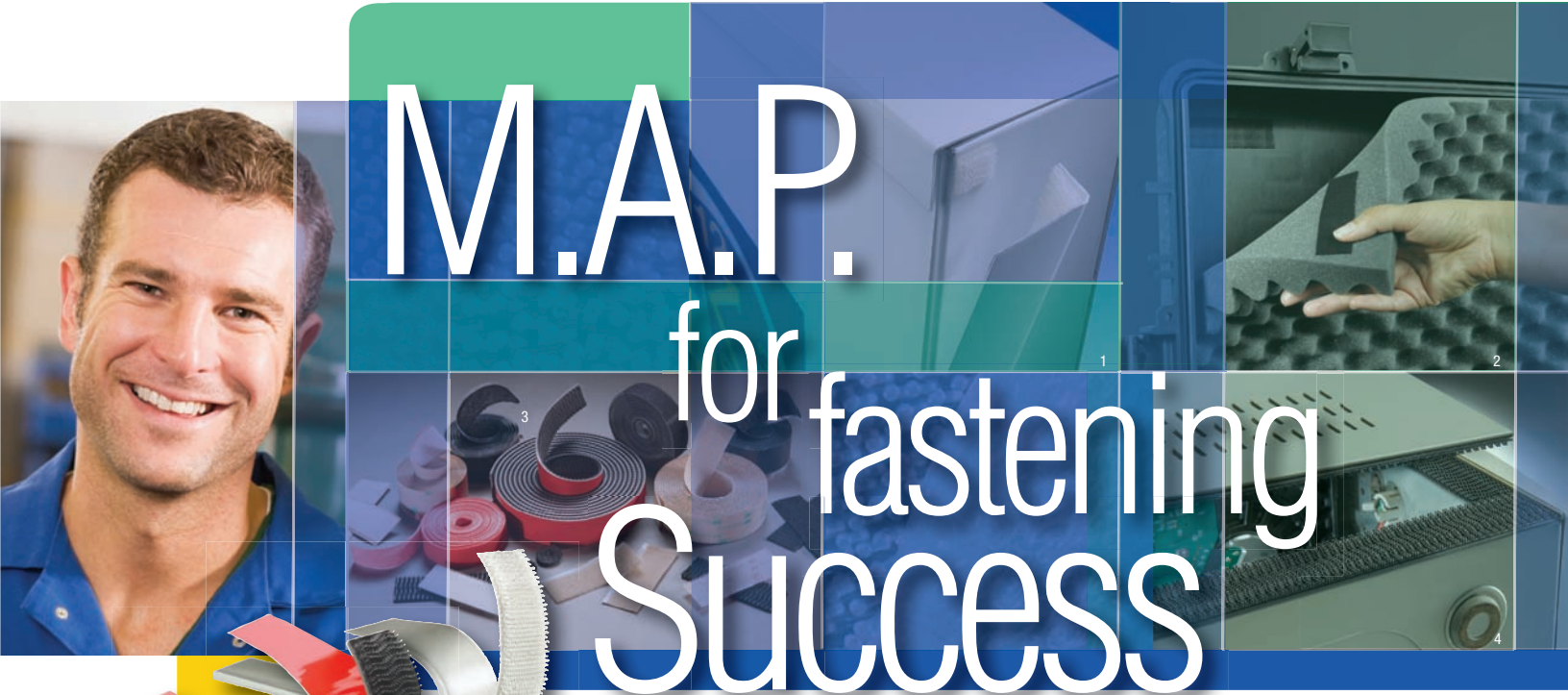


# 3M™ Reclosable Fasteners Design Selection Guide



Align **M**arkets and **A**pplications with  
3M **P**roducts to increase your productivity  
and improve your product design,  
function, and appearance



