

## Introduction

The purpose of this installation guide is to establish 3M-recommended procedures for installing the following “Product(s)”:

- 3M™ DI-NOC™ Architectural Finishes
- 3M™ DI-NOC™ Architectural Finishes MT Series (Matte)
- 3M™ DI-NOC™ Architectural Finishes EX Series (Exterior)
- 3M™ DI-NOC™ Architectural Finishes E-Series
- 3M™ DI-NOC™ Whiteboard Film WH-111
- 3M™ DI-NOC™ Projection Screen Whiteboard Film PWF-500

### **i** IMPORTANT NOTE

Please refer to the individual technical data sheets for additional information.

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## Application Surfaces

The Products can be applied to many types of application surfaces. See [“Adhesion Compatibility with Application Surfaces” on page 3](#).

## Glossary of Terms

**Application Surface:** The actual surface to which a Product is applied. This may be a bare application surface or a finish on an application surface, such as paint, varnish, or laminate.

**Porosity:** The amount of void compared to solid material in an application surface. Product may appear to adhere well initially to some porous application surfaces, but adhesion decreases significantly over time. Apply an appropriate product to seal porous surfaces.

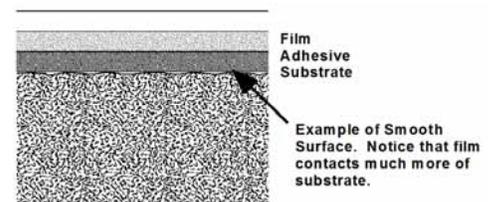
**Sealer:** A coating applied to an application surface to seal a porous surface.

Below are some terms that describe the surface’s tactile feel, which has a significant effect on Product choice, ease of application, and adhesion. A very smooth application surface will have the best Product adhesion and coverage. For rough application surfaces, consider using a Product with more visual design and/or embossed texture.

- **Very smooth:** No surface variation, such as glass. Allows for the easiest Product application.
- **Fairly smooth:** Little surface texture, such as painted wallboard. Allows for easy Product application and good adhesion, but texture may show through some Products. A Level 5 Gypsum Board Finish (ASTM C840) is an example of a “fairly smooth” surface.
- **Rough:** Has obvious visual and tactile surface variations, such as concrete block, brick, textured wallpaper, etc. Product may not adhere well due to the adhesive not having full contact with the surface. In addition, the surface’s texture will show through almost all Products. See [“Adhesion” on page 2](#) and [“Surface and Work Area Preparation” on page 7](#) for instructions on rough application surfaces.

### Non-compatible Application Surfaces

- Brass, Copper and other corrosion-susceptible metals
- Non-sealed Concrete and Stone
- Non-sealed Drywall, including skim-coat
- Other porous substrates



**Figure 1.** Examples of Film Contact on Smooth Surfaces

## Installation Tools and Supplies

- 3M™ Hand Applicator PA-1 (Blue or Gold) (optionally apply 3M™ PTFE Skived Film Tape 5480 or the loop side of 3M™ Hook and Loop Tape to reduce surface friction during application)
- Razor blade knife with stainless steel replacement break-away blades
- An appropriate container for holding discarded cutting blades or tools
- Liner cutting tool (i.e. Seam Buster tool)
- Steel ruler with nick-free edges
- Scotch™ Masking Tape
- 3M™ Air Release Tool 391X
- Measuring tape
- Adhesion promoter and brush
- Industrial heat gun capable of attaining and sustaining 100°F–300°F (38°C–149°C) or equivalent
- Clean, lint-free cloths
- 70/30 IPA cleaning solution (70% isopropyl alcohol, 30% water)
- 3M™ Scotch-Brite™ Hand Pad
- Sand paper
- Soft-bristle brush

## Adhesion

### Initial and Final Adhesion

An adhesive-backed Product will have both initial and final adhesion. Adhesion will vary depending on the surface type and texture, installation conditions and techniques, and Product exposure conditions, any of which can prevent a Product from achieving a full bond to the application surface.

- Initial Adhesion is the bond needed to hold the Product in place during installation. 800 grams of adhesion is recommended when tested using a spring scale per the 3M Adhesion Test section. A good initial adhesion requires that a substantial portion of the adhesive be in contact with the application surface.
- Final Adhesion, or maximum bond, is achieved in 24 to 48 hours after Product application. A good final adhesion requires all of the following: a suitable application surface with an optimal surface, correct Product installation techniques, and Product exposure conditions within those stated for the Product.

### Adhesion Considerations

- An adhesion promoter may aid in Product adhesion. See Adhesion Promoters in the following section.
- If Product is stretched during application, it may shrink later, which decreases adhesion. Using an adhesion promoter may minimize shrinkage.

### Adhesion Promoters

Using an adhesion promoter can significantly increase a Product's adhesion. However, before using an adhesion promoter, consider these points: the Product will be more difficult to reposition on the surface due to enhanced adhesion; and Product removal will be more difficult and may cause additional application surface damage, if attempted.

### Using Adhesion Promoter

- Adhesion promoter is recommended at Product overlaps, ends, corners or edges, or around fixtures. It should also be used wherever the Product is stretched.
- Adhesion Promoters are often not needed on flat or high energy application surfaces, such as metal or glass.
- Allow adhesion promoters to dry per manufacturer's instructions.
  - Allow the water-based adhesion promoter to dry at least 1 hour before Product installation.
  - Allow the solvent-based adhesion promoter to dry at least 5 - 15 minutes before Product installation.

## Adhesion Promoter Properties

The following table contains general properties of adhesion promoters and general application surface types where useful.

