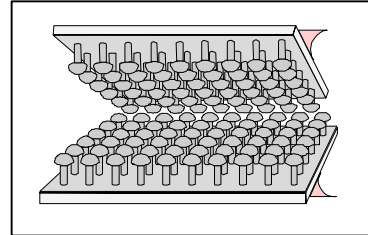


# 3M Dual Lock™ Fastening Systems

## Technical Data Sheet

### General Description

3M™ Dual Lock™ Fastening Systems 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™ fasteners are used primarily to secure rigid and semi rigid surfaces such as trim or door panels, instrument panel bezels, headliners, and other automotive interior trim.



Dual Lock™ fasteners overcome the often difficult alignment and installation problems of screws and hidden fastener. Dual Lock™ fasteners offer a cost effective alternative.

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### Special Properties

Pressure - sensitive Dual Lock™ combines the features of the Dual Lock™ fastener with 3M Automotive Acrylic Foam Tape for attachment to painted sheet metal and many other automotive substrates.

#### *Noise reduction*

The viscoelastic property of the Acrylic Foam Tape and the special construction of the mushrooms guarantees an ideal absorption of vibrations and rattlings.

#### *Blind Attachment*

Dual Lock™ fasteners can be attached on the backside of the interior part where it won't interrupt the show surface.

#### *Reclosability*

Dual Lock™ fasteners can be opened and reclosed several times ( up to 1000 reclosures).

#### *Ease of Assembly*

Dual Lock™ fasteners can be attached to components before they enter the assembly plant, reducing the number of parts and the required assembly time.

#### *Easy Alignment*

Dual Lock™ fasteners engage in any orientation. The stems slide over each other until they are engaged with a firm pressure, eliminating concerns about disalignment or premature engagement.

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## Dual Lock™ Fasteners

Dual Lock™ Fasteners are available in three stem densities:

DL 170	170 stems/ inch <sup>2</sup> (26 stems/ cm <sup>2</sup> )
DL 250	250 stems/ inch <sup>2</sup> (39 stems/ cm <sup>2</sup> )
DL 400	400 stems/ inch <sup>2</sup> (62 stems/ cm <sup>2</sup> )

## Dual Lock™ combinations

(Dis)Engagement Force

	170/400	250/250	250/400	400/400
<i>Initial Engagement</i>				
 [N/cm <sup>2</sup> ]	17,3 - 24,2	6,9 - 13,8	27,6 - 34,5	41,4 - 62,1
<i>Initial Disengagement</i>				
 [N/cm <sup>2</sup> ]	20,7 - 27,6	24,2 - 31,1	31,1 - 38,0	38,0 - 44,9

The combination DL/170/ DL 170 will not be recommended.

## Product Basket

<i>Dual Lock™ /Tape</i> i.e. DL250/ 5361	<i>Thickness **</i> [mm]	<i>Tolerance</i> [mm]	<i>Adhesive</i>	<i>Stem density***</i> [stems/inch <sup>2</sup> ]		
DL Typ*/ Plainback	2,67	± 0,35	-	170	250	400
DL Typ*/ 468MP	add 0,13	± 0,35	Acrylic	170	250	400
DL Typ*/ 5428	add 0,45	± 0,5	AR-7	-	250	400
DL Typ*/ 5580	add 0,80	± 0,5	AR-7	-	250	400
DL Typ*/ 5386	add 0,80	± 0,5	SS	-	250	400
DL Typ*/ 5361	add 1,10	± 0,5	AR-7	170	250	400
DL Typ*/ 5673	add 1,10	± 0,5	TX-1	-	250	400
DL Typ*/ 5356	add 1,52	± 0,5	AR-7	-	-	400
DL Typ*/ 5390	add 2,29	± 0,5	AR-7	-	-	400
DL Typ*/ 4225	add 3,18	± 0,5	AR-5	-	-	400

### Liner

*Material* Polyethylene (except 468 MP – paper liner)  
Paper liner (especially used for die cut parts)

Note: \* DL Typ either DL 170, DL 250 or DL 400

\*\*Thickness does not include liner

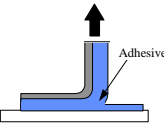
\*\*\* average stem density

Adhesive Systems: AR-7 and AR-5 adhesive used for most substrates like painted panel, metal, etc.  
TX-1 special adhesive for low energy substrates (e.g. Polyolefine, PP, etc.)  
SS for all kind of substrates

