

Product Description

3M™ DI-NOC™ Architectural Finishes and 3M™ DI-NOC™ E-Series Architectural Finishes (the “Product”) are durable, cleanable, flexible, plastic films with 3M’s Comply™ Adhesive air release channels for fast, easy and virtually bubble-free application. Use Products in place of, or to enhance, natural materials. Products have excellent adhesion and flexibility, allowing them to be used on flat or complex curved substrates, walls, furniture, fixtures, and more. Many Products can be applied to 3-dimensional surfaces or thermoformed. Products are ideal for both new construction and refurbishment.

Application Characteristics

Acceptable Surface contours: Smooth, flat or simple curved surfaces; many of the Products can be applied to 3-dimensional surfaces. Please refer to Considerations for Design Selection in the applicable Product Technical Data Sheet.

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

Adhesive: Pressure sensitive acrylic adhesive

Removal: Removable with heat at 176° to 212°F (80° to 100°C)

Surface Definitions

Substrate: The supporting wall structure, such as wood, wallboard, brick, concrete block, stucco, or metal.

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

Porosity: Some substrates are porous, so Product may appear to adhere well initially, but adhesion decreases significantly over time. An appropriate product should be used to seal porous surfaces.

Sealer: A coating applied to a substrate 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 unsmooth substrates, 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.
- **Unsmooth:** Has obvious visual and tactile surface variations, such as concrete block, brick, textured wallpaper, etc. Product may not adhere well because its adhesive does not have full contact with the surface. In addition, the surface’s texture will show through almost all Products. See the Sections below on Adhesion Promoter and Surface Preparation.



Inspect, Repair and Prepare the Application Surface

Changing Application Surface Texture

There are many products available to make textured surfaces smooth, but they permanently change the application surface and any underlying substrate. Work with your supplier to identify one that is compatible with your application surface and any underlying substrate. Apply it as directed by its manufacturer. Allow it to dry thoroughly. Finally apply the desired surface finish and allow it to cure thoroughly before Product application.

Common Interior Wall Problems

The following conditions can affect Product adhesion and performance. Be sure you address each one before installing Product.

- Level 5 Gypsum Board Finish is required for application (refer to ASTM C840).
- Too much surface texture.
- Poor bond between the paint, finish or wall covering and the substrate.
- Inconsistently applied surface finish.
- Surface finish that is “out-gassing.” As a surface finish dries, it releases certain gases until it is fully dried and cured. Applying Product before that process has finished can result in lifting, bubbles, and premature Product failure.
- Patched areas that are not smooth and/or have not been sealed.
- Moisture behind or on the application substrate, often due to dripping or condensation, which may not be obvious at Product installation. This may include but is not limited to: substrates near or under cooling systems, water pipes, covered windows and uncovered windows
- Any type of contamination (including dust, dirt, oil, food, vehicle exhaust, etc.) that has not been properly cleaned before Product installation.

Repairing Damaged Surface

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

- Smooth by sanding and/or using an appropriate filler. Assure that any filler is fully cured before proceeding.
- Seal the surface with primer and a finish, such as paint or other sealant. Two coats may be needed. Follow the manufacturer's recommendations for surface preparation and chemical application.
- When painting a surface, use a high quality, semi-gloss paint, not a matte paint or paint with silicone, graffiti-resistant or texturizing additives.
- Allow the surface to cure thoroughly before Product installation.

Poor Substrate Bonding to Surface Finish or Wall Covering

If the surface finish or wall covering's bond to the application surface is not excellent over the entire application area, the Product may not adhere properly and may have a poor finished appearance.

- Where possible, repair a poorly bonded surface finish as you would a damaged surface.
- For poorly bonded wall coverings, the optimal solution is to remove it, clean and repair the substrate, apply primer and paint or another finish, and allow to cure.

Clean the Application Surface

Dust and other contaminants on the application surface can prevent the Product from adhering properly. Clean the application surface immediately before applying Product, giving special attention to edges, corners and trim.

