



Dual Lock™ Reclosable Fasteners with Acrylic Foam Tape

Application Guide

February, 2008

Summary

Most substrates are best prepared by cleaning with a 50:50 mixture of isopropyl alcohol (IPA) and water* prior to applying 3M™ Dual Lock™ Reclosable Fasteners.

Exceptions to this general procedure that may require additional surface preparation include:

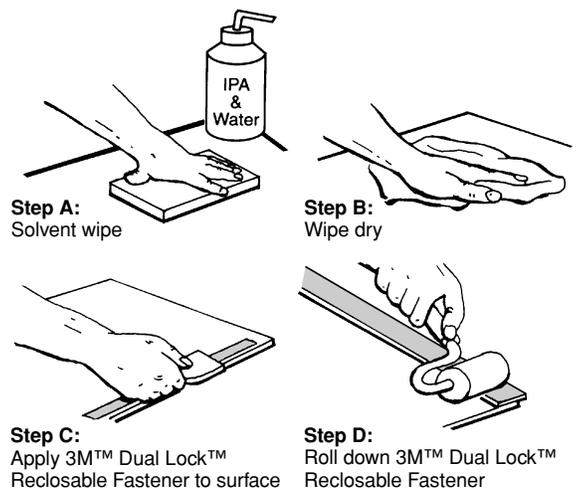
- **Heavy Oils:** A degreaser or solvent-based cleaner may be required to remove heavy oil or grease from a surface and should be followed by cleaning with IPA/water.
- **Abrasion:** Abrading a surface, followed by cleaning with IPA/water, can remove heavy dirt or oxidation and can increase surface area to improve adhesion.
- **Adhesion Promoters:** Priming a surface can significantly improve initial and ultimate adhesion to many materials such as plastics and paints.
- **Porous Surfaces:** Most porous and fibred materials such as wood, particleboard, concrete, etc. need to be sealed to provide a unified surface.
- **Unique Materials:** Special surface preparation may be needed for glass and glass-like materials, copper and copper containing metals and plastics or rubber that contain components that migrate (e.g. plasticizers).

General Procedure

- The Dual Lock reclosable fasteners and substrates should have equilibrated for a minimum of one hour at temperatures of 68° to 80°F (20° to 27°C) before application.

- To obtain optimum adhesion, the bonding surfaces must be well unified (see porous surfaces above), clean and dry. Typical surface cleaning solvents are IPA/water mixture (rubbing alcohol) or heptane.* (Steps A and B.)

- **Application Procedure:** Bond strength is dependent upon the amount of adhesive-to-surface contact developed. Firm application pressure develops better adhesive contact and helps improve bond strength. (Steps C and D.)



***Note:** These cleaner solutions contain **greater than** 250 g/l of volatile organic compounds (VOC). Please consult your local Air Quality Regulations to be sure the cleaner is compliant. When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and directions for use. Be sure to follow all government regulations and the manufacturer's precautions and directions for use when using solvents or other cleaning methods.

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General Procedure (continued)

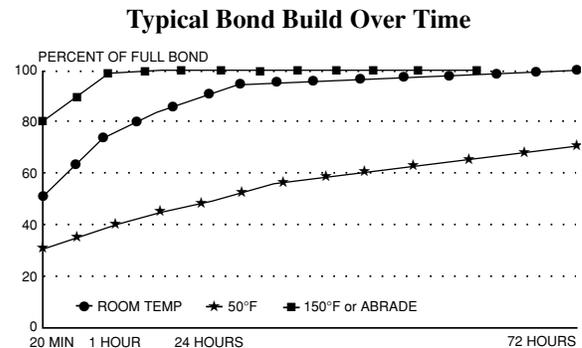
• 3M™ Dual Lock™ Reclosable Fastener Application Procedure:

- **For small pieces:** The liner is removed from the Dual Lock reclosable fastener adhesive. Without touching the adhesive, the Dual Lock reclosable fastener is applied to the surface using light finger pressure. The Dual Lock reclosable fastener must then be rolled down with a rubber-covered hand roller, being careful not to crush the Dual Lock reclosable fastener stems. It is suggested to roll down the Dual Lock reclosable fastener at least once in each direction with a 4.5 lb. to 10 lb. roller to insure 100% adhesive contact, especially around the perimeter of the part.
- **For long strips:** The liner is removed from the Dual Lock reclosable fastener adhesive. Without touching the adhesive, the Dual Lock reclosable fastener is aligned on the substrate surface. One end of the Dual Lock reclosable fastener strip is pressed down (tabbed) to the substrate while holding the other end of the strip under light tension. The Dual Lock reclosable fastener strip is then slowly rolled down the entire length of the strip from the tabbed end with a rubber covered hand roller, taking care not to trap air bubbles under the adhesive and not to crush the Dual Lock reclosable fastener stems. It is suggested to roll down the reclosable fastener at least once in each direction with a 4.5 lb. to 10 lb. roller to insure 100% adhesive contact, especially around the perimeter of the part.

- **Evaluate Application Procedure:** A Clear Test Panel (Glass, Acrylic, or Polycarbonate) can be used to evaluate and improve application procedure. Using the above procedure, apply the Dual Lock reclosable fastener to a Clear Test Panel. After Dual Lock reclosable fastener has been applied, examine the back side of the panel for adhesive wet out (contact area). It is important to adjust application procedure and roll down to insure almost 100% contact, especially around the perimeter of the parts.

- The pressure-sensitive adhesive bonds to the substrate on contact and parts can be handled immediately. Adhesive bond strength increases with time, pressure and temperature. A minimum of twenty four hours dwell time is recommended before applying a load or disengaging assembled parts.

- After application, the bond strength will increase as the adhesive flows onto the surface. At room temperature, approximately 50% of the ultimate strength will be achieved after 20 minutes, 90% after 24 hours and 100% after 72 hours. In some cases, bond strength can be increased and ultimate bond strength can be achieved more quickly by exposure of the bond to elevated temperatures (e.g. 150°F [66°C] for 1 hour).



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Heavy Oils On surfaces with a light oily film, or other light contamination, the 50:50 IPA/water solution is usually adequate. Where heavy oils or grease are present, a “degreasing” solvent such as 3M™ Prep Solvent 70, 3M™ Citrus Base Cleaner, mineral spirits, naphtha or similar solvents are suggested to cut the oil. This should always be followed with an IPA/water cleaning to help ensure that any residue or film is removed.*

Abrasion Abrading a surface can serve several functions:

- Remove heavy levels of dirt or oxide from metals or paints (e.g. galvanized steel).
- Create additional surface area that can increase adhesion.
- Smooth a surface to obtain more flatness, allowing improved contact area.

Abrasion often helps adhesion to paints and plastics. When abrading, it is important for tapes to have a finely abraded surface. Very small scratches in the surface, generated with circular motion rather than straight-line motion, are most desirable. A surface with many micro-scratches in it can have up to 40% additional available surface area, translating to higher ultimate strength and greater initial adhesion. Scotch-Brite® Hand Pads (such as 7447 Maroon or Heavy Duty Green) are good for achieving the right level of abrasion. Tools such as a power palm sander will assist on large jobs. Avoid grinding a surface with coarse abrasive materials, since they may create too rough of a texture for the adhesive to adequately flow into the surface. Always clean the surface with the IPA/water solution or additional methods previously described, and be certain that all loose particles are removed prior to bonding.

Adhesion Promoters Priming a surface can significantly improve initial and ultimate adhesion to many materials such as plastics and paints because of their low surface energy or the additives they may contain. A primer creates a new surface for 3M™ Dual Lock™ Reclosable Fasteners to adhere to and can also create a layer that may impede the migration of additives that may be present in a material. If needed for LSE and difficult to bond to substrates, lightly abrading a surface with Scotch-Brite® Hand Pad prior to applying the adhesion promoter can sometimes improve its bond performance to the substrate. It is important for the user to determine the suitability of the Dual Lock reclosable fastener, the adhesion promoter and the application process. Consult Technical Data Sheet on individual promoters for suggested application procedure.