# Markets and Applications

## General Industrial



- Attach plastic and screen enclosure panels around automated equipment in temporary manufacturing cells
- Attach acoustic control panels to sound containment enclosure
- Hold access panels to manufacturing equipment, control panels, HVAC units, electrical enclosures, electronic equipment, and elevators
- Attach moveable sensors
- Hold remote controls on equipment for storage when not in use
- Fasten rigid or flexible solar panels
- Attach decorative panels and circulation vents to refrigerators
- Hang tools on maintenance carts for ready access and secure transport

## POP, Display, and Signage



- Attach metal L-bracket edging to hold rigid graphics panels and prevent light leaks on internally-illuminated sign
- Hang graphics and banners for trade shows and in-store promotion
- Attach repositionable shelving for retail display and museum exhibits
- Attach product samples to trade show backwalls and retail display cases
- Attach literature dispensers
- Secure carpet to trade show floors, walls, and counter facings
- Attach flexible retail signage for products that change frequently with the season, holiday, popularity, or promotional focus

## Specialty Vehicle and Transportation



- Fasten headliners and ceiling panels in over-the-road truck cabs, buses, ambulances, and recreational vehicles
- Hang ceiling light diffusion panels in light rail cars and buses
- Hang equipment on ambulance walls
- Secure removable seat covers and cushions in ambulances
- Attach door and wall panels in truck cabs
- Suspend privacy curtains in truck cabs
- Attach air bag cover in trucks and cars
- Attach decorative liner to interior SUV cargo areas
- Attach ceiling, wall and cushioning panels in cargo and horse trailers

## Furniture



- Assemble modular office wall panels
- Attach fabric-covered cushions to chair seats, backs, and arm rests
- Attach cover plate to wire and cable channels in modular office walls
- Secure window shade to header rail
- Fasten institutional furniture seats and backs to metal frames
- Architectural/Construction flooring, carpeting, lighting, and decorative panels
- Marine and yacht carpeting, seat cushions, and wall panels
- Sporting goods such as securing helmet cushions, closing tent flaps, and assembling hunting blinds
- Medical gowns and equipment such as orthopedic braces

## And more

# M.A.P. for Fastening Success...

## simple 4-step process

With this step-by-step guide you can more easily align **M**arkets and **A**pplications with a 3M reclosable fastener **P**roduct to help improve your product and process.

### Step 1: Challenge traditional thinking

Lose the screws. Consider 3M™ Reclosable Fasteners to replace screws, bolts, nails, rivets, welds, and other traditional fastening methods in many applications involving repeated opening

and closing, attaching and detaching. Consider even converting a permanent closure to reclosable one.

### Step 2: Select closure strength

Based on the specific construction of each 3M™ Reclosable Fastener, select from a wide range of holding strength to match the weight of surfaces and stresses of use.

### Step 3: Select adhesive performance

Select from multiple adhesive backings to best match different substrates and environmental conditions. Or, select plain-backed versions.

### Step 4: Combine, test, and evaluate

Combine closure strength and adhesive performance to determine the right fastener(s) for testing and evaluation. See charts on pages 6-8.

## 1. Challenge traditional thinking

### Lose the screws...

as well as the nuts and bolts, snaps, latches, nails, zippers, clasps, wingnuts, and welds.



### Think 3M First for expanded options to improve design and function

- Range of closure strengths and thicknesses
- Hold together even dissimilar substrates, then attach and detach multiple times easily
- Choice of plain-backed or pressure sensitive adhesive-backed to bond to many surfaces even LSE plastics
- Reliable performance in hot, cold, wet, sunny, and other difficult environments
- Colors to accent or clear to blend for aesthetics
- Save the weight of metal fasteners



Attach cushioning to horse trailer divider.