- For most surfaces, wash with a solution of detergent and lukewarm water. Rinse thoroughly and dry. Avoid soaps or preparations that contain waxes, oils or lotions.
- For stubborn grease or exhaust contamination, tri-sodium phosphate cleaner may be needed. Use according to the manufacturer's recommendations.
- Smooth poured concrete walls may require power washing or hand washing with a stiff brush and a detergent cleaner followed by a clean water rinse to remove grease and/or exhaust contaminants. Allow the surface to dry thoroughly (at least 24 hours) before Product application.
- Even if a surface is freshly painted or finished, dust it immediately before Product application using a soft, clean, lint-free cloth.

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. 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 substrate 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.
- Product must retain some flexibility to achieve maximum adhesion. If an overlamine is required, use only 3M™ DI-NOC™ Protect Film DPF-100.

Adhesion Promoters

Using an adhesion promoter can significantly increase a Product's adhesion, making it easier to apply a Product to challenging surfaces. Adhesion Promoter also helps minimize the shrinkage of applied Product. However, before using an adhesion promoter, consider these points: the adhesion promoter may permanently damage the application surface; 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 substrate damage, if attempted.

Using Adhesion Promoter

- Adhesion promoter is recommended at Product overlaps, ends or edges, such as under a butt joint, and wherever Product is stretched, such as at a sharp radius.
- If the application surface temperature is below 50°F (10°C), allow the water based adhesion promoter to dry at least 2 to 3 hours before Product installation. At warmer temperatures, allow the water based adhesion promoters to dry at least 15 to 30 minutes before Product installation.
- Adhesion Promoters are often not needed on flat or high energy application surfaces, such as metal or paint.

Adhesion Promoter Properties

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

Adhesion Promoter Properties	WP-2000 (Water-based)	Primer 94 (Solvent-based)
Type	Synthetic rubber	Acrylic
Container size	4 liter	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 substrates	<ul style="list-style-type: none"> - MDF (w/sealer) - Gypsum board (w/sealer) - Metals - Plastics - DI-NOC™ Films 	<ul style="list-style-type: none"> - Coated metals - Plastics - DI-NOC™ Films

WP-2000 undiluted for testing

Adhesion Compatibility with Application Surfaces

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 substrate.

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

Substrate	Application Surface	Adhesion Promoter		
		NO ADHESION PROMOTER lbs/in. (N/25mm)	WP-2000 (water-based) lbs/in. (N/25mm)	Primer 94 (solvent-based) lbs/in. (N/25mm)
Wood	MDF (w/ sealer)	○ 2 (7)	● 11 (51)	● 4 (18)
	Painted MDF	● 4 (20)	● 12 (52)	● 7 (31)
Boards	Gypsum Board (w/sealer)	○ 2 (7)	● 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*	ABS	● 6 (28)	● 13 (56)	● 10 (44)
	Acrylic	● 5 (22)	● 12 (54)	● 10 (43)
	Polyester (PET G)	● 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)
	DI-NOC™ Film**	○ 5 (24)	● 11 (49)	● 9 (42)

WP-2000 undiluted for testing

- Acceptable adhesion
- Fails in adhesion

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

** Due to additional stress from wrapping DI-NOC™, use of an adhesion promoter is highly recommended.

Tools and Supplies

- Scotch™ Masking Tape
- 3M™ Plastic Applicator PA-1
- Suitable sleeve for applicator
- 3M™ Air Release Tool 391X
- Straight edge; minimum of 1 yard (1 meter)
- Measuring tape
- An adequate supply of sharp cutting tools, such as a razor blade with a safety holder
- An appropriate container for holding discarded cutting blades or tools
- Adhesion promoter and brush

Industrial heat gun capable of attaining and sustaining 500°F–750°F (260°C–399°C) or equivalent

Application Procedure

General Method

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

1. Only use a dry application method.
2. For the most successful application, the environment and substrate should be 60°–82°F (15°–38°C).
3. Roll back a few inches of the Product liner from the Product's top. To avoid stretching Product, always remove the liner from the Product, not the Product from the liner.
4. Align the Product and use a finger to tack it to the substrate. See Figure 1.

