

# 3M™ Dual Lock™ Reclosable Fasteners - Piece Parts

## Technical Data Sheet

### General Description

3M™ Dual Lock™ Reclosable Fasteners are positive-locking, blind fasteners designed for attaching automotive trim components. The products feature mushroom-shaped polyolefin stems that snap together, forming a high tensile closure. Dual Lock™ Reclosable Fasteners overcome the often-difficult alignment and installation problems of screws and hidden fasteners. They offer simple installation with no additional tools required.

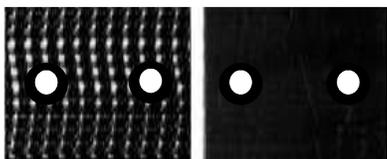
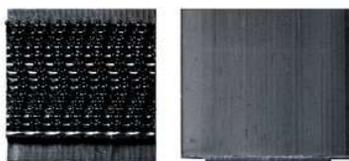
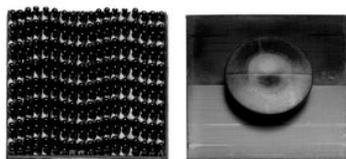
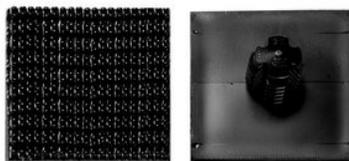
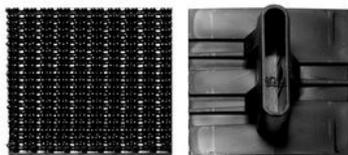
Dual Lock™ fasteners are used primarily to secure rigid and semi-rigid surfaces. Dual Lock™ fasteners can replace conventional mechanical fasteners in a wide range of assembly and attachment applications where reclosability is desired. Some examples of applications include:

- Vehicle headliners
- Attaching accessories and equipment
- Attaching window and door trim panels
- Vibration and sound dampening control
- CHMSL -- Center High Mounted Stop Light -- cover plates
- Center console flanges
- Interior trim
- Sunroof rings

Dual Lock™ Reclosable Fasteners provide a firm bond to a wide variety of surfaces, including, but not limited to those listed above. Since product performance will depend on actual conditions within a 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.

### Physical Properties

<b>Material</b>	Polyolefin
<b>Color</b>	Black
<b>Environmental Stability</b>	Excellent moisture resistance Recommended temperature range is -20°F to 220°F (-29°C to 104°C)
<b>Flammability</b>	Should be tested as a composite with the attached component for FMVSS 302 certification
<b>Thickness</b>	<ul style="list-style-type: none"> <li>• Varies based on part and application.</li> <li>• There are two different measurements that should be considered for your application – the individual thickness of a product and the engaged thickness of the two-part system.</li> <li>• The individual thickness is listed under “Product Thickness Code” next to the specific product number listed in this selection guide. The product thickness code is the thickness of the additional layer added to the plain-backed version of Dual Lock™ Reclosable Fasteners.</li> <li>• Plain-backed Dual Lock™ Reclosable fasteners have a thickness of 0.101 inches (2.57 mm).</li> </ul>



**Product Features**

<b>Easy Alignment of Parts:</b>	Designed to eliminate concerns about misalignment and premature or incomplete engagement while providing easy and firm engagement.
<b>Reclosability:</b>	Can be opened and re-closed in high cycle applications. Cycle life is the number of cycles (openings and closings) that the fastener is subjected to while maintaining 50% or greater of the peel values. The cycle life is 1000.
<b>Appearance:</b>	Able to attach on the backside of a trim piece allowing for blind fastening and an uninterrupted show surface.
<b>Vibration Resistance:</b>	Dramatically reduces the rattling and vibration of components.
<b>Ease of Assembly:</b>	Does not require any special tools or equipment; fasteners can be used to attach components before they enter the final assembly plant, thus reducing the number of parts and the length of assembly time.
<b>Multiple Attachment Methods</b>	Available in numerous forms, allowing for the ability to be attached to a variety of surfaces, using different methods.
<b>Adjustable Engagement and Disengagement Forces:</b>	<ul style="list-style-type: none"> <li>• Provides a range of engagement and disengagement forces that can be achieved by combining the different stem densities.</li> <li>• Provides adjustable and proportional engagement and disengagement forces to the engaged area of the fastener.</li> </ul>



