

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 EX Series
- 3M DI-NOC Architectural Finishes E-Series
- 3M DI-NOC Whiteboard Film WH-111
- 3M DI-NOC Projection Screen Whiteboard Film PWF-500

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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 9](#) for instructions on rough application surfaces.

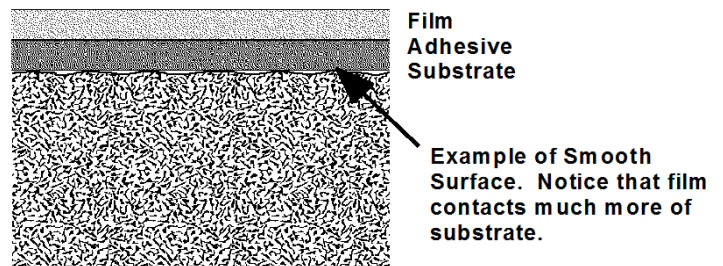


Figure 1. Examples of Film Contact on Smooth Surfaces

Installation Tools and Supplies

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

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™ Wall 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.

DI-NOC Adhesion Compatibility with Application Surfaces

Application Surface		Adhesion Promoter		
		NO ADHESION PROMOTER lb./in. (N/25mm)	WP-2000 (water-based) lb./in. (N/25mm)	3M™ Tape Primer 94 (solvent-based) lb./in. (N/25mm)
Wood	MDF (w/ sealer)	● 2 (8) ³	● 11 (51)	● 4 (18)
	Painted MDF	● 4 (20)	● 12 (52)	● 7 (31)
Boards	Gypsum Board (w/skim coat & sealer)	● 2 (8) ³	● 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 ¹	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) ²	● 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 Wall Adhesion Test and passed at 800-1000 g/in.

3M™ Wall 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 Wall 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 Worksheet for Walls on page 16.
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.
5. 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.

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.
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.
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 2. Preparing the test strips



Figure 3. Adhering Product strips



Figure 4. Zeroing the scale

Adhesion Test Procedure (continued)

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.

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 DI-NOC Adhesion Test Recommendations on page 7.
 - b. Note and record the value in grams/inch that register on the scale using the Worksheet for Walls on page 16.
11. Repeat steps 2 to 10 for each of the same test strips. Record each of the three test values and average them together.

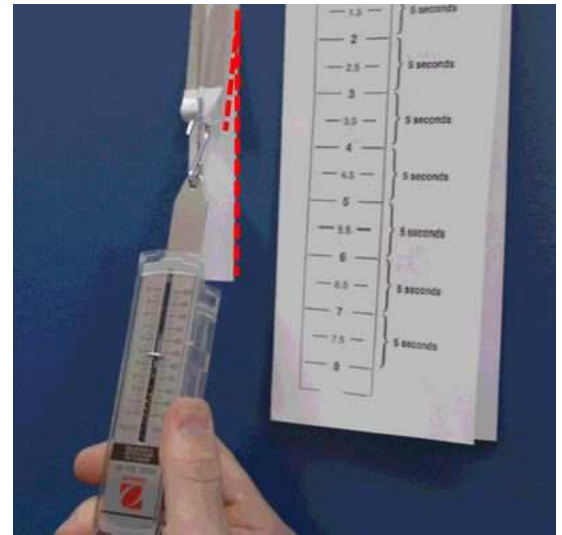


Figure 5. Adhesion test

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 DI-NOC Adhesion Test Recommendations on page 7 table below to interpret scale values.

NOTE: 454 grams equal 1 pound.

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
 - a. 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.
 - b. 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™ Wall Adhesion Test on page 5 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. Ensure that any needed repairs to the application surface are completed prior to performing the 3M Enhanced Adhesion Cleaning Method.
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.



Figure 6. Soaking a lint free cloth

ⓘ 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.