Adhesion Promoter Properties	3M™ WP-2000 (Water-based)	3M™ Tape Primer 94 (Solvent-based)
<b>Type</b>	Synthetic rubber	Acrylic
<b>Container size</b>	3.75 liter can	Multiple sizes
<b>Usage</b>	Optional dilution with maximum 4 parts water	Do not dilute
<b>Coverage</b>	135 - 270 sq. ft./gal. (12.5 - 25.1 sq. meters/liter)	600 sq. ft./gal. (14.7 sq. meters/liter)
<b>Color</b>	Blue	Clear light yellow - clear dark orange
<b>Solids</b>	48%	6%
<b>Viscosity</b>	2400 cps (mPa-s)	1-10 cps (mPa-s)
<b>Compatible application surfaces</b>	<ul style="list-style-type: none"> <li>• MDF (w/sealer)</li> <li>• Gypsum board (w/ sealer)</li> <li>• Previously applied 3M™ DI-NOC™ Finishes</li> <li>• Metals</li> <li>• Plastics</li> </ul>	<ul style="list-style-type: none"> <li>• MDF (w/sealer)</li> <li>• Gypsum board (w/ sealer)</li> <li>• Previously applied 3M™ DI-NOC™ Finishes</li> <li>• Metals</li> <li>• Plastics</li> </ul>

## Adhesion Compatibility with Application Surfaces

The chemistry of paints has been changing over the years to drive down the level of Volatile Organic Compounds, VOCs, due to both sustainability efforts and regulatory requirements. These new paint formulations have changed how the painted surface interacts with the adhesive on the Product, affecting its ability to adhere to the paint.

Because the paint formulations are protected by trade secrets, it is difficult for any manufacturer to understand how adhesives interact with these paints. In fact, the Product may perform well on one paint and poorly on another paint. However, by using the new 3M™ Enhanced Adhesion Cleaning Method and testing the adhesion to the walls using the 3M Adhesion Test, you can quickly, easily and successfully adhere almost any Product to nearly any paint or surface finish.

The following table contains peel adhesion information for the Product peeled from various surfaces. A number of surfaces have acceptable adhesion without the use of adhesion promoter. Examples of increased adhesion with adhesion promoters on certain surfaces is presented. Surfaces vary widely, so adhesion should be assessed for each customer application surface. Some surfaces are porous and must be sealed before application of film to prevent outgassing of the surface over time.

## 3M™ DI-NOC™ Adhesion Compatibility with Application Surfaces

Application Surface		Adhesion Promoter		
		NO ADHESION PROMOTER lb./in. (N/25mm)	3M™ WP-2000 (water-based) lb./in. (N/25mm)	3M™ Tape Primer 94 (solvent-based) lb./in. (N/25mm)
Wood	MDF (w/ sealer)	● 2 (8) <sup>3</sup>	● 11 (51)	● 4 (18)
	Painted MDF	● 4 (20)	● 12 (52)	● 7 (31)
Boards	Gypsum Board (w/skim coat & sealer)	● 2 (8) <sup>3</sup>	● 8 (35)	● 4 (19)
Metals	Aluminum	● 11 (47)	● 11 (48)	● 11 (47)
	Anodized Aluminum	● 5 (23)	● 13 (56)	● 11 (49)
	Stainless Steel	● 6 (26)	● 13 (56)	● 6 (28)
Glass	Glass	● 6 (26)	● 13 (58)	● 6 (26)
Plastics <sup>1</sup>	ABS	● 6 (28)	● 13 (56)	● 10 (44)
	Acrylic	● 5 (22)	● 12 (54)	● 10 (43)
	Polyester (PETG)	● 7 (29)	● 11 (51)	● 10 (45)
	Polypropylene	○ 1 (2)	● 4 (17)	● 4 (20)
	Polyethylene	○ 1 (3)	● 5 (21)	○ 1 (3)
	Polycarbonate	● 6 (28)	● 12 (53)	● 10 (44)
	3M™ DI-NOC™ Film	● 5 (24) <sup>2</sup>	● 11 (49)	● 9 (42)

Test specimens were applied to the application surface and conditioned at 68°F (20°C) for 48 hours, then peel tested at a 180 degree angle at a tensile speed of 12 inches (300mm) per minute.

WP-2000 undiluted for testing

- Acceptable adhesion
- Fails in adhesion

1 Bubbles may appear under film due to outgassing if plastic application surface is not fully cured before application.

2 If Product is wrapped and overlapped around edges, use of an adhesion promoter is highly recommended due to additional stress from wrapping the Product.

3 Sealer was wiped with Isopropyl alcohol to improve adhesion. Adhesion was tested after 15 minutes using a spring scale per the 3M Adhesion Test and passed at 800-1000 g/in.

## 3M Adhesion Test

This test is designed to show initial adhesion capability of the Product you plan to use when the wall is cleaned according to 3M's recommendations and the it is applied to a smooth indoor wall surface.

Product applied to contaminated walls, or walls that exhibit visible signs of peeling, lifting, bubbling, or dampness are likely to fail. The results of the 3M Adhesion Tests will help determine if the wall is prepped accurately for 3M™ DI-NOC™ installation.

Paint that has not fully cured may continue to outgas. Product that is applied over paint that has not fully cured may develop air bubbles over time.

**NOTE:** Testing adhesion on smooth walls takes less than 30 minutes.

## Before Doing the Test

1. Review and use the "Except for the limited remedy stated above, and except to the extent prohibited by law, 3M will not be liable for any loss or damage arising from or related to the 3M product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability." on page 15.
2. Understand the types of wall surfaces and the variables that influence adhesion. For example, the paint or wall finish used on different walls may look the same but have different paint chemistry or cure times that affect adhesion.
3. Test adhesion on each wall that will receive the Product.
4. For each Product being considered, test THREE samples of the same Product on the same wall and compare the results.