Porous Surfaces Rough, porous or fibered materials such as wood, particleboard, cement, etc., have an open surface and require sealing to provide a unified surface for tape bonding. Common sealing materials would include paint, varnish or other hard surface coatings. Fast drying 3M™ Rubber & Vinyl 80 Spray Adhesive can also be used to unify the surface and improve the tape bond.

Unique Surfaces Glass, stone, ceramic or other siliceous materials are hydrophilic (water-loving) by nature. Normally, the hydrophilic nature makes pressure sensitive adhesive bond durability susceptible to change under high humidity or exposure to moisture. In basic terms, water vapor can undercut the tape bond and interfere with the normal adhesion forces. Silane coupling agents, added to the IPA/water cleaning solution, can help reduce the “water-loving” tendency of these surfaces and enhance the tape bond in high moisture environments.

Copper, brass, and bronze are prone to oxidation even after the Dual Lock reclosable fastener is applied. To prevent a weakening of the bond, a lacquer or varnish should be applied to these surfaces. Be sure to test the tape bond to the sealer on a metal surface to verify good adhesion.

Flexible PVC (vinyl) contains plasticizers that can migrate into the tape and affect adhesion. The Dual Lock reclosable fasteners with **Multi-Purpose 1 or 2 Acrylic Adhesives** are formulated to be resistant to plasticizer migration, or 3M™ Adhesive Promoter 2262AT can serve as a barrier to migration. Rubber materials (e.g. EPDM, neoprene) can have low surface energy and may also contain plasticizers and oils. These require the use of an adhesion promoter for stable bond strength. Test for compatibility with flexible PVC and rubber materials by aging bonded samples for a week at 150°F (66°C) and check for softening of the adhesive, discoloration or reduction in bond strength.

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Suggested Primers The table below offers suggested primers and alternative methods that commonly require primers, adhesion promoters or other surface treatments for successful use with 3M™ Dual Lock™ Reclosable Fasteners. This list is not intended to be fully comprehensive, but may be useful for many applications. It is very important for the user to determine the suitability of the Dual Lock reclosable fasteners, primer and application process and compliance with local Air Quality Regulations.

Substrate/Surface	Concern	4298UV or 3M Primer 94	4296T	2262AT ^(a)	K500	N-200J	C-100J	K520UV	111	Silane Glass Treatment AP 115 ^(b)	Other Alternatives
Steel or Aluminum	Surface must be clean								X		Abrasion may clean surface
Copper, Brass, Bronze	Oxidation after bonding										Lacquer or varnish, architectural grade coatings
Glass, Stone, Ceramic, Tile	High humidity moisture	X								P	or similar silane coupling agent in IPA/water mixture
Concrete, Brick	Non-unified or rough surface, moisture										3M™ Rubber & Vinyl 80 Spray Adhesive, concrete sealer, paint
Wood (soft, hard particle board, etc.)	Weak fiber layer on surface										3M™ Rubber & Vinyl 80 Spray Adhesive, 3M™ Fastbond 30 Contact Adhesive, urethane paint, varnish ^(b)
Paints	Low adhesion	X		X		X				P	Abrade surface
PVC	Migrating oils			P		P	X				Evaluate Multi-Purpose Adhesives 1 or 2 and test for migration
PP	Low adhesion	P			X	X		X			Flame treatment, Corona treatment
TPO	Low adhesion	P			X			X			
Fascia Paint	Low adhesion		P				X				
EPDM Rubber	Low adhesion, migrating oils	P			X			X			
Neoprene, Santoprene™ Rubber	Low adhesion, migrating oils	P			X						3M™ Scotch-Grip™ Plastic Adhesive 1099
TPU, Polyurethane	Mold release, low adhesion	X	P			X	X				Abrade and prime
ABS	Mold release, low adhesion	X		P		X	X				
TPV/TPE	Mold release, low adhesion	P			X						
PC	Mold release, low adhesion	P				X					
Acrylic	Mold release, low adhesion	P									
Nylon	Mold release, low adhesion	X		P		X					
Polyester	Mold release, low adhesion	X		P	X	X	X				
RIM	Mold release, low adhesion	X	P								