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### Think 3M First for smooth, clean surfaces to improve appearance

- Hidden beneath the surface for greater design flexibility
- No nail or screw heads, snap caps, weld marks, or breakable teeth
- Maintain surface integrity with no holes to invite moisture, corrosion, or dirt
- Sleek appearance for competitive advantage

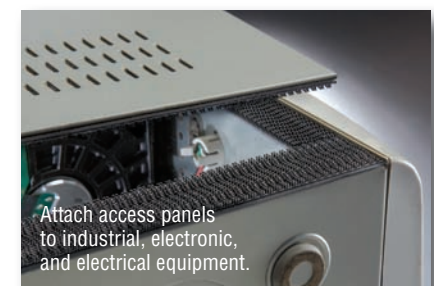


Invisibly attach fascia to painted metal valence.

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### Think 3M First for faster, easier application to save time and labor

- Pressure sensitive adhesive options stick on contact as quickly and easily as tape for quick installation without special tools
- No drilling, screwing, tightening, sewing, or complex process
- Quickly and easily adjust or reattach until precisely aligned



Attach access panels to industrial, electronic, and electrical equipment.

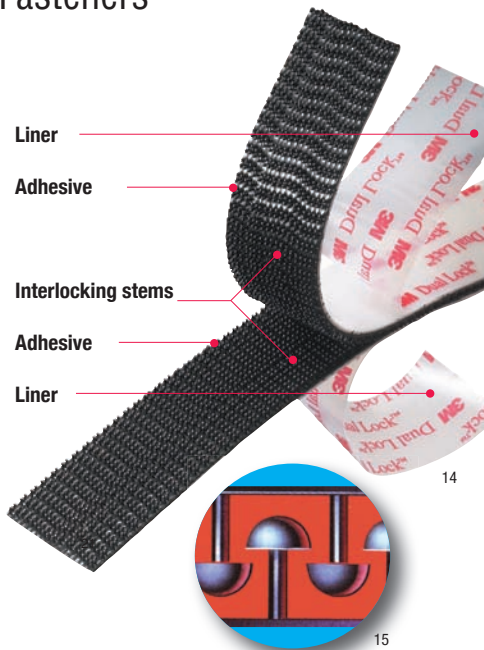
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[www.3M.com/fasteners](http://www.3M.com/fasteners)

## 2. Select closure strength based on fastener construction

### 3M™ Dual Lock™ Reclosable Fasteners

- Mushroom-shaped stems on one side of the fastener interlock with identically shaped stems on the other side for 5X greater closure strength than hook and loop; peel apart for opening
- Pressure sensitive adhesive-backed versions\* bond on contact to a variety of flexible and rigid materials; choice of specialized adhesive properties (see charts on pages 5-8)
- Choice of stems per square inch: 170, 250, 400 (higher the combined number, greater the closure strength—see chart at right)
- Larger the fastener area, greater the strength for holding weight and resisting shear and peel
- Low profile option for a snug fit with about half the thickness of the standard products

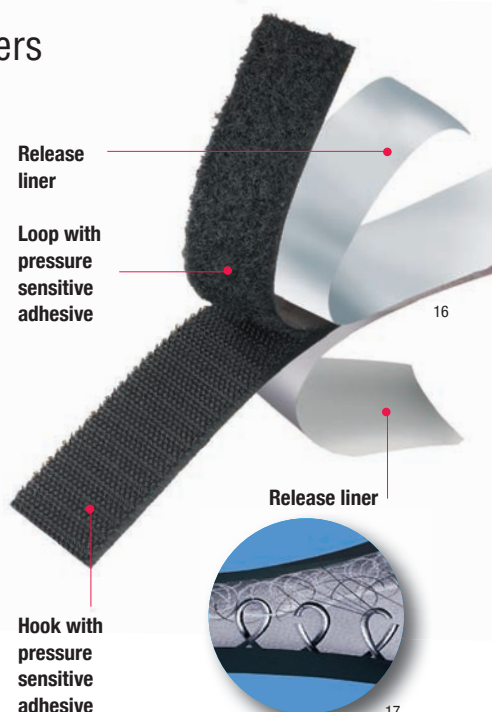


Effective combinations; strength increasing left to right

170/250	250/250	170/400	250/400
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### 3M™ Hook and Loop Fasteners