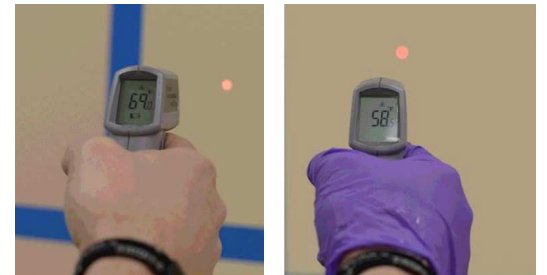
6. Thoroughly soak another clean, lint-free cloth with the IPA cleaning solution and wash the application surface again.
7. The alcohol in the cleaning solution will lower the surface temperature of the application surface as much as 10 degrees F - a noticeable difference. When the alcohol has completely 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. When it no longer feels cool, it is dry and you can proceed with the adhesion test, or if you are ready, with the Product installation.



Figure 7. Removing paint particles

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.



Before Cleaning

Immediately After Cleaning

Figure 8. Testing wall temperature

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 installation of Product on surfaces susceptible to swelling

[Before covering application surfaces susceptible to swelling, such as wood 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.

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 2 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 8 if needed.

For DI-NOC EX Series Application Surfaces:

DI-NOC EX Series for exteriors can be applied to the following vertical 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.

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 inch (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.

For DI-NOC WH-111 and PWF-500 Seams:

Seams in 3M DI-NOC Whiteboard Films WH-111 and PWF-500 can accumulate marker residue. Make double cut seams as tight as possible when installing WH-111 and PWF-500.

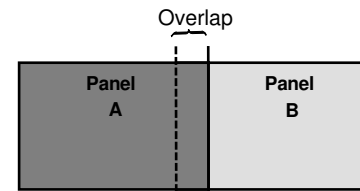


Figure 9. Creating a double cut seam

Create an Overlap Seam

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

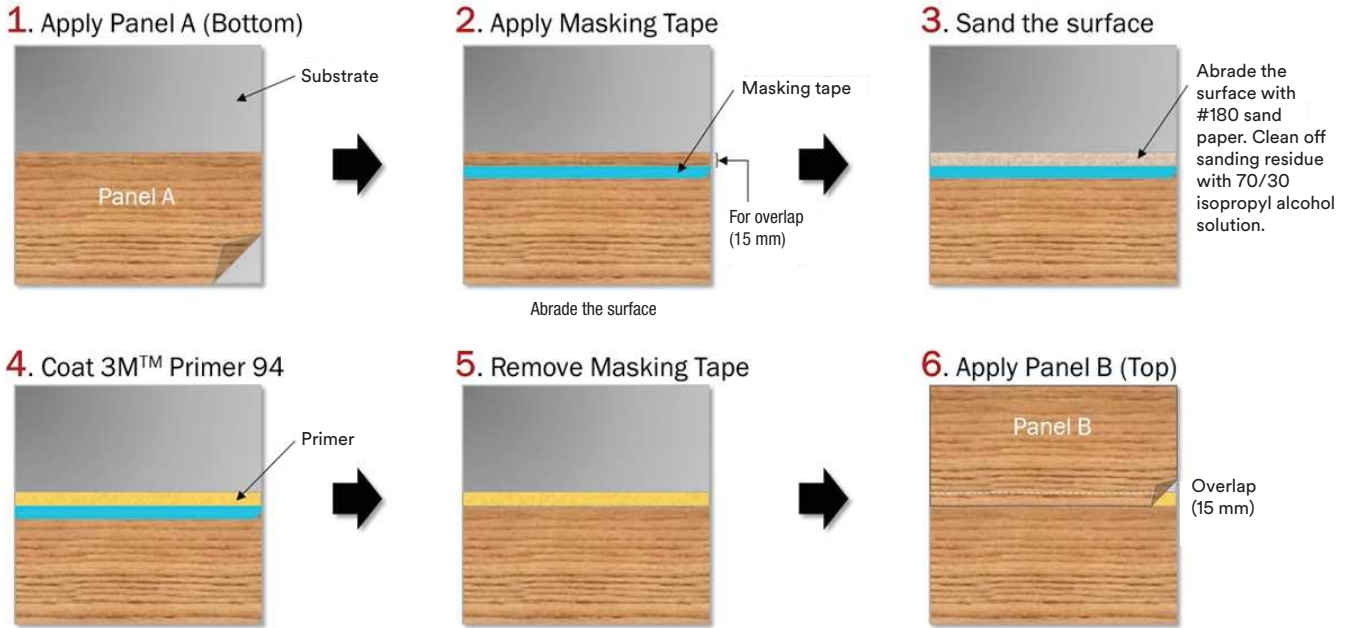


Figure 10. Creating an overlap seam

For DI-NOC EX Series Seams:

DI-NOC EX Series for exteriors must have an overlap seam of at least 0.6 in. (15 mm). 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.