**Type 170**  
 170 stems/inch<sup>2</sup>  
 (26 stems/cm<sup>2</sup>)



**Type 250**  
 250 stems/inch<sup>2</sup>  
 (39 stems/cm<sup>2</sup>)



**Type 400**  
 400 stems/inch<sup>2</sup>  
 (62 stems/cm<sup>2</sup>)



## 3M™ Dual Lock™ Reclosable Fasteners Pop-In Piece Parts

### General Description

3M™ Dual Lock™ Reclosable Fasteners Pop-In Parts attach without the use of pressure sensitive adhesive, and come with a variety of bases that can be inserted or slid into holes of precise dimension.

They are easy to install and require no special equipment or skills. Pop-ins are a good alternative to pressure sensitive adhesive backed Dual Lock™ reclosable fasteners.

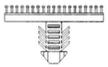
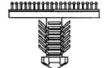
### Design Considerations and Suggestions

Selection of the Pop-in part should be made based on the following considerations:

1. Dual Lock reclosable fastener strength is proportional to the fastening contact area. Target Disengagement Strength for part/application (Dual Lock reclosable fasteners combination and fastening area).
2. Whenever possible, design one side of the Dual Lock reclosable fasteners to be larger than the mating side. This will allow for variability or mismatch in Dual Lock reclosable fastener alignment positions, and ensure 100% fastening area contact. Another approach would be to design two rectangular shaped fasteners so that they can be engaged in a cross-web/perpendicular pattern.
3. Dual Lock reclosable fastener disengagement strength/performance is strongest in direct tensile. Cleavage mode disengagement greatly reduces the fastening strength.
4. Standard part drawings are available for all Dual Lock reclosable fastener piece parts. These part drawings define key dimensions which should be used for design purposes.
5. Pop-in pull-out strength must exceed the Dual Lock reclosable fasteners target disengagement strength for the Dual Lock reclosable fasteners combination. The target for the Pop-in pull-out strength should be 150% of the target disengagement strength. For example, if the target disengagement strength for the selected fastener combination and area is 43 lb/f, then the pull-out strength for the piece part should be a minimum of 64.5 lb/f.
6. Sheet metal or panel thickness and range.
7. Hole size.
8. Gap behind the sheet metal for post protrusion, etc.
9. Burr on die punched hole – the burr on a hole affects the effective panel thickness which will have an effect on the performance of Pop-ins.
10. Stack-up height can be increased for Tree Style Pop-ins with the addition of a foam washer.

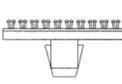
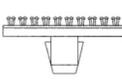
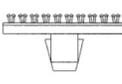
**Product Information and Physical Properties**