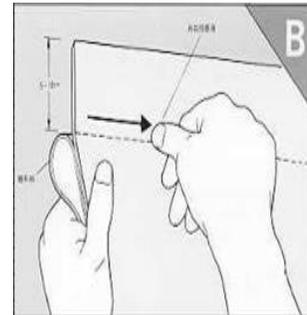


Figure 1.

5. Use care not to close off the Product's air release channels. Starting in the Product's center and using firm pressure, squeegee the Product, stroking toward the closest edge. Work across the Product to each outside edge. See Figure 2.

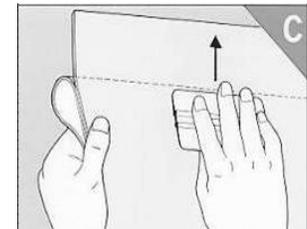


Figure 2.

6. Remove several more inches of liner, and while maintaining about a 45 degree angle with the squeegee, stroke downward. Work across the Product to each outside edge.
7. Continue in this manner to apply the rest of the Product. See Figure 3.

Finishing Product Edges

Usually, the Product's outer edges have the least adhesive bond. To finish the installation properly, heat and re-squeegee the edges. To do this:

1. Set a heat gun to 150°F (66°C), hold the gun about 1 inch (25 mm) from the Product.
2. Heat a few inches of the Product edges for 1 to 2 seconds.
3. Immediately re-squeegee the heated edges.
4. Continue until all Product edges are well sealed. 3M™ DI-NOC™ Architectural Finishes Specifications.

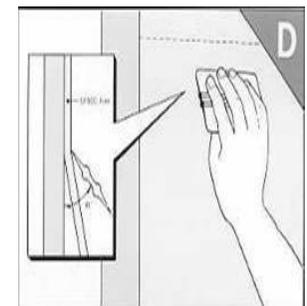


Figure 3.

Non-Standard Application Techniques

When applying a Product, always plan how you will approach the installation on complex architectural surfaces to take advantage of the Product's air release channels and to avoid wrinkles and bubbles.

Color Matching & Seaming of Adjacent Product Panels

If two or more panels of the same Product will be applied adjacent to one another, the following techniques will assist in obtaining uniform day time color and transmitted night time appearance.

Create a Butt Seam

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

1. If the same Product will be used on each side of the butt joint, be sure to use Product from the same roll or lot.
2. Ensure that Product design and/or “grain” of an embossed pattern always go in the same direction or the application may have obvious shifts in color, gloss and/or design.
3. Use a butt joint only when visibility is important and you are working on a flat surface. Products with a **W** designation in the Catalog should not use butt joints.
4. Apply adhesion promoter to the substrate for 1/2 inch (13 cm) on either side of where the joint line will fall. Allow to dry.
5. On the Product side where the joint will be, leave 1/2 inch (13 cm) of Product liner on Panel A. See Figure 4.
6. Apply Panel A.
7. Apply Panel B overlapping Panel A by 1/2 inch (13 cm).
8. Use a straight edge to cut through the overlap's center.
9. Remove the Product liner and any excess Product.
10. Firmly squeegee the joint. Then continue applying Panel B, always working from the joint to the unapplied opposite edge.

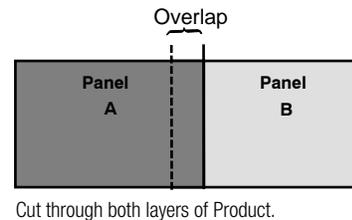


Figure 4.

Trimming

Certain Product areas are more likely to be damaged, such as areas around doors, openings (like vents), and wall corners. Trimming Product from the edge may reduce the risk of this damage. After application, re-squeegee all Product edges to help ensure good edge adhesion. See Figure 5.

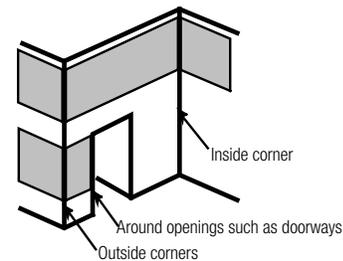


Figure 5.