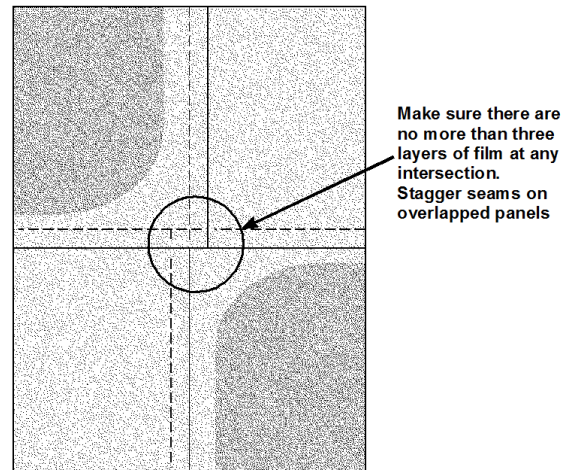


Figure 11. Stagger seams on overlapped panels

Trimming

After application, re-squeegee all Product edges to help ensure good edge adhesion before trimming. See Figure 12.

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

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

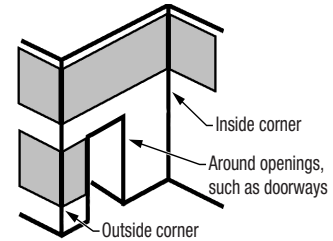


Figure 12. Re-squeegee to ensure good adhesion

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.

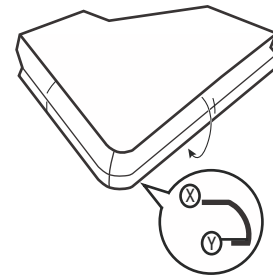



Figure 13. Apply adhesive promoter between X and Y

CAUTION

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

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 adhesive 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 adhesive 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.

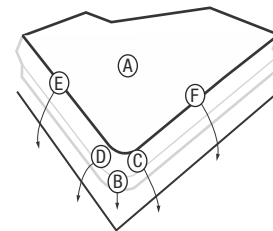


Figure 14. Apply the Product on the corner

For DI-NOC EX Series Seam 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.

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 70/30 IPA (70% Isopropyl Alcohol/ 30% Water) cleaning solution

Type of Surface Damage	Appearance of Surface Damage	Method to Reduce Visibility
Mar	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.
Indentation	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.
Scratch	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.
Gouge	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.

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 effort and results will vary:

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

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 sheets for 3M products go to 3M.com/SDS, or by mail or in case of an emergency, call 1-800-364-3577 or 1-651-737-6501.

When using any equipment, always follow the manufacturers' 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.

Technical Information

Technical information and data, recommendations, and other statements provided by 3M are based on information, tests, or experience which 3M believes to be reliable, but the accuracy or completeness of such information is not guaranteed. Such technical information and data are intended for persons with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. The typical values shown should not be used for the purpose of specification limits. If you have questions about this Product, contact the Technical Service helpline at 1-888-650-3497.

Warranty

Please refer to the applicable product's technical data sheet for warranty information.

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™ Wall 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 Wall Adhesion Test and before doing the full installation.

Problem	What To Look For	Recommended Solutions
Installation Problems - Smooth Walls		
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 Wall 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% iso-propyl 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"> • Some textured paint additives create too much texture for Products that are intended for smooth walls. • 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.
Application Surface temperature too low.	Refer to the Installation on page 10 for the proper installation temperature range.	
Post-Installation Problems - All Walls		
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 Wall 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 9.
	Under-cured paint.	Be sure the paint is properly applied and fully cured per the manufacturer's specifications before applying the Product.

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
Contact Name
Business Name
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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		



3M Measured Reference Guide for Adhesion

