Hook and Loop Fasteners

SJ3401/SJ3402	No Adhesive
SJ3476/SJ3477	No Adhesive
SJ3522/SJ3523	Plasticizer resistant acrylic
SJ3526N/SJ3527N	High Performance Rubber Based PSA
SJ3530/SJ3531	General Purpose Rubber Based PSA
SJ3532N/SJ3533N	Rubber Based PSA
SJ3546/SJ3547	General Purpose Acrylic PSA
SJ3571/SJ3572	High Performance Acrylic PSA
SJ3576/SJ3577	Polyester w/High Performance Acrylic PSA

Technical Data **October, 2012**

Product Description: 3M™ Hook and Loop 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. 3M hook and loop fasteners consist of hooks and loops which engage to form a quick fastening attachment. Simply pull the strips apart by hand to disengage.

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Nylon Products

The woven nylon hook has flexible, self-supporting inverted j-hooks protruding up from the backing with approximately 300 hooks per square inch (46 hooks/square cm). The woven nylon loop has thousands of soft, pliable napped loops protruding above the backing, providing for thousands of openings and closings (cycles). Both the hook and loop are preshrunk to insure maximum dimensional stability and flatness. Standard colors available are black, white and beige, with several custom colors available with extended delivery times and additional costs.

SJ3401/SJ3402: plain backed for applications not requiring an adhesive. Most commonly sewn. Very durable.

SJ3526N/SJ3527N: coated on the backside with a high performance rubber based pressure sensitive adhesive which allow for easy and convenient attachment to a variety of substrates, including low surface energy plastics.

SJ3530/SJ3531: utilizes general purpose rubber based pressure sensitive adhesive. Adheres well to low surface energy surfaces. Low heat resistance. The adhesive on the back is the stickiest of all other adhesives.

SJ3532N/SJ3533N: coated with a rubber based adhesive, these are meant to be economical product.

SJ3546/SJ3547: coated on the backside with a general purpose acrylic pressure sensitive adhesive designed to adhere to variety of surfaces including low surface energy materials while still providing good temperature resistance.

SJ3571/SJ3572: coated with high performance acrylic pressure sensitive adhesive which has high temperature resistance and resistant to many environmental and chemical conditions.

Polyester Products

The woven polyester hook has flexible, self-supporting inverted j-hooks protruding up from the back, with approximately 300 hooks per square inch (46 hooks/square cm). The woven loop is covered with thousands of soft pliable napped loops providing for thousands of openings and closings (cycles). Both the hook and loop are preshrunk to insure maximum dimensional stability and flatness. The polyester products offer a durable moisture resistant fastener to resist the most humid, wet conditions. Black and Standard colors available are black and white, with several custom colors available with extended delivery times and additional costs.

SJ3476/SJ3477: plain backed for applications not requiring an adhesive; most commonly sewn. Good for wet, humid or outdoor environments.

SJ3576/SJ3577: coated with high performance acrylic pressure sensitive adhesive which has high temperature resistance and resistant to many environmental and chemical conditions.

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Product Construction

Note: The following technical information and data should be considered representative it 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™ Hook and Loop Fasteners for further evaluation. Customer specifications should not be based solely on the data presented in this document.

				Weight	Thickness (using 1/2" pressure foot with 34 gram weight)			
Backing	Product Number	Material	Backing	Without liner Ounces/in² (grams/cm²)	Unmated without liner	Mated without liner	Liner	Shelf Life when stored in original packaging at 72°F (22°C) and 50% RH
Plain Back	SJ3401 SJ3402	Loop- Woven Nylon Hook- Woven Nylon	No Adhesive Sew on	0.009 (0.04) 0.008 (0.035)	0.080" (2.0mm) 0.080" (2.0mm)	0.12" (3.1mm)	none	24 months
	SJ3476 SJ3477	Hook- Woven Polyester Loop- Woven Polyester	No Adhesive Sew on	0.008 (0.035) 0.008 (0.035)	0.09" (2.0mm) 0.08" (2.0mm)	0.12" (3.1mm)	none	24 months
Acrylic Adhesive	SJ3522 SJ3523	Hook- Woven Nylon Loop- Woven Nylon	Plasticizer resistant acrylic PSA	0.015 (0.063) 0.014 (0.059)	0.091" (2.4mm) 0.125" (3.2mm)	0.14" (.33mm)	Clear non printed polyolefin film 3.5 mil	24 months
Rubber Based Adhesive	SJ3526N SJ3527N	Hook- Woven Nylon Loop- Woven Nylon	High Performance rubber based PSA	0.014 (0.062) 0.015 (0.063)	0.091" (2.4mm) 0.125" (3.2mm)	0.14" (3.6mm)	3.0 mil White Polyethylene with red printing	18 months
	SJ3530 SJ3531	Hook- Woven Nylon Loop- Woven Nylon	General Purpose rubber based PSA	0.014 (0.062) 0.015 (0.066)	0.091" (2.4mm) 0.125" (3.2mm)	0.14" (3.6mm)	3.0 mil White Polypropylene	18 months
	SJ3532N SJ3533N	Hook- Woven Nylon Loop- Woven Nylon	Rubber based PSA	0.013 (0.057) 0.013 (0.057)	0.08" (2.03mm) 0.12" (3.05mm)	0.13" (3.3mm)	3.0 mil White Polypropylene	18 months
Acrylic Adhesive	SJ35346 SJ35347	Hook- Woven Nylon Loop- Woven Nylon	General Purpose Acrylic PSA	0.013 (0.057) 0.014 (0.062)	0.091" (2.4mm) 0.125" (3.2mm)	0.14" (3.6mm)	4.0 mil Clear Silicone treated Polyolefin with embossed 3M logo	24 months
High Performance Acrylic Adesive	SJ3571 SJ3572	Loop- Woven Nylon Hook- Woven Nylon	High Performance Acrylic PSA	0.014 (0.062) 0.013 (0.057)	0.125" (3.2mm) 0.091" (2.4mm)	0.14" (3.6mm)	4.0 mil Clear Polyolefin with embossed 3M logo	24 months
High Performance Acrylic Adesive	SJ3576 SJ3577	Hook- Woven Nylon Loop- Woven Nylon	High Performance Acrylic PSA	0.013 (0.057) 0.014 (0.062)	0.091" (2.4mm) 0.125" (3.2mm)	0.14" (3.6mm)	4.0 mil Clear Polyolefin with embossed 3M logo	24 months