- Stiff hooks on one side of the fastener mesh with pliable loops on the other side for secure closure; peel one side away for opening
- Pressure sensitive adhesive-backed versions\* bond on contact to a variety of flexible and rigid materials; variety of adhesive properties
- The larger the fastener area, the greater the strength for holding weight and resisting shear and peel
- Low profile option for applications where thickness is more critical than number of closures; 75% thinner than standard product with fewer openings and closings



**Strength Increase**

3M™ Dual Lock™ Fastener Type 400 (18)

3M™ Dual Lock™ Fastener Type 250 (19)

3M™ Dual Lock™ Fastener Type 170 (20)

3M™ Dual Lock™ Fastener Low profile (21)

3M™ Hook and Loop Standard thickness (22)

3M™ Hook and Loop Low profile (23)

Weight-bearing and engagement holding strength increases as you move up from 3M™ Hook and Loop through 3M™ Dual Lock™ Fasteners.

\* Non-adhesive versions available.

# 3. Select adhesive performance

## Rubber, Acrylic, or Non-adhesive

For the application ease of a PSA tape, a variety of adhesive backings are available to meet production and end use criteria (see charts starting next page). Consider rubber or acrylic.

### Rubber Adhesives

- High initial adhesion upon contact
- Quick stick adhesion
- Good shear strength
- Narrow operating temperature range
- Fair moisture resistance in end use
- Some solvent resistance in end use
- Fair UV resistance for indoor use
- Moderate aging performance
- Bonds well to a variety of LSE materials including plastics and powder coated surfaces

### Acrylic Adhesives

- Fair initial adhesion upon contact
- Build-up over 72 hours to strong adhesion
- High shear strength
- Wide operating temperature range
- Excellent moisture resistance in end use
- Excellent solvent resistance in end use
- Excellent UV resistance for indoor and outdoor use
- Excellent aging performance
- Bonds well to HSE materials including metals and HSE plastics

### Non-adhesive versions

3M™ Dual Lock™ Fasteners are also available as non-adhesive or non-woven backed rolls, or rigid-backed circles or strips.

Plain-backed 3M™ Hook and Loop Fasteners are available for sewing to the fabric and leather of jackets and gloves.

Back-to-back 3M™ Hook and Loop Fastener SJ3000 meshes with itself as a replacement for string, tapes, rubber bands, wire, and strapping.



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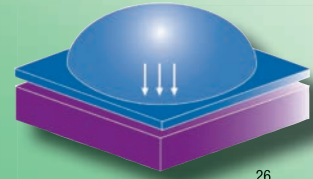


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## Surface Contact

Rolling down the fastener on a clean and dry substrate increases adhesive flow and contact for more secure bonding. Contact and adhesion will build over time until reaching ultimate strength.

## Surface Energy



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### HSE High Surface Energy Substrates

Adhesive “wets out” the surface. Higher the surface energy, better the bond performance.



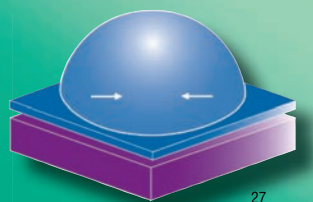
#### Metal

- Copper
- Aluminum
- Tin
- Stainless Steel

#### Glass

#### Plastics

- Phenolic
- Nylon
- Alkyd Enamel
- Polyester
- Epoxy Paint
- Polyurethane Paint
- ABS
- Polycarbonate
- PVC Rigid
- Acrylic



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### LSE Low Surface Energy Substrates

Considered “hard-to-bond” since the adhesive “beads up” and does not readily “wet” the surface.



#### Plastics

- PVA
- Polystyrene
- Acetal
- EVA
- Polyethylene
- Polypropylene
- Polyvinyl Fluoride Film

Powder coated metal is also LSE.