Wrap Product Around Complex Structures

Apply Products to complex structures, such as door jams, as follows. See Figure 6.

1. Apply Product to largest areas first.
2. Apply adhesion promoter to surfaces that require Product wrapping around an edge.
3. Wrap Product strips around individual parts one at a time. Using a single Product piece usually results in Product wrinkles.
4. Be sure to cut Product strips wide enough. Wrapping often takes more Product than expected.
5. Overlap the joints on inside corners.

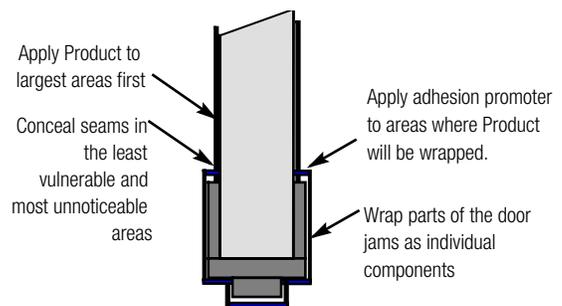


Figure 6.

Use Heat to Conform Product Around Difficult Features

You can improve many Products' conformability by heating them with a heat gun for 1 or 2 seconds and then immediately working the area with a squeegee. This technique also helps get good edge adhesion on overlaps.

Compound Curved Surfaces

NOTE: 3M recommends testing and approving application to circular forms.

1. Be sure to have enough Product to wrap around the edges to the surface's bottom.
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 7.

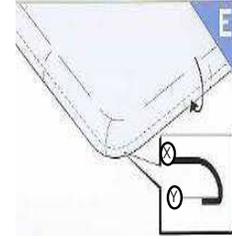


Figure 7. Apply adhesion promoter between X and Y

3. Apply the Product at the corner first and then along the straight edges in this sequence: A, then B & C, then D & E, etc. See Figure 8.
4. Neatly trim excess Product on the surface's back side.

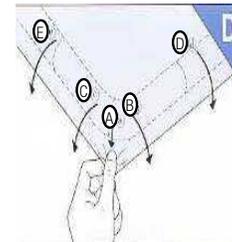


Figure 8. Apply the Product on the corner

5. To secure the edges, especially at corners where the Product is probably heavier, apply adhesion promoter, allow to dry, and then apply a small strip of Product to the cut edge. This provides additional stabilization and further minimize shrinkage. See Figure 9.

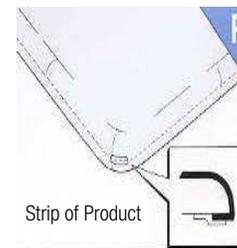


Figure 9. Securing the edges

Thermoforming

Except those Products identified in the Catalog with the ! symbol, Products are thermoformable. Please note that excessive stretching may deform Product Series WG's design.

Product Processing

Products are typically not printed or used in electronically cut applications. Some customers have reported success when printing selected Product with UV cure inks. All such use must be done on a customer test and approve basis.

Overlaminates

Overlamine DPF-100, a glossy transparent finish, is a Product that can be applied to other Products to provide additional scratch and damage protection. It will, however, increase most Products' gloss, it may diminish the texture of selected Products, and it will cause an inconsistent appearance in deeply embossed patterns.

3M does not recommend use of any other laminate or finish products, as they may decrease a Product's flexibility and adhesion.

Cleaning and Maintaining Applied Product

1. Use commercially available synthetic detergent and water. Avoid using organic solvents or strong detergents that are either highly alkaline (pH>11) or acid (pH<3).
2. Use a soft cloth or sponge without abrasives.