**NOTE:** 3M is not responsible for the results of the Product installation.

## Test Considerations

- Perform the adhesion tests in an inconspicuous area of the same wall on which you will be applying the actual job.
- If you will be applying the Product to more than one wall, perform the tests on each wall. While one wall may look the same as another in color and gloss, they may have been painted at different times and with different paint, which can affect the adhesion test results. Performing the test on a different wall/paint than will be used in the job will not give you the adhesion values and information you need to make a good evaluation.

## Limitations of Test and Cleaning Method

This test cannot detect problems with pre-existing variations in the wall or poor paint-to-wall bond. Such problems may result in poor adhesion as well as wall damage upon attempted removal of the Product.

## Adhesion Test Tools and Supplies

- Spring scale
  - 0-1000 grams, part number 8003-MN
  - 0-2000 grams, part number 8004-MA
- Isopropyl alcohol
- Lint free clothes
- 3M™ Rivet Brush RBA-1
- Copy or cut out the “3M Measured Reference Guide for Adhesion” on page 17. This will be used during the test to help you gage how fast to pull the Product strip.
- Hole punch
- Strips of each Product you plan to test

## Prepare the Product Test Strips

1. Cut three, 1 inch by 10 inch (2.5 cm x 25 cm) strips of each Product you plan to test on a given wall.
2. Note the Product name or number on each test strip and on the Worksheet for Walls.
3. Remove about 2 inches (5 cm) of liner and fold over the Product, adhesive to adhesive, to make a tab.
4. Punch a hole in the tab.



**Figure 2.** Preparing the test strips

## Adhesion Test Procedure

1. Clean the area of the wall you will be testing using the 3M™ Enhanced Adhesion Cleaning Method.
2. Use your thumb to initially adhere the Product strip (punched hole at the top) to the cleaned wall.

### **i** IMPORTANT NOTE

Test THREE strips of each Product being evaluated on the same wall. After all three strips are tested, compare the results.

3. Working in the long direction of the test strip and using the RBA-1 rivet brush, use firm pressure and a circular motion to go over each strip three times to firmly adhere it to the wall. See Figure 3.
4. Tape the Measured Reference Guide next to the Product strip you are testing. See [Figure 5. “Adhesion test.” on page 6.](#)
5. Wait a full 15 minutes before proceeding with the test to allow some adhesion to build.
6. Make sure the scale is zeroed out per the scale manufacturer’s recommendations. See [Figure 4. “Zeroing the Scale.” on page 6.](#)
7. After 15 minutes, slide the scale’s S hook through the punched hole in the Product strip.
8. Hold the scale in your palm, keeping it as straight as possible but without any portion of the scale or your hand contacting the wall during the test.



**Figure 3.** Adhering Product Strips

9. Pull the scale downward at a steady rate of about 1 inch (2.5 cm) in 5 seconds, using the Measured Reference Guide lines as a guide. Once you have started pulling, DO NOT STOP until the Product strip is fully released from the wall.

## **i** IMPORTANT NOTE

The Measured Reference Guide in Figure 5 is included at the end of this guide.

10. As you pull down on the scale:
  - a. Observe the release characteristics of the Product and compare to [“3M™ DI-NOC Adhesion Test Recommendations” on page 6](#).
  - b. Note and record the value in grams/inch that register on the scale using the “Except for the limited remedy stated above, and except to the extent prohibited by law, 3M will not be liable for any loss or damage arising from or related to the 3M product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability.” on page 15.
11. Repeat steps 2 to 10 for each of the same test strips. Record each of the three test values and average them together.

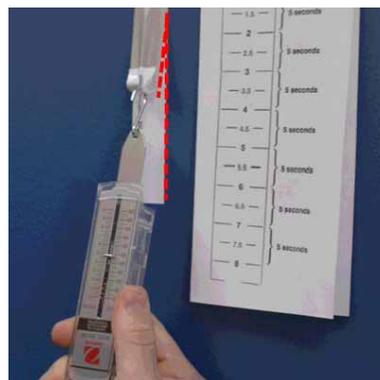
## Test Evaluation - Smooth Walls Only

1. Averaging test results  
If two or three out of three strips of the same Product perform the same way, use those characteristics to judge the suitability of that particular Product for that wall.
2. Use the [“3M™ DI-NOC Adhesion Test Recommendations” on page 6](#) table below to interpret scale values.

**NOTE:** 454 grams equal 1 pound.



**Figure 4.** Zeroing the Scale



**Figure 5.** Adhesion test

## 3M™ DI-NOC Adhesion Test Recommendations

Scale Value	Adhesion Characteristics	Recommendation
Less than 800 grams/inch	Removes very easily; little or no resistance	Unacceptable adhesion; additional cleaning may be necessary
800-1000 grams/inch	Smooth, consistent release; no jerkiness but more difficult to release	Acceptable adhesion; may be removable with heat/chemicals; removal may cause wall damage
Greater than 1000 grams/inch	Smooth consistent release; no jerkiness, but substantial resistance to releasing	Excellent adhesion; removal will cause damage

## Unsatisfactory Test Results

1. Test strip removes unevenly.
  - Inconsistent or low adhesion value; due to high and low spots in the surface texture, the adhesive does not make full contact.
  - Cold wall and air temperature, which doesn't allow adhesive to flow or make full contact.
2. Test strip pulls paint off wall.

If any paint is pulled off with the test strip, the paint is not sufficiently bonded to the wall and the Product should not be applied until the problem is corrected, a new paint is fully cured, and the “3M Adhesion Test” on page 4 is performed again with satisfactory results.