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

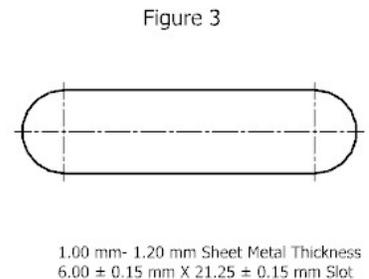
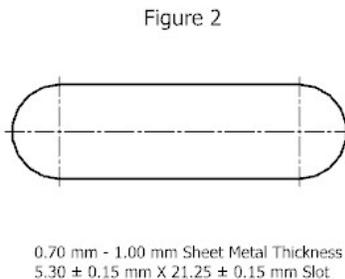
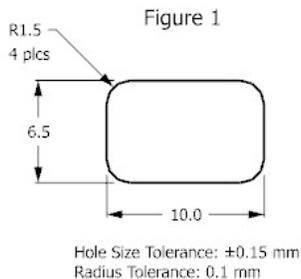
Part Portfolio: Christmas Tree Designed for Round Holes										
Xmas Tree Type	Target Hole Size (Range) (mm)	Post Length (mm)	Panel Thickness Range (mm)	Design Information				Product Numbers		
				Typical Performance		Product Thickness Code	Stem Area (mm)	Type 170	Type 250	Type 400
				Insertion Force	Pull-Out Force					
				Panel Thickness/Hole Size						
	7.1 (7.0 – 7.5)	12.0	0.8 – 3.0	<b>7.14 mm hole</b> 0.71 mm panel: 10.9 lbs 0.86 mm panel: 11.6 lbs 1.17 mm panel: 13.4 lbs 1.55 mm panel: 14.7 lbs 2.97 mm panel: 11.1 lbs	54 lbs 56 lbs 50 lbs 68 lbs 40 lbs	104	26 x 26		SJ3222	
				<b>1.2 mm panel</b> 7.0 mm hole: 24.3 lbs 7.14 mm hole: 13.4 lbs 7.5 mm hole: 8.7 lbs	81 lbs 50 lbs 50 lbs					
	8.2 (7.9 – 8.5)	12.0	0.8 – 4.7	<b>7.9 mm hole</b> 0.8 mm panel: 42.6 lbs 1.56 mm panel: 48.7 lbs 4.7 mm panel: 48.5 lbs	101 lbs 136 lbs 68 lbs	104	26 x 26		SJ3209	SJ3749
				<b>0.8 mm panel</b> 7.9 mm hole: 38.9 lbs 8.03 mm hole: 22.9 lbs 8.2 mm hole: 21.2 lbs 8.33 mm hole: 22.4 lbs 8.43 mm hole: 22.8 lbs 8.5 mm hole: 11.9 lbs	97 lbs 88 lbs 78 lbs 66 lbs 76 lbs 60 lbs					
	8.2 (7.9 – 8.5)	16.5	0.8 – 8.0	<b>7.9 mm hole</b> 0.8 mm panel: 31.7 lbs 1.56 mm panel: 34.6 lbs 4.7 mm panel: 38.3 lbs	85 lbs 94 lbs 96 lbs	104	26 x 26			SJ3748
				<b>0.8 mm panel</b> 7.9 mm hole: 29.5 lbs 8.03 mm hole: 22.2 lbs 8.2 mm hole: 14.7 lbs 8.33 mm hole: 11.8 lbs 8.43 mm hole: 9.5 lbs 8.5 mm hole: 9.6 lbs	94 lbs 81 lbs 70 lbs 71 lbs 65 lbs 52 lbs					
	8.33 (8.0 – 8.5)	12.74	0.8 – 4.7	<b>8.50 mm hole</b> 0.86 mm panel: 16.8 lbs 1.55 mm panel: 17.3 lbs 2.97 mm panel: 33.4 lbs 4.76 mm panel: 39.9 lbs	83 lbs 61 lbs 72 lbs 57 lbs	104	26 x 26		Black SJ3267	Black SJ3268
				<b>0.864 mm panel</b> 8.03 mm hole: 40.3 lbs 8.2 mm hole: 33.9 lbs 8.33 mm hole: 25.0 lbs 8.43 mm hole: 21.1 lbs 8.5 mm hole: 16.8 lbs 8.6 mm hole: 15.1 lbs	79 lbs 97 lbs 74 lbs 86 lbs 83 lbs 52 lbs					White SJ3274 S.O.

- Notes:
1. The “post length” is the measurement from the back of the 3M™ Dual Lock™ Reclosable Fastener base to the tip of the post.
  2. Stem type shown on part drawing is an example for the instance when more than one type is available.
  3. NA = Not Available
  4. Minimum order quantities, lead times and pricing are available upon request.