# 4. Combine, test, and evaluate

## 3M™ Dual Lock™ Reclosable Fasteners

Product	Stem Density	Color	Liner	Engaged Thickness Inches (mm)	Temperature Resistance (F/C)	Features/Application Ideas
<b>Rubber Adhesive</b>						
SJ3540	250	Black	A	0.23 (5.7)	120/49	Low temperature performance. Bonds well to plastics (acrylic, poly carbonate, ABS), powder coated paints and low surface energy materials (polypropylene, polyethylene). Indoor and limited outdoor use.
SJ3541	400	Black	A	0.23 (5.7)	120/49	
SJ3542	170	Black	A	0.23 (5.7)	120/49	
<b>General Purpose Acrylic Adhesive</b>						
SJ3550	250	Black	D	0.23 (5.7)	200/93	High temperature performance. Bonds well to metals (aluminum, stainless steel), glass, plastics (acrylic, polycarbonate, ABS) and paints. Indoor and outdoor use.  * Note: This is a clear fastener with white adhesive giving the product a white appearance.
SJ3551	400	Black	D	0.23 (5.7)	200/93	
SJ3552	170	Black	D	0.23 (5.7)	200/93	
SJ3557	170	White*	D	0.23 (5.7)	200/93	
SJ3558	250	White*	D	0.23 (5.7)	200/93	
SJ3559	400	White*	D	0.23 (5.7)	200/93	
<b>Clear Acrylic Adhesive</b>						
SJ3560	250	Clear	D	0.23 (5.7)	220/104	Highest temperature performance. Bonds well to metals (aluminum, stainless steel), glass and plastics (acrylic, polycarbonate, ABS). Indoor and outdoor use.
SJ3561	400	Clear	D	0.23 (5.7)	220/104	
SJ3562	170	Clear	D	0.23 (5.7)	220/104	
SJ3550CF	250	Black	D	0.23 (5.7)	220/104	
SJ3551CF	400	Black	D	0.23 (5.7)	220/104	
SJ3552CF	170	Black	D	0.23 (5.7)	220/104	
<b>Modified Acrylic Adhesive</b>						
SJ3244	170	Black	E	0.24 (6.1)	120/49	Low temperature performance. Bonds well to low surface energy materials. Indoor and outdoor use.
SJ3245	250	Black	E	0.24 (6.1)	120/49	
SJ3246	400	Black	E	0.24 (6.1)	120/49	
SJ3870	250	Black	C	0.24 (6.1)	180/82	Medium temperature performance. Bonds well to plastics (acrylic, polycarbonate, ABS), powder coated paints and medium to low surface energy materials. Indoor and outdoor use. Available in 45 yard rolls only.
SJ3871	400	Black	C	0.24 (6.1)	180/82	
SJ3872	170	Black	C	0.24 (6.1)	180/82	
<b>Low Surface Energy Acrylic Adhesive</b>						
SJ3773	170	Black	F	0.16(4.1)	120/49	Low to medium temperature performance. Bonds well to metals (aluminum, stainless steel), glass, many plastics (polypropylene, polyethylene, polycarbonate, ABS) powder coated paints and medium to low surface energy materials. Thinner adhesive than standard. Indoor and outdoor use.
SJ3782	250	Black	F	0.16(4.1)	120/49	
<b>Specialty Products: No Adhesive, Non-Woven, and Rigid Back/Piece Parts</b>						
SJ3443	400	Black	N/A	0.28 (7.1)	200/93	Backed with a unique felt-like non-woven polypropylene fabric, this product is for use with a variety of hot melt or liquid adhesives. Can be bonded to wood, foam, fabric or similar materials. Good temperature performance.
SJ3444	170	Black	N/A	0.28 (7.1)	200/93	
SJ3445	250	Black	N/A	0.28 (7.1)	200/93	
SJ3463	400	Black	None	0.20 (5.1)*	200/93	Thicker than standard. Designed for mechanical attachment, such as riveting, or sliding into retention brackets. Round 13/16 inches diameter with 0.16 inch hole.
SJ3481	400	Black	None	0.20 (5.1)*	200/93	Thicker than standard. Designed for mechanical attachment, such as riveting, or sliding into retention brackets. Available in 48 inch strips.