## 3M™ Enhanced Adhesion Cleaning Method

Using the 3M™ Enhanced Adhesion Cleaning Method ensures that the application surface is ready to receive and hold the Product. The installer must evaluate each application surface to determine cleaning requirements prior to Product installation.

### **WARNING**

For your safety, always wear protective eye wear and disposable gloves when cleaning application surfaces.

1. Complete any needed repairs to the application surface prior to cleaning.
2. Clean stubborn grease and grime using an appropriate, commercially available cleaning product.
3. Prepare a cleaning solution with 70/30 IPA cleaning solution in a spray bottle.
4. Soak a clean, lint-free cloth with the IPA cleaning solution until it is dripping wet. See Figure 6.
5. Clean the entire application surface with overlapping strokes. You may notice some migrated paint particles on the cloth. See Figure 7.

### **IMPORTANT NOTE**

Change cleaning cloths often to avoid redepositing contaminants on another part of the application surface. Soak each new cloth with the IPA cleaning solution.

6. Thoroughly soak another clean, lint-free cloth with the IPA cleaning solution and wash the application surface again.
7. The alcohol in the cleaning solution will lower the surface temperature of the application surface as much as 10 degrees F - a noticeable difference. When the alcohol has completely flashed off, which takes about 10 minutes, the application surface will return to its normal temperature. You can use an IR gun (see Figure 8) to accurately measure the temperature before cleaning and immediately after cleaning, or simply touch the back of your hand to the cleaned area.
8. When it no longer feels cool, it is dry and you can proceed with the adhesion test or Product installation, if ready.

## Estimated Time for Cleaning

About 30 minutes is required to clean a 125 sq. ft. (11.6 square meters) area, which is approximately an 8 ft. x 16 ft. (2.4 m x 4.9 m) wall. Keep this in mind as you estimate your next job.

## Surface and Work Area Preparation

Use the following steps to prepare the application surface for Product application. An experienced installer's techniques may vary.

## Inspect Application Surfaces

Before installation, contact the property manager or the general contractor of the installation site to ensure that the application surface is ready for installation.

### **CAUTION**

Before covering application surfaces susceptible to swelling, such as wooden doors, wood core-doors, or gypsum board, ensure that the environmental conditions, such as temperature and humidity, are stable. Wide changes in humidity or temperature can affect the application surface, which may cause wrinkles or bubbles in the applied Product.

### **CAUTION**

It is critical that the paint, sealer and/or primer coatings be allowed to fully cure for the entire time period stated by the manufacturer.



**Figure 6.** Soaking a lint free cloth



**Figure 7.** Removing paint particles



**Figure 8.** Testing Wall Temperature

## Repair Damaged Application Surfaces

Repair any damage such as holes, loose wallboard joints, and any chipped or peeling material.

1. Fill any holes or gouges with Bondo® or non-water-based filler. Assure that any filler is fully cured before proceeding.
2. For exterior surfaces, use a soft bristle brush to remove all loose particles, dust, sand and gravel.
3. Smooth by sanding and reclean the application surface with IPA.
4. If the surface is porous, seal the application surface with a minimum of two coats of a primer or sealer. Follow the manufacturer's recommendations for surface preparation. Allow the sealer or primer to fully cure before Product installation.

## Clean the Application Surface

Wipe down the application surface with a lint-free cloth and 70/30 IPA cleaning solution, or use the [“3M™ Enhanced Adhesion Cleaning Method” on page 7](#) if needed.

## For 3M™ DI-NOC™ EX Series Application Surfaces:

3M™ DI-NOC™ EX Series for exteriors can be applied to the following application surfaces:

- Aluminum
  - Anodized Aluminum
  - Colored Aluminum
  - Painted Aluminum
  - Aluminum Composite Panel
- Galvanized Steel
- Painted steel

## Textured Exterior Surfaces

Some exterior surfaces are highly dimensional and the adhesive may not have enough contact area to adhere properly to the surface. Contact your local 3M Commercial Solutions Technical Service person if you have a question about the suitability of any surface.

## Exterior Application Surface Conditions

Exterior application surfaces must not be loose, crumbling, contaminated, wet or damp.

The Product can be applied at temperatures as low as 54°F (12°C) on days when the temperature is expected to rise to at least 70°F (21°C). Heat helps the adhesive bond to the application surface; therefore, the warmer the temperature, the better the bond.

**NOTE:** Do not apply the Product late in the day when the surface temperature is likely to drop.

## Installation

Recommended application temperature: 54 °F - 100 °F (12 °C - 38 °C)

These are the general Product application steps. An experienced installer's techniques may vary.

1. Measure the application surface to be covered.
2. Cut the Product to size with a minimum 1/2 in. extra on all sides for trimming.
3. Put a set line in the liner 6 - 8 inches from the top.
4. Align the Product with the application surface and set the set line.
5. Pull out the liner approximately 8 inches.
6. Starting in the center, use the squeegee to adhere the Product to the application surface using overlapping strokes. Repeat steps 5 and 6 until the panel is completely applied.
7. Re-squeegee entire panel for ultimate adhesion.

## Create a Double Cut Seam

This technique is not recommended for 3-dimensional or curved surfaces, for which a standard overlap seam is recommended.

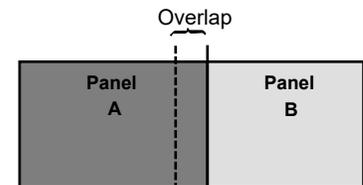
**NOTE:** If the same Product will be used on each side of the double cut, be sure to use Product from the same roll or lot.

1. Ensure that Product design and/or “grain” of an embossed pattern always runs in the same direction or the application may have obvious shifts in color, gloss and/or design.