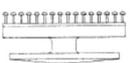
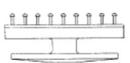
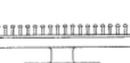
**Part Portfolio: Pop-In Designed for Rectangular Holes**

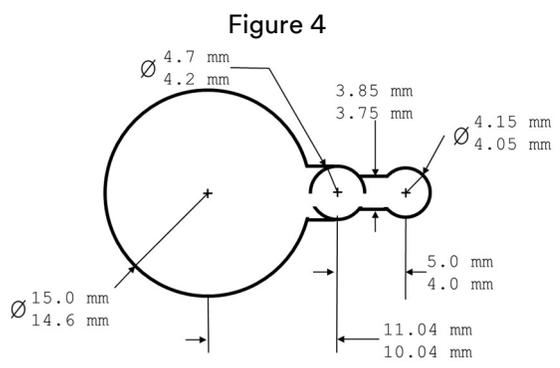
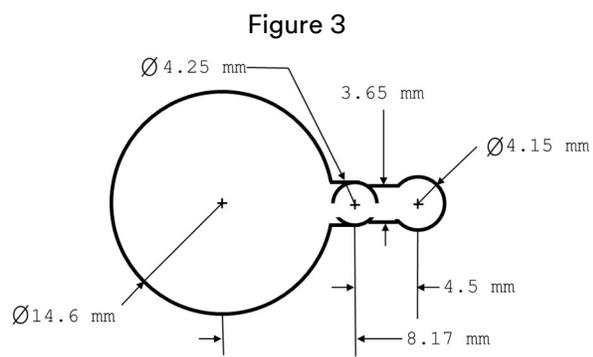
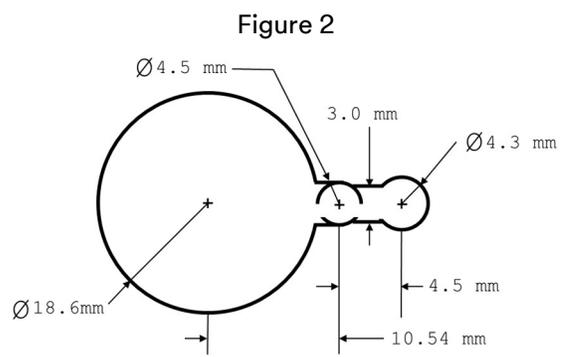
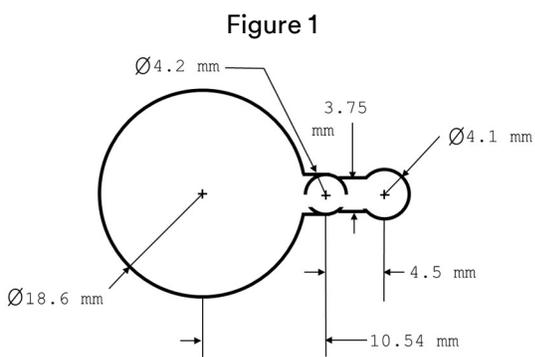
Pop-In Type / Design	Target Hole Size Range (mm)	Post Length (mm)	Panel Thickness Range (mm)	Design Information				Product Numbers		
				Typical Performance		Product Thickness Code	Stem Area (mm)	Type 170	Type 250	Type 400
				Insertion Force	Pull-Out Force					
	6.5 X 10.0 (See Figure 1)	8.6	1.3 – 1.59	<b>6.5mm x 10mm Hole</b> 1.29 mm panel: 13.2 lbs 1.45 mm panel: 11.1 lbs 1.55 mm panel: 14.4 lbs	85 lbs 78 lbs 83 lbs	104	26 x 26		SJ3704	SJ3713
	6.5 X 10.0 (See Figure 1)	8.6	0.71 – 1.0	<b>6.5mm x 10mm Hole</b> 0.71 mm panel: 7.9 lbs 0.78 mm panel: 15.0 lbs 0.86 mm panel: 11.5 lbs 1.00 mm panel: 8.4 lbs	75 lbs 82 lbs 73 lbs 79 lbs	104	26 x 26		SJ3826	SJ3827
	6.0 X 21.25 (See Figure 2)	8.6	1.0 – 1.2	1.22 mm panel: 7.0 lbs	121 lbs	104	26 x 26			SJ3806
	5.3 X 21.25 (See Figure 3)		0.70 – 1.0	0.69 mm panel: 7.0 lbs						

- Notes:
1. Some vertical movement may be observed at the low end of the panel thickness range for these parts designed to fit a 6.5 mm x 10 mm rectangular hole.
  2. The “post length” is the measurement from the back of the 3M™ Dual Lock™ Reclosable Fastener base to the tip of the post.
  3. Stem type shown on part drawing is an example for the instance when more than one type is available.
  4. Minimum order quantities, lead times and pricing are available upon request.