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

\* Single thickness; not engaged.



Fasten flexible solar panels to roofing membrane with strength to resist wind.



Secure plastic sign to window glass.



Hold plastic air vent to base of refrigerator with strength to resist vibration

## 3M™ Dual Lock™ Reclosable Fasteners – Low Profile/Thin

Product	Stem Density	Color	Liner	Engaged Thickness Inches (mm)	Temperature Resistance (F/C)	Features/Application Ideas
<b>Acrylic Adhesive</b>						
SJ4570 SJ4575	Low Profile/ Thin	Clear Black	F	0.098 (2.489)	158/70	Low to medium temperature performance. Bonds well to metals, glass, many plastics (polypropylene, polyethylene, polycarbonate, ABS) powder coated paints and medium to low surface energy materials. Half standard thickness. Indoor and limited outdoor use.
SJ4580	Low Profile/ Thin	Clear	C	0.12 (3.0)	200/93	High temperature performance. Bonds well to CARC and enamel paint, bare metal, glass, wood (painted or sealed) and many plastics (acrylic, polystyrene, polycarbonate, ABS). Half standard thickness. Indoor and outdoor use.

### Liners:

- A - White 5.0 mil (0.13 mm) thick polyolefin with silicone release coating
- B - Brown 83# polykraft liner printed with "3M™" in green. Good for diecutting directly against liner.
- C - Red 4.5 mil (0.11 mm) thick polyolefin with no silicone release coating
- D - Clear 4.0 mil (0.10 mm) thick polyolefin with silicone release coating
- E - White 5.0 mil (0.13 mm) thick polyethylene with silicone release coating
- F - Brown 83# polykraft liner printed with "3M™ Dual Lock™" in green. Good for diecutting directly against liner.

**Footnotes:** 1) Type 400 is not recommended to be engaged to other type 400 fasteners. As well, type 170 should not be engaged with type 170. 2) Acrylic PSAs are best suited for outdoor or high humidity applications for medium to high energy surfaces. 3) Engaged thickness is for products with the same backcoating. You can mix products with different backcoatings to obtain an even greater variety of engaged thicknesses. Any of these 3M™ Dual Lock™ Reclosable Fasteners can be engaged with 3M™ Loop Reclosable Fasteners providing a quick grab closure with high strength and limited cycle life.

**Notes:** Suggest 4 square inches of fastener per pound of load as a starting point for evaluation of long term performance. Suggest type 250 engaged to type 250 as a starting point for evaluations. Tensile strength increases in the following order: 170/250 < 250/250 < 170/400 < 250/400. Maximum widths are 6" except 3M™ Dual Lock™ Reclosable Fasteners SJ3443, SJ3444, and SJ3445 which are 4" maximum widths.. All products available on 50 yard rolls except 3M™ Dual Lock™ Reclosable Fasteners SJ3870, SJ3871, and SJ3872 which are 45 yards and SJ3481 which comes in four foot strips. This information should be considered representative only, for help in narrowing the list of possible fasteners for further and more detailed evaluation, and should not be used for specification purposes. User is responsible for determining whether the 3M product is fit for the desired end use. Refer to specific product technical data sheets for more detailed product performance information.