### **i** IMPORTANT NOTE

Do not use double cut seaming with Products that have a **W** designation in the 3M™ DI-NOC™ Architectural Finishes Product Catalog.

2. On the Product side where the seam will be, leave 1 inch (2.5 cm) of Product liner on the side of Panel A. See Figure 9.
3. Apply Panel A.
4. Apply Panel B overlapping Panel A by 1 in. (2.5 cm).
5. Remove the Panel B liner to adhere to panel A. The transition should be flat against application surface with no air pocket underneath.
6. Use a straight edge to cut through the overlap’s center.
7. Remove the excess Product and then the Product liner.
8. Starting in the center of the seam, use your fingernail or appropriate tool to bring the two edges of the seam together and tight to the wall. There should be no overlap of the edges at this point. Complete a one inch section of the seam before going to the next step.
9. Starting in the middle of the one inch section, firmly squeegee the seam together with a rocking motion. Work the squeegee along the seam, keeping it tight to the film.



Cut through both layers of Product.

**Figure 9.** Creating a Double Cut Seam

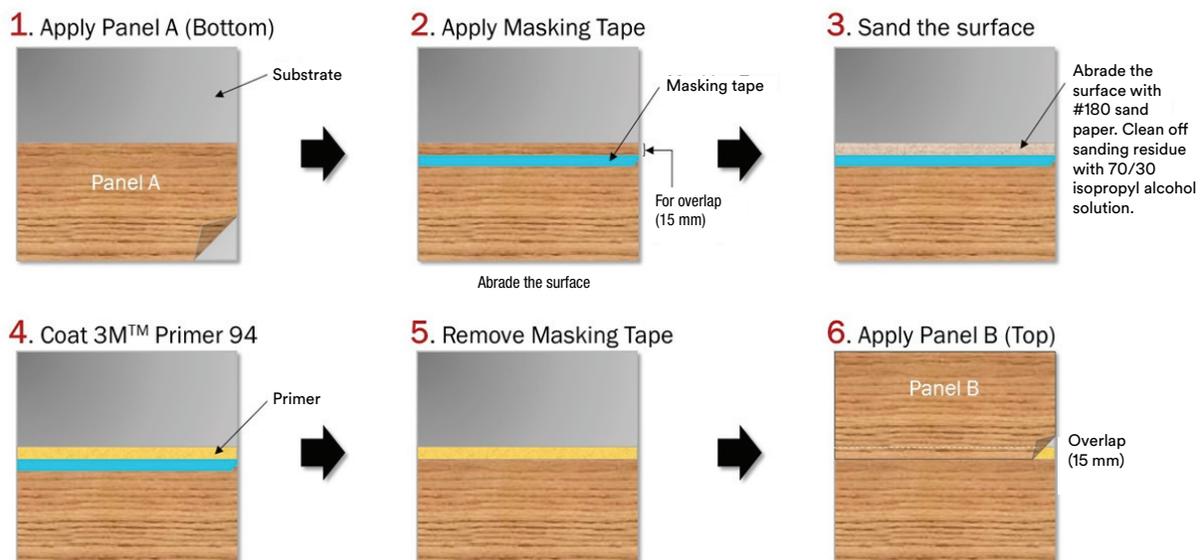
## For 3M™ DI-NOC™ WH-111 and PWF-500 Seams:

Seams in 3M DI-NOC Whiteboard Films WH-111 and PWF-500 can accumulate marker residue. If doing a double-cut seam, make all seams as tight as possible. If doing an overlap seam, use 3M™ Tape Primer 94 adhesion promoter under the overlap, which should be 1/2-1”.

Horizontal application at eye level is preferred, so as to allow continuous writing and erasing along the length of the whiteboard area. See DI-NOC™ WH-111 and DI-NOC™ PWF-500 Tech Data Sheets.

## Create an Overlap Seam

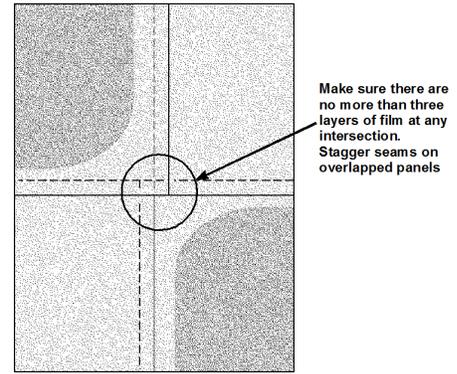
**NOTE:** Use Product from the same roll or lot on each side of the seam.



**Figure 10.** Creating an overlap seam

## For 3M™ DI-NOC™ EX Series Seams:

DI-NOC EX Series for exteriors must have an overlap seam of at least 0.6 in. (15 mm). Apply with 3M™ Tape Primer 94 at the overlap. Overlap panels in the shortest direction, where possible. Apply the lower panel first, then apply the upper panel after sanding and priming the edge of the lower panel. This allows water to shed away from the seam. Multiple layers of overlapped film can cause edge lifting problems in high winds. Make sure there are no more than three layers of film at any overlapped seam intersection. See Figure 11.



**Figure 11.** Stagger Seams on Overlapped Panels

## Trimming

After application, re-squeegee all Product edges to help ensure good edge adhesion before trimming. See [Figure 12, “Re-squeegee to ensure good adhesion.” on page 12.](#)

Outside corners should be cut at a 45 degree angle. Inside corners should have an overlap of 1/8 inch.

