flexible to Rigid	12 in/min (305 mm/min)
Cycle Life	50			Cycle Life is the number of cycles (openings and closings) that the fastener is subjected to while maintaining 50% or greater ofthe original peel values.

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.

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Available Sizes

	Standard Widths in. ± 1/16" (mm) ± 1.6	Roll Length Yards (Meters)
	3/4" (19.1 mm)	50 yds. (45.7 meters)
	1" (25.4 mm)	50 yds. (45.7 meters)
	2" (50.8 mm)	50 yds. (45.7 meters)
	6" (152.4 mm)	50 yds. (45.7 meters)
Fabricated Forms[b]	See Below for Special Sizes	Cut Pieces

a) 3M™ Dual Lock™ Low Profile Reclosable Fastener SJ4580 and SJ4580C are available on 3" core. Contact your 3M authorized distributor or 3M representative for details on special sizes.

b) 3M™ Reclosable Fasteners can be fabricated into many custom shapes and sizes to fit your product design and manufacturing process. Please contact your local 3M authorized converter or 3M representative for additional options, configurations and ordering information.

Handling/Application Information

Application Ideas

Dual Lock low profile reclosable fasteners SJ4580 and SJ4580C 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 Painted or Sealed Wood Polycarbonate Polystyrene
Bare Metal Rigid Vinyl
Not suggested for powder coated paints or low surface energy materials.

Dual Lock low profile reclosable fastener SJ4580 has shown to be useful for:

- Automotive interiors
- Attaching accessories and equipment
- Watercraft and Marine applications
- Interior mutin bar attachment
- Attaching Exhibit and Display Graphics
- Outdoor sign attachment

Application Techniques

The following information is intended to assist the designer considering the use of 3M™ Dual Lock™ Low Profile 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.

Dual Lock low profile reclosable fasteners SJ4580 and SJ4580C are typically attached to various surfaces using the supplied adhesive.

Pressure Sensitive Adhesive attachment: The fasteners and surfaces should have equilibrated for a minimum of one 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 remove any surface contaminants using the method suited for the type and quantity of surface contaminants present. NOTE: Follow the manufacturer's precautions, and direction for use and government requirements. The liner is removed from Dual Lock low profile reclosable fastener SJ4580 or SJ4580C 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 twenty-four (24) hours dwell time is recommended before applying a load or disengaging. Recommended time to achieve maximum bond strength is 72 hours (three days).

Heat (Press) Bonding: Because of the higher temperature rating of 3M™ Dual Lock Low Profile Reclosable Fastener SJ4580 or SJ4580C, adhesive attachment using press bonding to gain improved strength to fabrics and similar substrates is not suggested.

Mechanical Attachment: Mechanical attachment, such as staples, screws, etc. is not recommended due to the thin backing which may be damaged in application or use.

Additional Performance Characteristics

Solvent Resistance: The polypropylene components of the stems and backing resist attack by most common solvents and alkaline solutions. The adhesive on 3M™ Dual Lock™ Low Profile Reclosable Fastener SJ4580 and SJ4580C is resistant to many common laboratory solvents and transportation fluids (gasoline, motor oil, etc). It is suggested that the customer evaluate Dual Lock low profile reclosable fasteners SJ4580 or SJ4580C or our 3M™ Dual Lock™ Reclosable Fastener products to determine the best adhesive to meet the requirement of their application.
Plasticizer Resistance: The adhesive on Dual Lock low profile reclosable fasteners SJ4580 and SJ4580C 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 then 3M™ Scotchmate™Reclosable Fasteners SJ3522 and SJ3523 or many of our standard Dual Lock reclosable fastener products can be evaluated.
Flammability Resistance: If you need 3M™ 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), please refer to the 3M™ Dual Lock™ and Scotchmate™ Flame Resistant Reclosable Fasteners Technical Bulletin (70-0707-3992-8).
Environmental Effects: Temperatures down to -20°F (-29°C) increases the typical closure strengths. The adhesive and backing of Dual Lock low profile reclosable fastener SJ4580 and SJ4580C has been formulated to withstand typical outdoor temperature, humidity and ultraviolet exposure conditions. Many of our standard Dual Lock products such as 3M™ Dual Lock™ Reclosable Fastener SJ3560 or standard Scotchmate products such as 3M™ Scotchmate™ Reclosable Fasteners SJ3576 or SJ3577 also provide good to excellent performance in outdoor conditions.
Water (Humidity) Resistance: Closure strength is typically unaffected after prolonged exposure to moisture. Our polyester 3M™ Scotchmate™ Reclosable Fasteners SJ3576, SJ3577, SJ3586FR or SJ3587FR can also be evaluated for high humidity environments. 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 usage. Generally products with acrylic adhesives (such as Dual Lock low profile reclosable fasteners SJ4580 and SJ4580C) or no adhesive have low volatile outgassing values. Products tested at the Goddard Space Flight Center can be found at the following web site: http://outgassing.nasa.gov/ (Enter Scotchmate, Dual Lock or an SJ number in the search box.)
Sterilization Autoclaving: Dual Lock low profile reclosable fasteners SJ4580 and SJ4580C has not been evaluated for performance after gas or steam sterilization, or autoclaving.
Washing and Dry Cleaning: Dual Lock low profile reclosable fasteners SJ4580 and SJ4580C have not been evaluated for performance in washing or dry cleaning cycles. Typically these products would not be suggested as the stems may become entangled in any loop fabrics causing difficulty in separating.

Storage and Shelf Life

Store in original packaging at 72°F (22°C) and 50% relative humidity.
When stored under proper conditions, product retains its performance and properties for two years from date of manufacture.

Family Group

	SJ4570	SJ4575	SJ4580
Thickness (mm) Test Condition: Engaged	2.489	2.489	2.997
Material	Polypropylene	Polypropylene	Polypropylene
Adhesive	300 LSE (Acrylic)	300 LSE (Acrylic)	High Temperature Acrylic
Liner	86# Polycoated Kraft	86# Polycoated Kraft	Red, non-silicone liner

3M™ Dual Lock™ Low Profile Reclosable Fastener SJ4580

References

1. 3m.com Product Page
   Url: https://www.3m.com/3M/en_US/company-us/all-3m-products/~/3M-Dual-Lock-Low-Profile-Reclosable-Fastener-SJ4580?N=5002385+3293242260&rt=rud
2. Safety Data Sheet
   Url: https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=SJ4580

ISO Statement

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001 standards.

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. Address correspondence to: 3M Industrial Adhesives and Tapes Division, Building 21-1W-10, 900 Bush Avenue, St. Paul, MN 55144-1000. Our fax number is 651-778-4244. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.

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, 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: This Mil Spec. does not apply to 3M™ Dual Lock™ Low Profile Reclosable Fastener SJ4580, please refer to our line of Scotchmate Reclosable Fasteners. CID A-A-55126A: This commercial item description does not apply to Dual Lock SJ4580 or SJ4580C. Automotive Specifications: The product has been tested to the following specifications and results are available upon request. General Motors GM2743M Ford WSB M15P35 Chrysler PF 8543

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.

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