## 3M™ Hook and Loop Fasteners

Product	Hook/ Loop	Closure Life	Product Material	Liner	Engaged Thickness Inches (mm)	Temperature Resistance (F/C)	Features/Application Ideas
<b>High Performance Rubber Adhesive</b>							
SJ3526N	Hook	5,000	Nylon	A	0.14 (3.6)	120/49	Medium temperature performance. Bonds well to a variety of plastics, bare and powder coated metal, glass, sealed wood, paper and cardboard. Indoor use.
SJ3527N	Loop	5,000	Nylon	A	0.14 (3.6)	120/49	
<b>Modified Rubber Adhesive</b>							
SJ3532N	Hook	5,000	Nylon	C	0.14 (3.6)	100/38	Medium temperature performance. Bonds well to a variety of plastics, paint, bare and powder coated metal, glass, sealed wood, fabrics, paper and cardboard. Indoor use.
SJ3533N	Loop	5,000	Nylon	C	0.14 (3.6)	100/38	
<b>General Performance Rubber Adhesive</b>							
SJ3530	Hook	5,000	Nylon	C	0.14 (3.6)	90/32	Low temperature performance. Bonds well to a variety of plastics, paint, bare and powder coated metal, glass, sealed wood, fabrics, paper and cardboard. Indoor use.
SJ3531	Loop	5,000	Nylon	C	0.14 (3.6)	90/32	
<b>High Performance Acrylic</b>							
SJ3571	Loop	5,000	Nylon	D	0.14 (3.6)	200/93	High temperature performance. Bonds well to bare and painted (non-powder coated) metal, glass, sealed wood, paint and many plastics. Indoor and outdoor use.
SJ3572	Hook	5,000	Nylon	D	0.14 (3.6)	200/93	
SJ3576	Hook	1,000	Polyester	D	0.14 (3.6)	200/93	High temperature performance. Bonds well to bare and painted (non-powder coated) metal, glass, sealed wood, paint and many plastics. Excellent for humid outdoor conditions. Improved water resistance over nylon product. Indoor and outdoor use.
SJ3577	Loop	1,000	Polyester	D	0.14 (3.6)	200/93	
<b>General Performance Acrylic Adhesive</b>							
SJ3546	Hook	5,000	Nylon	G	0.14 (3.6)	180/82	Medium temperature performance. Bonds well to some low surface energy materials. Indoor and outdoor use.
SJ3547	Loop	5,000	Nylon	G	0.14 (3.6)	180/82	
SJ3596	Hook	5,000	Nylon	G	0.14 (3.6)	180/82	Made in USA. Medium temperature performance. Bonds well to some low surface energy materials. Indoor and outdoor use.
SJ3597	Loop	5,000	Nylon	G	0.14 (3.6)	180/82	
<b>Plasticizer Resistant Acrylic Adhesive</b>							
SJ3522	Hook	5,000	Nylon	B	0.14 (3.6)	158/70	Medium temperature performance. Bonds well to flexible vinyl, bare and painted metal, glass, sealed wood and many plastics. Resists many different plasticized vinyls. Indoor use.
SJ3523	Loop	5,000	Nylon	B	0.14 (3.6)	158/70	
<b>Flame Resistant Adhesive</b>							
SJ3518FR	Loop	5,000	FR Nylon	A	0.14 (3.6)	100/38	Medium temperature performance. Bonds wells to bare and painted metal, paint, glass, sealed wood, paper and cardboard and many plastics.
SJ3519FR	Hook	5,000	FR Nylon	A	0.14 (3.6)	100/38	
SJ3586FR	Hook	1,000	FR Polyester	A	0.17 (4.3)	100/38	Medium temperature performance. Bonds wells to bare and painted metal, paint, glass, sealed wood, paper and cardboard and many plastics. Excellent for humid outdoor conditions. Improved water resistance over nylon product.
SJ3587FR	Loop	1,000	FR Polyester	A	0.17 (4.3)	100/38	

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

Continued on back.