**Part Portfolio: Pop-In Designed for Key Hole Slots**

Pop-In Type/Design	Target Hole Size (Range)	Post Length (mm)	Panel Thickness (mm)	Design Information				Product Numbers		
				Typical Performance		Product Thickness Code	Stem Area (mm)	Type 170	Type 250	Type 400
				Insertion Force Panel Thickness/Hole Size	Pull-Out Force					
	Key Hole Slot (See Figure 1)	4.35	2.65 (2.50 – 2.80)	Low – Slide-in Type	~ 92 lbs (stem break strength)	104	20 x 20		SJ3221	SJ3731
	Key Hole Slot (See Figure 2)	4.95	3.25 (3.10 – 3.40)	Low – Slide-in Type	~ 92 lbs (stem break strength)	104	20 x 20	SJ3743	SJ3705	SJ3220
	Key Hole Slot (See Figure 3)	4.7	3.00 (2.75 – 3.15)	Low – Slide-in Type	~ 92 lbs (stem break strength)	104	26 x 26		SJ3278	SJ3279
	Key Hole Slot (See Figure 4)	4.2	2.50 (2.35 – 2.65)	Low – Slide-in Type	~ 92 lbs (stem break strength)	104	20 x 20		SJ3285	SJ3286



## 3M™ Dual Lock™ Reclosable Fasteners Pre-Cut Piece Parts

### General Description

3M™ Dual Lock™ Reclosable Fasteners Die-Cut Circles and Die-Cut Rectangular Parts are available in only two stem types: type 250 and type 400. Most pre-cut parts are supplied with a counter sunk hole for easy attachment using pan-head screws, pop rivets, ultrasonically stacked post, etc. The head of the screw or rivet must be recessed below the bottom of the mushroom stems to allow proper engagement of the mushroom heads.

### Product Information and Physical Properties

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

Part Portfolio: 3M™ Dual Lock™ Reclosable Fasteners Die-Cut Circles									
Part Drawing	Part Dimensions (mm) and Information				Design Information		Product Numbers		
	Diameter (mm)	Thickness (mm)	OD Hole Size (mm)	ID Hole Size (mm)	Fastening Area (mm²)	Product Thickness Code	Type 170	Type 250	Type 400
	28.5	5.96	9.53	4.93	568	134		SJ3251	
	28.5	5.96	7.90	4.10	587	134		SJ3755	
	28.5	5.10	7.90	4.10	587	100			SJ3762
	20.6	5.10	9.00	4.10	271	100			
	20.6	5.10	7.90	4.10	284	100		SJ3263	SJ3763
	14.3	5.10	7.90	4.10	109	100			SJ3465

Part Portfolio: 3M™ Dual Lock™ Reclosable Fasteners Die-Cut Rectangles												
Part Drawing	Part Dimensions (mm) and Information						Design Information		Product Numbers			
	Width (mm)	Length (mm)	Thickness (mm)	# of Holes	OD Hole Size	ID Hole Size	Hole Spacing (mm)	Fastening Area (sq. inch)	Product Thickness Code	Type 170	Type 250	Type 400
	20.5	28.0	5.08	1	8.33	4.22	Center	522	99			SJ3250
	38.1	38.1	5.08	2	8.33	4.22	25.0	1342	99			SJ3252
	38.1	38.1	5.08	2	7.50	3.60	25.0	1361	99			SJ3261
	38.1	38.1	4.70	2	7.50	3.60	25.0	1361	84			SJ3767