## Performance Properties

Typical tape values with DL backing

90° Peel adhesion to stainless steel



[N/12,7mm]	20 minutes RT	72 hours RT
DL Typ*/ 468	14	19
DL Typ*/ 5428	29	34
DL Typ*/ 5580	34	40
DL Typ*/ 5386	28	38**
DL Typ*/ 5361	36	44**
DL Typ*/ 5673	34	40**
DL Typ*/ 5356	40	45
DL Typ*/ 5390	42	58
DL Typ*/ 4225	54	57**

Note: \* DL Typ either DL 170, DL 250 or DL 400

\*\* After 3 days at RT a Foam Split can appear.

Tests are run at 22° C and 50 % r.h.

**Shelf Life** 12 months after shipment, storage in original package at 20°C/50% r.h.

**Environmental Stability** Excellent moisture resistance  
Recommended temperature range under static load conditions: - 40°C to + 95°C  
For higher temperature requirements (up to + 120°C) it will be recommended to use the DL plainback and the **3** Jet-Welt™ TE031 (reactive PUR-melt adhesive), which is used in several automotive applications.

**Application** It will be recommended to test the Dual Lock™/Acrylic Foam tape construction on the appropriate substrate under the typical loading conditions (static, dynamic, temperature, load).  
Please make sure, that the Dual Lock™ area is appropriately in size to guarantee static and dynamic load, which is needed for this attachment application.  
Due to experience of this blind fastening system, it is recommended to have a bigger sized Dual Lock™ part on one side, so that a full-sized engagement of the attached part can be guaranteed.  
In order to avoid any cleavage of the Dual Lock™ parts, please make sure that the parts are attached plane parallel.

**Construction height**  
of the different Dual Lock™ combination  
*Engaged Dual Lock™ thickness in mm*

	DL Typ*/ Plain	DL Typ*/ 468 MP	DL Typ*/ 5428	DL Typ*/ 5580	DL Typ*/ 5386	DL Typ*/ 5361	DL Typ*/ 5673	DL Typ*/ 5356	DL Typ*/ 5390	DL Typ*/ 4225
DL Typ*/ Plain	3.81	3.94	4.26	4.61	4.61	4.91	4.91	5.33	6.10	6.99
DL Typ*/ 468 MP	3.94	4.07	4.39	4.74	4.74	5.04	5.04	5.46	6.23	7.12
DL Typ*/ 5428	4.26	4.39	4.71	5.06	5.06	5.36	5.36	5.78	6.55	7.44
DL Typ*/ 5580	4.61	4.74	5.06	5.41	5.41	5.71	5.71	6.13	6.90	7.79
DL Typ*/ 5386	4.61	4.74	5.06	5.41	5.41	5.71	5.71	6.13	6.90	7.79
DL Typ*/ 5361	4.91	5.04	5.36	5.71	5.71	6.01	6.01	6.43	7.20	8.09
DL Typ*/ 5673	4.91	5.04	5.36	5.71	5.71	6.01	6.01	6.43	7.20	8.09
DL Typ*/ 5356	5.33	5.46	5.78	6.13	6.13	6.43	6.43	6.85	7.62	8.51
DL Typ*/ 5390	6.10	6.23	6.55	6.90	6.90	7.20	7.20	7.62	8.39	9.28
DL Typ*/ 4225	6.99	7.12	7.44	7.79	7.79	8.09	8.09	8.51	9.28	10.17

DL Typ\* – DL 170, DL 250 or DL 400

Tolerance on engaged thickness ± 0,5 mm; of plain Dual Lock™ ± 0,35 mm

**Pressure sensitive Dual Lock™ fasteners engaged thickness does not include liner.**

**Important notice to purchaser**

All statements, technical information and recommendations herein are based on tests we believe to be reliable, but the accuracy of completeness thereof is not guaranteed, and the following is made in lieu of all warranties, expressed or implied, including the implied warranties of merchantability and fitness of purpose: Seller's and manufacturer's only obligation shall be to replace such quantity of the product to be defective. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risks and liability whatsoever in connection there with. Neither seller nor manufacturers shall be liable either in tort or in contract for any loss or damage, direct, incidental, or consequential, arising out of the use of or in the inability to use the product. No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller or manufacturers.



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