P - Primary Choice
X - Other Possibilities

3M™ Adhesion Promoter 2262AT is not a preferred OEM recommendation for exterior applications.
Solvent-based adhesion promoter use limited in California as required by Air Quality Management Directive.
4298UV and K520UV are premixed with UV dye.

***Note:** These primers contain greater than 250 g/l of volatile organic compounds (VOC). Solvent based adhesion promoter use limited in California as required by Air Quality Management Directive. Please consult your local Air Quality Regulations to be sure these primers are compliant.

^(a)3M™ Adhesion Promoter 2262AT contains 57 g/l VOC less water and less exempt solvent.

^(b)See supplier information.

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Primer Source and Description

- **3M™ Primer 94, 3M™ Adhesion Promoter 111 and 3M™ Silane Glass Treatment AP 115** are available through distributors that carry 3M™ Dual Lock™ Reclosable Fasteners.
- **3M™ Adhesion Promoter 2262AT** is ready-to-use, pre-diluted (ten parts Acetone/one part 2262) version of 3M™ Scotch-Grip™ Plastic Adhesive 1099.
- **3M™ Adhesion Promoters** are available from Customer Service at (317) 290-1600.
- **Silane Coupling Agent** is also available premixed in a 91:9 IPA/water solution or as a concentrate. A 0.5 wt. % level of silane* adhesion promoter diluted in a 91:9 IPA/water cleaning solution has been found to be sufficient.

Suggested Sources for Silane Coupling Agents:

Custom-Pak Products, Inc. (262) 251-6180 available premixed in IPA/water
Lancaster Synthesis, Inc. (603) 889-3306 available 100% concentrated

***Note:** Be sure to read and follow silane and solvent manufacturer's precautions and directions for use for proper handling and storage information.

Run an Evaluation

Because 3M cannot anticipate all of the different possible surfaces and contaminants that may exist, it is imperative that the user conduct an evaluation to determine the suitability of 3M™ Dual Lock™ Reclosable Fasteners, surface preparations procedures, and any other processes that may have an influence on the tape or the bonded parts. Likewise, where there are any changes in plastic or paint formulation, or suppliers of these materials, it is advisable to run evaluations to ensure that the change has not influenced the compatibility of the surface with Dual Lock reclosable fasteners.

Sources

Hand held J-Roller:

Rockler Woodworking and Hardware
Phone: (800) 279-4441 Specify #39463
www.rockler.com

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Product Use

All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

Limited Warranty

3M warrants for **24** months from the date of manufacture that 3M™ Dual Lock™ Reclosable Fasteners with Acrylic Foam Tape will be free of defects in material and manufacture. 3M MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. This limited warranty does not cover damage resulting from the use or inability to use 3M™ Dual Lock™ Reclosable Fasteners with Acrylic Foam Tape due to misuse, workmanship in application, or application or storage not in accordance with 3M recommended procedures.

Limitation of Remedies and Liability

If the 3M™ Dual Lock™ Reclosable Fasteners with Acrylic Foam Tape is proved to be defective within the warranty period stated above. THE EXCLUSIVE REMEDY, AT 3M'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE 3M™ DUAL LOCK™ RECLOSABLE FASTENERS WITH ACRYLIC FOAM TAPE. 3M shall not otherwise be liable for loss or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including negligence, warranty, or strict liability.

ISO 9001:2000

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001:2000 standards.



Industrial Adhesives and Tapes Division

3M Center, Building 21-1W-10, 900 Bush Avenue
St. Paul, MN 55144-1000
800-362-3550 • 877-369-2923 (fax)
www.3M.com/industrial



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