## 3M™ Hook and Loop Fasteners (cont.)

Product	Hook/Loop	Closure Life	Product Material	Liner	Engaged Thickness Inches (mm)	Temperature Resistance (F/C)	Features/Application Ideas
<b>Plain-Back, Non-Adhesive, Sew On</b>							
SJ3401	Loop	5,000	Nylon	None	0.12 (3.0)	200/93	Plain-backed fastener designed for sew on applications. Ideal replacement for zippers, buttons, snaps and laces. Indoor and outdoor use.
SJ3402	Hook	5,000	Nylon	None	0.12 (3.0)	200/93	
SJ3476	Hook	1,000	Polyester	None	0.13 (3.3)	200/93	Plain-backed fastener designed for sew on applications. Ideal replacement for zippers, buttons, snaps and laces. Excellent for humid outdoor conditions. Improved water resistance over nylon product. Indoor and outdoor use.
SJ3477	Loop	1,000	Polyester	None	0.13 (3.3)	200/93	
SJ3418FR	Loop	5,000	FR Nylon	None	0.12 (3.0)	200/93	Flame resistant plain backed fastener designed for sew on applications. Ideal replacement for zippers, buttons, snaps and laces. Indoor and outdoor use.
SJ3419FR	Hook	5,000	FR Nylon	None	0.12 (3.0)	200/93	
SJ3486FR	Hook	1,000	FR Polyester	None	0.13 (3.3)	200/93	Same as above with improved water resistance over nylon product.
SJ3487FR	Loop	1,000	FR Polyester	None	0.13 (3.3)	200/93	

Standard colors: Nylon—black, white and beige; Polyester—black and white. Custom colors available upon request.

## 3M™ Hook and Loop Fasteners - Low Profile/Thin

<b>Acrylic Adhesive</b>							
SJ3506	Hook	25	Polypropylene	E	0.034 (0.84)	158/70	This product is 75% thinner than standard Hook and Loop. Medium temperature performance. Bonds well to medium surface energy plastics such as polycarbonate, ABS, acrylic and polystyrene. Also bonds well to a variety of other surfaces.
SJ3507	Loop	25	Polyester	E	0.034 (0.84)	158/70	

## 3M™ Hook and Loop Fasteners SJ3000

<b>No Adhesive</b>							
SJ3000	Back-to-Back Hook and Loop	10	Polypropylene (Hook) Nylon (Loop)	None	0.053 (1.3)	200/93	No stick. No mess. Simply wrap, unwrap and wrap up to 10 times without the hassles of adhesive, knotted strings, waste and cutting. Convenient and secure bundling replacement for tape, string, rubber bands, plastic wire and strapping. High temperature performance. Available in black, red and white.

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

### Liners:

- A - White 3 mil polyethylene film printed with "3M™ Hook and Loop" in red.
- B - Clear 3.5 mil polyolefin film with no printing.
- C - Yellow 3.0 mil polyethylene film with no printing.
- D - Clear 4.0 mil polypropylene film with white embossed 3M logo.
- E - Brown 83# PCK liner printed with "3M™" in green. Good for diecutting directly against liner.
- F - Brown 83# PCK liner with no printing. Good for die-cutting directly against liner.
- G - Silicone-treated polyolefin with 3M logo embossed.

**Footnotes:** Engaged thickness is for hook and loop with the same backcoating engaged to each other. Any of these 3M™ Loop Reclosable Fasteners can also be engaged with 3M™ Dual Lock™ Reclosable Fasteners providing a quick grab closure with high strength and limited cycle life.

**Note:** This information should be considered representative only, for help in narrowing the list of possible fasteners for further and more detailed evaluation, and should not be used for specification purposes. User is responsible for determining whether the 3M product is fit for the desired end use. Refer to specific product technical data sheets for more detailed product performance information.



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From attaching chair cushions to adjusting orthopedic braces, when your product requires thousands of easy openings and secure closings, 3M™ Hook and Loop Fasteners give you choices to improve your product and production time.

**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. **Warranty, Limited Remedy, and Disclaimer:** Unless an additional warranty is specifically stated on the applicable 3M product packaging or product literature, 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. If the 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price. **Limitation of Liability:** Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.



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