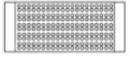
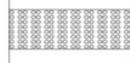
## 3M™ Dual Lock™ Reclosable Fasteners Slide-In Piece Parts

### General Description

3M™ Dual Lock™ Reclosable Fasteners Slide-In Parts are supplied with extended edges on two sides. The parts are easily attached to a rigid substrate having formed or molded retaining bracket. The retaining bracket should be recessed below the bottom of the mushroom stems to allow proper engagement of the mushroom heads. The part is usually designed with a simple ridge to prevent the parts from sliding out. The key advantage of slide-in parts is that parts can be installed, changed or replaced very easily by just sliding the part in or out of the retaining bracket.

### Product Information and Physical Properties

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

Part Portfolio: 3M™ Dual Lock™ Reclosable Fasteners Slide-In Parts										
	Nominal Dimensions					Design Information		Product Numbers		
	Outside Dimensions L x W (mm)	Thickness (mm)	Fastener Dimensions (mm)	Minimum Flange Width (mm)	Flange Thickness (mm)	Fastening Area (sq. inch)	Product Thickness Code	Type 170	Type 250	Type 400
	20.0 x 20.0	5.08	20 x 14	2.5	2.0	0.43	99	SJ3700	SJ3240	SJ3228
	25.4 x 25.4	5.08	25.4 x 19.4	2.5	2.0	0.76	99		SJ3229	
 *	25.4 x 31.0	5.10	25.4 x 25.4	2.0	1.25	1.00	100	SJ3736	SJ3792	SJ3717 (Black) SJ3717W (White)
	25.4 x 28.0	5.35	25.4 x 20	3.5	1.32	0.79	110		SJ3248	SJ3249
	40.0 x 20.0	5.08	40.0 x 15.0	2.5	1.25	0.93	99		SJ3803	
	70 x 20	5.08	70 x 14	2.5	2.0	1.52	99			SJ3260
	10.0 x 31.0	5.08	10 x 25.4	2	1.25	0.39	99		SJ3796	
	16 x 31	5.08	16 x 24	3.5	1.25	0.6	99		SJ3793	
	16.4 x 31	5.08	16.4 x 25.4	2.0	1.25	0.65	99		SJ3795	
	16 x 25.4	5.08	16 x 25.4	2.5	2	0.48	99		SJ3227	
	50 x 31	5.1	50 x 25.4	2	1.25	1.97	100			SJ3714
	12.7 x 31	5.1	12.7 x 25.4	2	1.25	0.5	100			
	25.4 x 18	5.35	25.4 x 10	3.5	1.32	0.9	110			SJ3290
	39.5 x 18	5.35	39.5 x 10.3	3.5	1.32	0.63	110	SJ3295	SJ3296	

Notes: 1. Stem type shown on part drawing is an example for the instance when more than one type is available. 2. Minimum order quantities, lead times and pricing are available upon request.

## Performance Properties

Performance tests are run using standard test procedures. The values shown are typical values and should not be used for specification purposes.

Typical Initial System Dynamic Tensile Strength**	3M™ Dual Lock™ Reclosable Fastener engaged to 3M™ Dual Lock™ Reclosable Fastener			
	Type 170 to 250	Type 250 to 250	Type 170 to 400	Type 250 to 400
Initial Engagement: lb <sub>F</sub> /in <sup>2</sup> (N/cm <sup>2</sup> )	13 (9.0)	22 (15.2)	21 (14.5)	31 (21.4)
Initial Disengagement: lb <sub>F</sub> /in <sup>2</sup> (N/cm <sup>2</sup> )	27 (18.5)	43 (29.6)	43 (29.6)	60 (41.4)