**For 3M™ DI-NOC™ EX Series Trimming:** Inside corners should have a double-cut seam.

## Compound Curved Surfaces

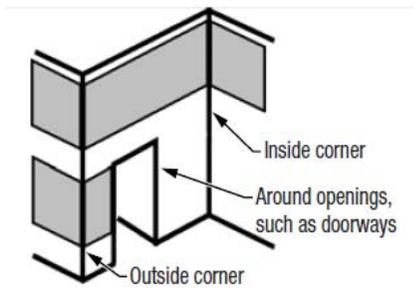
**NOTE:** 3M recommends testing and approving application to compound curved surfaces.

## Use Heat to Conform Product Around Three Dimensional Surfaces

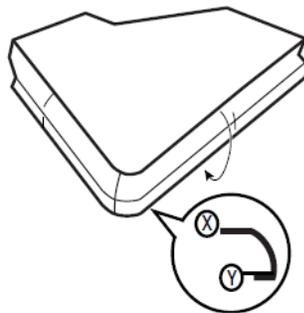
You can improve many Products’ conformability by heating the surface of the Product until it is pliable enough to form around a three dimensional surface.

### CAUTION

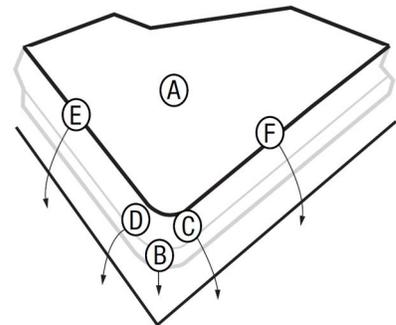
Overheating can result in damage to the Product. Practice this technique on a test piece before attempting on a finished Product.



**Figure 12.** Re-squeegee to ensure good adhesion



**Figure 13.** Apply Adhesion Promoter Between X and Y



**Figure 14.** Apply the Product on the Corner

1. Ensure that you have enough Product to wrap around the edges to the surface’s bottom. Allow a minimum of 3 inches around the entire panel.
2. Apply adhesion promoter to the edges, starting about 1/2 inch from where the shape changes (see Reference X) and extending to the back side of the surface for at least 1/2 inch (see Reference Y). Allow the adhesion promoter to dry to improve adhesion and minimize shrinkage. See Figure 13.
3. Apply the Product to the flat surface before conforming the corners and then along the straight edges in this sequence: A, then B, C and D, then E and F, etc. See Figure 14.
4. Neatly trim excess Product on the surface’s back side.

**NOTE:** Products identified in the 3M™ DI-NOC™ Architectural Finishes Product Catalog with the  symbol, and also noted in the 3M DI-NOC Technical Data Sheet, cannot be wrapped around three dimensional surfaces. Please note that excessive stretching and heat may deform Product’s design and texture.

**For DI-NOC EX Series on Compound Curved Surfaces:** Compound curved surfaces are not recommended. Stretching the film can adversely affect Product performance including outdoor durability.

## For DI-NOC EX Series Edge Sealing:

The DI-NOC EX film edge should not be covered by sealing material except when absolutely necessary. Certain exterior applications of DI-NOC EX may require a seam sealer by the installer. When necessary, the film edge should be covered 1 to 2 mm maximum by the sealer.

### CAUTION

Application to exterior glass surfaces is not warranted due to the risk of glass breakage caused by thermal expansion.

### IMPORTANT NOTE

Adhesion to exterior glass is not warranted, but caulking the entire edge of the installed film may help prevent water penetration. Application to exterior glass is customer test-and-approve.

## Additional Recommendations by Product Series

### 3M™ DI-NOC™ EX Series Exterior Architectural Finishes

Please take note of the points below when applying 3M™ DI-NOC™ EX Series Architectural Finishes.

- DI-NOC EX Series is designed for installation on exterior building elements.
- Although the product is highly durable when used outdoors, the expected performance life will be reduced when used on non-vertical surfaces. See warranty in DI-NOC EX Technical Datasheet.
- Aluminum, galvanized steel, or painted steel are the preferred substrates for DI-NOC EX Series for maximum expected performance life.
- In low temperature environments, the product can whiten at creases, tears, and folded corners. Apply at the recommended exterior air and surface temperatures, 54°F to 100°F (12° to 38°C).
- Handle with care during application to avoid creases and tears if the film is excessively bent. The product creases and tears more easily than standard DI-NOC Series. Applying and repositioning the product requires careful handling.
- DI-NOC EX Series is not as conformable as standard DI-NOC. Do not use on compound curved (3D) surfaces or deep channels. Avoid stretching the product during application due to low conformability. Stretched product may become distorted. Accurately determine the starting point for the application of the product so there will be no need for adjustments.
- DI-NOC EX Series is more difficult to cut than standard DI-NOC Series. Cut the product through to the adhesive with a sharp tool to avoid unexpected tearing or rough edges.
- Seams require a ½" (13 mm) overlap joint. When making an overlap joint, install masking tape ½" (13 mm) in from the edge of the DI-NOC. Lightly sand the exposed ½" (13 mm) section of DI-NOC up to the masking tape until it is smooth. Clean the area with a microfiber or soft cloth and 70% isopropyl alcohol and 30% water. Apply 3M™ Tape Primer 94 in the overlap area, remove the masking tape and install the next sheet of DI-NOC with a ½" (13mm) overlap.
- The DI-NOC EX film edge should not be covered by sealing material except when absolutely necessary.