Type of Surface Damage	Appearance of Surface Damage	Method to Reduce Visibility
Mar	Dragging an item, such as a colored briefcase, across DI-NOC™ 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 DI-NOC™ surface without breaking the surface, such as pressure from a chair	Carefully heat the indentation with a heat gun or hair dryer, which allows the DI-NOC™ surface to rebound and reduce visibility.
Scratch	Breaking the surface layer of DI-NOC™ 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 Armor All Protectant or 3M Marine Vinyl Cleaner & Restorer to reduce the visibility of scratches
Gouge	Breaking through the entire DI-NOC film, such as severe impact from sharp chairs or carts.	Patch by cutting out the damaged DI-NOC™ and replacing that piece with the same pattern of DI-NOC or remove and replace an entire panel of DI-NOC™



CAUTION: Risk of Glass Breakage Due to Thermal Expansion

When applying DI-NOC™ to glass surfaces, please consider that surfaces exposed to sunlight will absorb heat. A glass surface covered by a film with high opacity or dark-colored ink, including films with small areas of high opacity or dark-colored ink, will absorb more heat. Heat absorption can create thermal stress that results in glass breakage, or thermal cracking. This can cause personal injury and property damage. 3M specifically does not recommend using a film with high opacity or dark-colored ink on glass surfaces with significant exposure to sunlight.

Removing Product

Although Products may be removed, application techniques and adhesion promoters increase adhesion, so clean removal without substantial damage is unlikely. Instead of removal, 3M recommends applying new Product or new surface covering over existing Products. 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 substrate.
2. Use a hairdryer or heat gun set to 176°F - 212°F (80°C - 100°C) to soften Product adhesive.
3. Immediately pull the heated section of Product down at about a 150 degree angle.
4. Heat more Product and continue pulling.

Storage and Shipping

- Store in a clean, dry area at an ambient temperature of 95°F (35°C) or less
- Protect from excessive moisture
- Protect from direct sunlight
- If rerolled, roll with the film side facing out on at least a 3 inch (76mm) core.

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.

For more information or to order samples, please visit www.3MArchitecturalMarkets.com.

Limited Warranty and Limited Remedy

Product

3M™ DI-NOC™ Architectural Finishes (the “Product”).

Limited Warranty

1. 3M warrants that the Product will be free from defect in manufacture (“3M Warranty”) for three years from the date of shipment by 3M or its authorized distributor (“Warranty Period”). EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, THE 3M WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES, RIGHTS OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY, SATISFACTORY QUALITY, FITNESS FOR A PARTICULAR PURPOSE AND THOSE ARISING FROM A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. THE BUYER IS RESPONSIBLE FOR DETERMINING IF A PRODUCT IS SUITABLE FOR ITS PARTICULAR PURPOSE AND APPLICATION METHODS.
2. For a buyer’s convenience, 3M may provide engineering or technical information, recommendations, installation instructions or guides, and other information or materials relating to a Product (“Other Product Information”), but 3M makes only the 3M Warranty and does not warrant any Other Product Information.
3. 3M has no obligation under the 3M Warranty as to Product that has been: (a) modified, altered or processed in any manner; (b) stored, applied, installed, or used in a manner other than that 3M recommends in the Technical Data Sheet and Installation Guide and in all Other Product Information; (c) damaged through contact with a person or thing, misuse, accident, neglect, or other action by anyone other than 3M; (d) improperly installed, including, without limitation, installation after the expiration the Product’s shelf life or installation without proper surface preparation, or (e) exposed to excessive heat, humidity, dirt or UV light.
4. 3M must receive any 3M Warranty claim in writing no later than 10 business days after (a) the end of the Warranty Period or (b) the discovery of the 3M Warranty claim, whichever is earlier.

Limited Remedy

IF ANY PRODUCT IS PROVEN NOT TO HAVE MET THE 3M WARRANTY DURING THE WARRANTY PERIOD, THEN THE BUYER’S EXCLUSIVE REMEDY, AND 3M’S SOLE OBLIGATION, WILL BE, AT 3M’S OPTION, TO REPLACE THE NONCONFORMING PRODUCT OR TO REFUND THE NONCONFORMING PRODUCT’S PURCHASE PRICE.

Limitation of Liability

3M WILL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO A BUYER FOR DIRECT (other than the Limited Remedy stated above), SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS) IN ANY WAY RELATED TO THE PRODUCT, THE TECH DATA SHEET OR OTHER PRODUCT INFORMATION, REGARDLESS OF THE LEGAL OR EQUITABLE THEORY ON WHICH SUCH DAMAGES ARE SOUGHT.

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