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System Performance

Typical System Test Values for 3M Hook and Loop	Nylon Hook to Nylon loop	Polyester Hook to Polyester loop
Dynamic Tensile run at 12 inches per minute Lbs/in^2 (N/cm^2)	11 (7.6)	11 (7.6)
Dynamic Shear run at 12 inches per minute Lbs/in^2 (N/cm^2)	22 (15.2)	18 (12.4)
"T" Peel 12 inches per minute Lbs/inch width (Grams/cm width)	2.0 (3.5)	1.2 (2.1)
90° Peel 12 inches per minute Lbs/inch width (Grams/cm width)	2.2 (3.9)	1.8 (3.2)
Cleavage Peel Lbs/inch width (Grams/cm width)	7.5 (13.1)	4.6 (8.1)
Cycle Life*	5000	1000

* # of closures before losing 50% of the original peel value.

Unless stated, typical system 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.

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Product Performance

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

This guide should assist you in determining which product will adhere best to your substrate for your application.

Material Dynes mJ/m²	Polypropylene 29	Polyethylene 31	EVA 33	Acrylic 38	PC 42	ABS 42	Aluminum 840	Stainless Steel 700-1100	Typical Temperature Resistance °F
	Low Surface Energy Plastics			Medium Surface Energy Plastics			High Surface Energy Materials		
SJ3401 SJ3402	Sew on			Sew on			Sew on		200
SJ3476 SJ3477	Sew on			Sew on			Sew on		200
SJ3522 SJ3523				X	X	X	X	X	150
SJ3526N SJ3527N	X	X	X	X	X	X	X	X	120
SJ3530 SJ3531	X	X	X	X	X	X	X	X	90
SJ3532N SJ3533N	X	X	X	X	X	X	X	X	110
SJ3546 SJ3547				X	X	X	X	X	180
SJ3571 SJ3572				X	X	X	X	X	200
SJ3576 SJ3577				X	X	X	X	X	200
	X - Typically good adhesion without the use of surface primer								

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Typical Widths and Edge Configurations

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

Not all products are available in all sizes.

	Overall Width Tolerance	Selvedge Edges	Selvedge Edges	Selvedge width Tolerance
Nylon				
5/8 inch	+/- 1/16 inch	one side	1/16 inch	+ 3/32 or - 1/32
3/4 inch	+/- 1/16 inch	one side	1/16 inch	+ 3/32 or - 1/32
1 inch	+/- 1/16 inch	one side	1/16 inch	+ 3/32 or - 1/32
1-1/4 inch	+/- 1/16 inch	both sides	1/16 inch	+ 3/32 or - 1/32
1-1/2 inch	+/- 1/16 inch	both sides	1/16 inch	+ 3/32 or - 1/32
2 inch	+/- 1/16 inch	both sides	1/16 inch	+ 3/32 or - 1/32
4 inch	+/- 1/8 inch	both sides	1/16 inch	+ 4/32 or - 1/32
Polyester				
1 inch	+/- 1/16 inch	one side	1/16 inch	+ 3/32 or - 1/32
2 inch	+/- 1/16 inch	both sides	1/16 inch	+ 3/32 or - 1/32

Attachment Techniques

The following information is intended to assist the designer considering the use of 3M hook and loop fasteners. System product performance depends upon a number of factors, including the fastener (material, adhesive and area), application method, surface characteristics (material, texture and cleanliness), environmental conditions (moisture, ultraviolet and temperature exposure) and 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 3M products to determine whether they are fit for a particular purpose and are suitable for the user's substrates, method of application and desired end use.

Rounding the corners, slightly recessing the product into the substrate, 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 these 3M hook and loop fasteners to various surfaces are summarized on page 7.

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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, improved safety 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 to discuss automated equipment options.

Surface Preparation: Highly textured surfaces may reduce the ultimate adhesion levels and care should be given to minimize the surface texture or roughness. Adhesive backed 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 the 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. Isopropal alcohol is a good general use solvent for cleaning contaminants from surfaces for example.

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 surface sealer to optimize the adhesive bond to the substrate. The selection of abrasion, priming or sealing methods will depend upon the substrates and the environmental conditions the product will be exposed to during use.

Attachment Procedure: To obtain optimum bond to any surface, both the fasteners and the target surfaces should have equilibrated for a minimum of one 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 substrate. 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 materials 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 or wet-out with the substrate 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 chance of edge lifting.

Plain backed

The plain backed 3M hook and loop fasteners are most commonly sewn into their applications. Liquid or hot melt adhesives and staples are other forms of attachment that can be utilized.

Sewing: Although the selvedge edge was initially developed for stitching on, customers often find that they get better anchorage when stitching through the 3M hook and loop portions of the fastener – this may be application dependant. The type of thread and stitch type is also best determined based on individual application, however, the fastener should be stitched on all edges for the best seam strength. Typically, special machine adjustments are not necessary when using our 3M hook and loop fasteners

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Technical Information

The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use

Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

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