### 3M™ DI-NOC™ MT Series Matte Architectural Finishes

Please take note of the points below when applying 3M™ DI-NOC™ MT Series Architectural Finishes:

1. 3M™ DI-NOC™ MT Series utilizes a new state of the art matte surface texture. The matte surface of the film has less scratch and stain resistance compared to other DI-NOC Series. Avoid applications in high traffic areas and impact with hard objects. Customers should test and approve the installation location.
2. Apply in a dust-free environment to avoid dust particles scratching the surface during installation.
3. Wrap the application squeegee in a clean, soft cloth to avoid scratching the surface of the film, especially on inside corners or butt joints. Alternately, use 3M™ Teflon Tape 5480 on the edge of the squeegee. Be careful to avoid making marks during application, especially when working with VM-MT Series and dark colors of PS-MT and SU-MT Series, as these marks may be especially noticeable. Pressure from squeezing during installation may leave marks resembling white indentations which may recover with time. Wipe with a damp microfiber or soft cloth to shorten the recovery time. Deep indentations and scratches may not recover.
4. Handle with care during application to avoid creases if the film is excessively bent. Applying and repositioning the product requires careful handling.

5. DI-NOC MT Series may be applied to shallow complex curved (3D) surfaces with caution to avoid excessive heating and over stretching, except VM-MT Series is not recommended for 3D applications. Excessive heating and stretching may cause discoloration and/or damage to the matte surface. If cold wrapping around sharp outside corners causes whitening of the film, warming with a heat gun will make this less noticeable. Customers should test and approve 3D installations.
6. Cut edges may become noticeably white for dark colored patterns. Warming with a heat gun will make this less noticeable.
7. When making an overlap joint, install masking tape ½” (1.3 cm) in from the edge of the DI-NOC. Lightly sand the exposed ½” (1.3 cm) section of DI-NOC up to the masking tape until it is smooth. Clean the area with a microfiber or soft cloth and 70% isopropyl alcohol and 30% water. Apply 3M™ Tape Primer 94 in the overlap area, remove the masking tape, and install the next sheet of DI-NOC with a ½” (13 mm) overlap.
8. Do NOT pierce the film to release air bubbles which may show white marks.
9. To remove oil stains, wipe with a microfiber or soft cloth dipped in 70% isopropyl alcohol and 30% water. Do NOT put solution directly on the surface.

**NOTE:** For additional questions, refer to 3M Technical Service 1-800-328-3908.

## 3M™ DI-NOC™ WH-111 and PWF-500 Series Whiteboard Application Guidelines

**NOTE:** Please refer to the [3M™ DI-NOC™ WH-111 Tech Data Sheet](#) and the PWF-500 Tech Data Sheet for complete product information.

Please take note of the points below when applying 3M™ DI-NOC™ EX Series Architectural Finishes:

- Always handle the Product with care.
- The Product edges may be sharp; use caution when handling.
- Avoid scratching or denting the surface during installation as this may affect writing performance.
- Before setting the adhesive to the application surface:
  - Ensure proper alignment by using a guideline. Allow additional material for trimming as necessary.
  - Ensure that the entire surface of the film is flat against the application surface and the ends of the film do not sag.
- Stretching or attempting to reposition the Product during application may deform, buckle, or ripple the Product.
- Wrinkles created during application cannot be removed with heat due to polyester construction.
- Seams tend to accumulate ink from the markers. Make the seams as tight as possible.
- Horizontal installation at eye level is preferred, to allow continuous writing and erasing along the length of the whiteboard area.
- If additional sections are installed, seams should be overlapped 1/2 in. to 1 in. (1.3 cm to 2.5 cm) . Use Primer 94 adhesion promoter under the overlap.
- If installed on drywall (or painted drywall), follow the [Drywall Preparation & Installation Guidelines, 3M™ DI-NOC™ Surface Prep Guide](#).

## Cleaning and Maintenance

Regular cleaning will help maintain the appearance of the finish. Use mild detergent and water, and a soft cloth or sponge without abrasives. For difficult stains, spot clean with a diluted isopropyl alcohol solution and a soft cloth. Avoid using strong solvents or detergents that are either highly alkaline (pH>11) or acidic (pH<3). Do not use ammonia, chlorine, or strong organic-based cleaning products, polishing or cleaning compound, hard-bristle brushes or electric polishing equipment. Use only clean, nick-free tools and wipe gently.

Problem	Solution
Dust and grit	Wipe with a soft, damp cloth.
Soiled (but not gritty)	Use water and a soft cloth
Heavily Soiled	Clean first using a solution of mild liquid detergent and water, then use clear water. Wipe gently with a soft cloth.
Difficult Stains	Spot clean with 70% isopropyl alcohol and 30% water.

Type of Surface Damage	Appearance of Surface Damage	Method to Reduce Visibility
<b>Mar</b>	Dragging an item, such as a colored briefcase, across the film and leaving a deposit of color on the surface.	Rub with a soft cloth and warm soapy water to remove the mar.
<b>Indentation</b>	Pressing into the film surface without breaking the surface, such as pressure from a chair.	Carefully heat the indentation with a heat gun, which allows the film surface to rebound and reduce visibility.
<b>Scratch</b>	Breaking the surface layer of film leaving a slightly jagged whitish mark on the surface, such as by dragging a sharp rivet from a purse.	Rub with a surface restorer such as 3M™ Marine Vinyl Cleaner & Restorer to reduce the visibility of scratches.
<b>Gouge</b>	Breaking through the entire film, such as severe impact from sharp chairs or carts.	Repair by cutting out the damaged film and replacing that piece with the same pattern of film or remove and replace an entire panel of film.

## For DI-NOC EX Series

### Power Washing Films

Power-washing, or pressure-washing, may be used. However, aggressive washing can damage the Product.

Excessive pressure during power-washing can damage the Product, by forcing water underneath the surface. Water lowers the adhesion force of the Product to the substrate, allowing the graphic to lift or curl. These problems are further worsened by high winds, which can remove the Product from the substrate. Avoid pressure-washing perforated films applied without edge-sealing tape.