Typical Initial System Dynamic Peel and Cleavage Strength - lb <sub>F</sub> /in (N/cm) width	3M™ Dual Lock™ Reclosable Fastener engaged to 3M™ Dual Lock™ Reclosable Fastener			
	Type 170 to 250	Type 250 to 250	Type 170 to 400	Type 250 to 400
Cleavage Strength (rigid to rigid) 2.25" (5.7 cm) long piece	12 (21.0)	24 (42.0)	20 (35.0)	32 (56.0)
"T" Peel Flexible to Flexible	0.7 (1.2)	1.9 (3.2)	1.9 (3.2)	1.5 (2.6)
90° Peel Flexible to Rigid	1.8 (3.2)	4.1 (7.2)	3.1 (5.4)	4.6 (8.1)

Typical System Dynamic Tensile Strength	3M™ Dual Lock™ Reclosable Fastener engaged to 3M™ Scotchmate™ Reclosable Loop		
	Type 170	Type 250	Type 400
Initial engagement: lb <sub>F</sub> /in <sup>2</sup> (N/cm <sup>2</sup> )	< 1 (< 0.69)	< 1 (< 0.69)	< 1 (< 0.69)
Initial disengagement: lb <sub>F</sub> /in <sup>2</sup> (N/cm <sup>2</sup> )	33 (22.8)	35 (24.1)	39 (26.9)

Notes: 1. Typical system performance properties at 72°F (22°C) at 50% RH attached to Aluminum panels and a 12 inches/minute crosshead speed.  
 2. Dual Lock engagement/disengagement properties can be influenced by the rigidity of the mounting substrate.

## Temperature Performance

Typical test results show that all suggested combinations of 3M™ Dual Lock™ Reclosable Fastener types will support in static tensile or shear loads up to 1.0 kg/in<sup>2</sup> (2.2 lb/in<sup>2</sup>) across a temperature range of -20°F to 200°F (-12°C to 93.3°C).

Note: Test data refers to the Dual Lock Reclosable Fastener engagement to itself. The type of attachment system used can affect the performance results (i.e. such as the adhesive attachment system).

## Additional Performance Characteristics

<b>Resistance to Chemicals:</b>	The polypropylene backing, stems and mushroom top should resist attack by most common solvents and alkaline solutions. Tests should be conducted by the user to evaluate the solvents and exposure time expected for the actual application.
<b>Resistance to Plasticizers:</b>	Tests should be conducted by the user to evaluate the plasticizer resistance for the chosen application, environmental exposure and duration for the actual application.
<b>Flammability Resistance:</b>	Dual Lock™ reclosable fasteners pass FMVSS 302 flammability tests when attached to a thin metal panel. If you need reclosable fasteners that pass many of the other standard flammability tests (such as FAR 25.853, ASTM E-162, ASTM E-662, BSS-7239, etc.), it is suggested that you refer to IATD's 3M™ Scotchmate™ Flame Resistant Reclosable Fasteners data pages (70-0709-3976-7 and 70-0709-3978-3).
<b>Resistance to Environmental Exposure:</b>	Temperatures between -20°F (-29°C) and 200°F (93°C) should have minimal effect on closure strength. To maintain performance when exposed for extended periods of sunlight or ultraviolet radiation, these products should be placed between two opaque or UV-resistant surfaces. Specific testing under the expected environmental conditions is recommended.
<b>Water or Humidity:</b>	Closure strength should not be affected by prolonged exposure to water or humidity.



## Regulatory Information

Please refer to the product label and Safety Data Sheet (SDS) for health and safety information before using. Observe proper handling precautions as outlined in the SDS, which is available on request or at [www.3M.com/msds](http://www.3M.com/msds).

The product is published as a material entry and is available for access on [www.mdsystem.com](http://www.mdsystem.com). For product IMDS I.D. number, email requests to [3M-IMDSrequest@mmm.com](mailto:3M-IMDSrequest@mmm.com).

## Contact Information

The information provided in this technical document is intended as a guide for this product. For more information or help in selecting a 3M product for an application, please contact your 3M technical service representative or call 1-800-328-1684.

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### Automotive and Aerospace Solutions Division

3M Center  
St. Paul, MN 55144-1000  
Phone 1-800-328-1684  
Web [www.3M.com/autosolutions](http://www.3M.com/autosolutions)

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