

Designing with 3M™ Dual Lock™ Reclosable Fasteners

Technical Bulletin

3M™ Dual Lock™ Reclosable Fasteners are a strong, easy and reliable attachment mechanism that provide blind fastening and easy removability when needed, replacing screws, clips and other traditional fastening methods. A variety of 3M Dual Lock Reclosable Fasteners are available to ensure optimal performance for many applications and substrates.



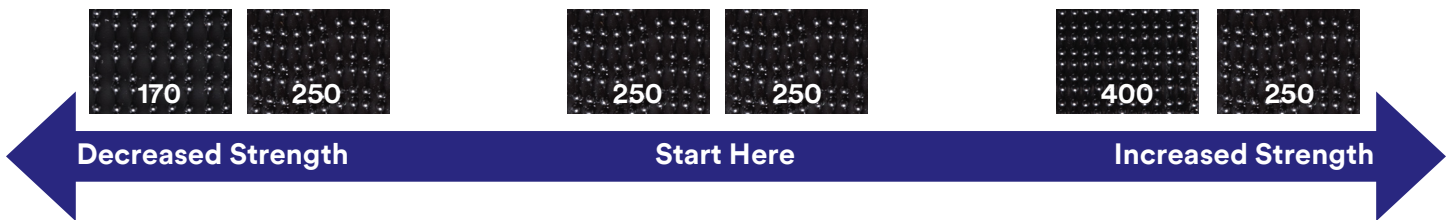
Engagement and disengagement strength

In one square inch there are approximately 170, 250 or 400 stems.

- To achieve the desired attachment strength, start the evaluation with 250 to 250.
- To increase the attachment strength, evaluate 250 to 400.
- To decrease the attachment strength, evaluate 170 to 250.

Note: If 250:250 is the correct strength but difficult to engage, we recommend evaluating 170:400.

Note: We advise against 170:170 because the attachment will be very weak. We advise against 400:400 because you may not be able to engage the two sides completely or disengage them without damage.



Substrate attachment & surface preparation

3M™ Dual Lock™ Reclosable Fastener is attached to substrates through various means; the most prevalent is with pressure sensitive adhesive tapes pre-applied to the 3M Dual Lock Reclosable Fastener backing. The pressure sensitive adhesive tape requires a clean dry surface and firm even pressure (15psi) to ensure good contact with the surface of the substrate to which it is being applied.

Most 3M Dual Lock Reclosable Fastener products will adhere best to high surface energy substrates, such as metals (like stainless steel, aluminum) or medium surface energy substrates (like ABS, polycarbonate, and acrylic). For low surface energy substrates (like powder coated paint and other plastics), consider advance treatment of the surface with 3M™ Tape Primer 94 or 3M™ VHB™ Tape Universal Primer UV which will increase adhesion to many low surface energy substrates. Please refer to the 3M Dual Lock Reclosable Fasteners with Acrylic Foam Tape Application Guide for more information.

Temperature and environmental exposure

3M™ Dual Lock™ Reclosable Fastener is designed to be applied between 68-80°F (20-27°C). For long term use in high temperatures or outdoor conditions please consider the following guidelines for temperature resistance:

- SJ3560/61/62 220F (104°C)
- SJ3550/51/52 200F (93°C)
- SJ3870/71/72 158F (70°C)
- SJ3540/41/42 120F (49°C)

3M™ Dual Lock™ Reclosable Fasteners Product Selection:

Product Family	Adhesive Type	Substrates	Indoor/ Outdoor Use	Color (Stems, Adhesive)	170- type	250- type	400- type
SJ3540	Rubber-based	HSE, MSE, LSE	Indoor	Black, Black	SJ3542	SJ3540	SJ3541
SJ3550	Conformable Acrylic	HSE, MSE	Indoor/Outdoor	Black, White	SJ3552	SJ3550 ¹	SJ3551
SJ3560	Firm Acrylic	HSE, MSE	Indoor/Outdoor	Clear, Clear	SJ3562	SJ3560 ¹	SJ3561
SJ3870	Conformable Modified Acrylic	HSE, MSE, Powder Coated Paints	Indoor/ Outdoor	Black, Black	SJ3872	SJ3870	SJ3871

¹Tested tested against the DIN EN 45545-2, the relevant FST Norm for the Rail Market in Europe

- Other 3M Adhesive-backed products and non-adhesive backed products are available, including:
- Piece parts: rigid backed 3M Dual Lock Reclosable Fastener pieces designed to be mechanically fastened to substrates
- Low profile 3M Dual Lock Reclosable Fastener: minimal engaged thickness and reduced weight limit
- Hook & loop: for applications

For more information on piece parts and other 3M Reclosable Fasteners, please contact your 3M Representative or 3M Technical Service.



Design considerations

The performance of 3M™ Dual Lock™ Reclosable Fastener depends on the design of the final assembly. The suggested starting point for evaluation is starting with four square inches (4 in²) of fastener area per pound of static tensile or shear load to be supported, increasing or decreasing the amount of fastener may be needed depending on the substrates and application, this should be tested in the specific application.

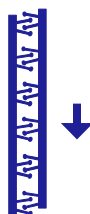
Direct tensile

3M™ Dual Lock™ Reclosable Fasteners are strongest in direct tensile. Example applications include: vehicle headliners and ceiling tiles.



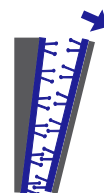
Shear

3M™ Dual Lock™ Reclosable Fastener is strong in shear. Example applications include: panel attachment, signage and graphics.



Cleavage

3M™ Dual Lock™ Reclosable Fastener is not intended to be used under peel or cleavage stresses in final application. Peel or cleavage is the weakest angle and is used to disengage or “remove” the 3M™ Dual Lock™ Reclosable Fastener component. If the 3M™ Dual Lock™ Reclosable Fastener is under constant stress at slight angles, the product may not meet technical performance specifications for adhesion or the forces can cause disengagement or creep to occur slowly over time. This includes examples where the product is not upright or hanging at a slight angle toward the ground.



Ensure full engagement

To ensure that the 3M™ Dual Lock™ Reclosable Fasteners is not accidentally under slow low angle peel, ensure that all 3M Dual Lock Reclosable Fasteners is fully engaged at the time of application.



Suggestions

- Use 4 square inches of 3M™ Dual Lock™ Reclosable Fasteners per pound of dead load
- Apply to a clean dry surface
- Apply firm even pressure of at least 15 pounds per square inch
- Apply the 3M Dual Lock Reclosable Fastener between 68-80°F (20-27°C)

This technical bulletin is not a substitute for performance testing and should be used to identify the appropriate 3M Dual Lock Reclosable Fastener to begin your evaluation.

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