To avoid edge-lifting, or other damage to the Products, follow these important steps:

- Use a spray nozzle with a 40°-wide (minimum) spray pattern
- Ensure the spray nozzle includes a nozzle protector (or tip guard)
- Use a maximum pressure of 1200 psi (80 bar)
- If the system is heated, limit the water temperature to 140°F (60°C) or less
- Hold the nozzle at least 12 in. (30 cm) away from, and perpendicular to, the Product, or a minimum of 39 in. (1 m) away from the Product at spray angles of 30° or greater.
- Do NOT direct the water stream between 0° and 60° from the Product surface.

### Removal

Although Products may be removed, application techniques and adhesion promoters increase adhesion, so clean removal without substantial damage is unlikely. The following removal techniques can be tried, but the level of effort required and end results will vary:

1. Make Product cuts about 4 in. (10 cm) apart, ensuring no damage to the application surface.
2. Optionally, use a heat gun set to 150°F to 200°F (66°C to 93°C) to soften the Product's adhesive.
3. Immediately pull the heated section of Product down at about a 180 degree angle.
4. Heat more Product and continue pulling.

## Troubleshooting

Every effort should be made to ensure that walls are in good condition before applying the Product. This generally reduces installation time while improving appearance, and if applicable, removal characteristics.

- Review all troubleshooting options before deciding on a course of action.
- Every wall paint must be fully cured for the full amount of time recommended by the paint manufacturer.
- Follow the 3M Adhesion Test for every Product you intend to use and on each different wall included in the installation.
- Every installation wall must be cleaned with the 3M™ Enhanced Adhesion Cleaning Method before doing the 3M Adhesion Test and before doing the full installation.

Problem	What To Look For	Recommended Solutions
<b>Installation Problems - Smooth Walls</b>		
The Product does not adhere well or falls off wall.	The Product was not tested on the wall prior to installation.	Always perform the 3M Adhesion Test for each Product and on each application surface before committing to the complete installation.
	Low VOC paint was used on the wall.	
	Wall repairs were not properly sealed, primed, painted or cured.	
	Walls were not washed with 70% isopropyl alcohol and 30% water.	Always follow the 3M™ Enhanced Adhesion Cleaning Method in this guide to increase adhesion.
	The texture of the application surface is not well suited to the Product being used.	If the wall texture is other than just smooth, contact the general contractor. <ul style="list-style-type: none"> <li>• Some textured paint additives create too much texture for Products that are intended for smooth walls.</li> <li>• A wall with too little texture may prevent proper air bleed during installation, trapping air under the film. In this case, use the 3M™ Air Release Tool 391X to make a small hole in the film to allow the air to escape. Re-squeegee as necessary.</li> </ul>
Application Surface temperature too low.	Refer to the "Installation" on page 8 for the proper installation temperature range.	
<b>Post-Installation Problems - All Walls</b>		
Edges of the Product lifting from application surface.	Poor installation technique, or wrong tools.	Review this Bulletin and make sure you are using the right Product, right tools, and right techniques for your walls. Lots of practice is critical for consistent success.
Large portion of the Product lifts or falls off.	Poor initial bond of paint to wall.	Perform the 3M Adhesion Test. Perform the 3M™ Enhanced Adhesion Cleaning Method if the test results are less than 800 grams.
	Wall not properly cleaned.	Follow the procedure "Surface and Work Area Preparation" on page 7.
	Under-cured paint.	Be sure the paint is properly applied and fully cured per the manufacturer's specifications before applying the Product.

## Health and Safety

### CAUTION

When handling any chemical products, read the manufacturers' container labels and the safety data sheets (SDS) for important health, safety, and environmental information. To obtain SDS for 3M products go to [3M.com/SDS](https://www.3m.com/SDS). To request SDS by mail, or in case of an urgent situation, call 1-800-364-3577 or 1-651-737-6501.

When using any equipment, always follow the manufacturer's instructions for safe operation.

### WARNING

#### **To reduce the risks of personal injury and/or property damage associated with glass breakage:**

A glass surface covered by a film with areas of high opacity or dark-colored ink will absorb more heat than other glass surfaces when exposed to sunlight. Heat absorption can create thermal expansion that could result in glass breakage or cracking. Do not use a film with areas of high opacity or dark-colored ink on glass surfaces with significant exposure to sunlight.

## Warranty Information

### Technical Information

The technical information, guidance, and other statements contained in this document or otherwise provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M or third party intellectual property rights is granted or implied with this information.

### Product Selection and 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. Customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment, reviewing all applicable regulations and standards, and reviewing the product label and use instructions. Failure to properly evaluate, select, and use a 3M product in accordance with instructions or to meet all applicable safety regulations may result in injury, sickness, death, and/or harm to property.

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Unless a different warranty is specifically stated on the applicable 3M product packaging or product literature (in which case such warranty governs), 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, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE. If a 3M product does not conform to this warranty, the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

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#### Commercial Solutions

3M Center, Building 220-12E-04  
St. Paul, MN 55144

1-888-650-3497  
[3M.com/AMD](https://www.3m.com/AMD)

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## Worksheet for Walls

Make copies of this page as needed.

Installation Site Information
Business Name
Address
City/State/Zip
Customer Information
Contact Name
Business Name
Address
City/State/Zip
Area Code/Phone

Adhesion Test Results		
Test Strip	Test Strip Product Number	Adhesion Value
3M™ DI-NOC™ sample 1		
3M™ DI-NOC™ sample 2		
3M™ DI-NOC™ sample 3		

Installation Site Information
Business Name
Address
City/State/Zip
Customer Information
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Adhesion Test Results		
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3M™ DI-NOC™ sample 3		

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# 3M Measured Reference Guide for Adhesion

