

Introduction

The purpose of this installation guide is to establish 3M-recommended procedures for interior dry application of 3M™ DI-NOC™ Architectural Finishes.

Contents

Introduction.....	1
Recommended Use – Considerations for Certain Design Series.....	2
Application Surfaces.....	2
Glossary of Terms.....	2
Common Substrate Issues and Possible Solutions.....	3
Installation Tools and Supplies.....	3
Adhesion.....	4
Adhesion Considerations.....	4
Primers.....	4
Using Primer.....	4
Primer Properties.....	4
Primer Application – Surface Energy.....	5
3M™ DI-NOC™ Adhesion Compatibility with Application Surfaces.....	5
3M™ DI-NOC™ Substrate – Surface Integrity.....	6
Cleaning Recommendations.....	7
Estimated Time for Cleaning.....	7
Surface and Work Area Preparation.....	7
Inspect Application Surfaces.....	7
Before Installation of DI-NOC on Surfaces Susceptible to Swelling.....	7
Repair Damaged Application Surfaces.....	8
Application.....	8
Create a Double Cut Seam (Butt Joint).....	8
Create an Overlap Seam.....	9
Trimming.....	9
Compound Curves.....	9
Use Heat to Conform Product Around Three Dimensional Surfaces.....	9
Additional Recommendations for DI-NOC MT Matte Architectural Finishes.....	10
Cleaning DI-NOC.....	11
Removal.....	12

Recommended Use – Considerations for Certain Design Series



For interior applications requiring maximum resistance to fading from UV exposures. Suitable for outdoor use.



For interior applications requiring maximum resistance to fading from UV exposures. Suitable for outdoor use. Not recommended for use on PVC-coated steel panel, as film colour will change over time.



Not recommended for use on compound curved surfaces.



Not recommended for butt joint applications.

NEW

New design



Pattern is large scale, view full pattern width image at 3M.com/AMD.



PVC free version – not available in EU



Indicates horizontal grain direction



Available in exterior version

Application Surfaces

3M™ DI-NOC™ Architectural Finishes can be applied to many types of application surfaces.

Glossary of Terms

Application Surface: The actual surface to which of 3M™ DI-NOC™ 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 choice, ease of application, and adhesion of 3M™ DI-NOC™ Architectural Finishes. A very smooth application surface will have the best adhesion and coverage of 3M™ DI-NOC™. For rough application surfaces, consider using 3M™ DI-NOC™ with more visual design and/or embossed texture.

- **Very Smooth:** No surface variation, such as glass. Allows for the easiest application of 3M™ DI-NOC™.
- **Fairly Smooth:** Little surface texture, such as painted wallboard. Allows for easy application and good adhesion of 3M™ DI-NOC™, but texture may show through some 3M™ DI-NOC™ pattern or designs.
- **Rough:** Has obvious visual and tactile surface variations, such as concrete block, brick, textured wallpaper, etc. 3M™ DI-NOC™ 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 3M™ DI-NOC™ patterns. See Adhesion on page 4 and Surface and Work Area Preparation on page 9 for instructions on rough application surfaces.

Uneven / rough surface texture will result in poor adhesive contact and low adhesion.

It may also cause a poor appearance of the applied film (especially high gloss, metallic and other monochromatic patterns).

Common Substrate Issues and Possible Solutions

Substrate	Related Issues	Possible Solutions
Drywall/Plaster board/Gypsum board	Rough surface Low surface energy Porous Easily Damaged	Putty/sand smooth Prime/Seal Careful Handling
MDF	Porous Low surface energy	Prime/Seal
Metal	Corrosion	Remove corrosion, Prime/Seal
Coated Steel	Greasy surface	Clean
High Pressure Laminates	Can be textured	Sand smooth and Prime/Seal as necessary
Melamine	Can be textured	Sand smooth and Prime/Seal as necessary
Wood	Textured Porous Low surface energy	Putty/Sand smooth Prime/Seal
Veneer	Textured Porous Low surface energy	Putty/Sand smooth Prime/Seal
Mortar/Concrete	Texture Alkaline attack Porous Low surface energy	Putty/Sand smooth Prime/Seal

Installation Tools and Supplies

- 3M™ Hand Applicator PA-1/W
- Razor blade knife with stainless steel replacement break-away blades
- An appropriate container for holding discarded cutting blades or tools
- Liner cutting tool
- Steel ruler with nick-free edges
- Scotch™ Masking Tape
- 3M™ Air Release Tool 391X
- Measuring tape
- Primer and brush
- Industrial heat gun capable of attaining and sustaining +38°C–149°C) or equivalent
- Clean, lint-free cloth
- 70/30 IPA cleaning solution (70% isopropylalcohol, 30% water)
- 3M™ Scotch-Brite Hand Pad
- Sand paper
- Rivet brush
- Scissors
- Cotton gloves
- Screw driver
- Putty
- Primer

Adhesion

Initial and Final Adhesion

Adhesion will vary depending on the surface type and texture, installation conditions and techniques, and 3M™ DI-NOC™ exposure conditions, any of which can prevent 3M™ DI-NOC™ from achieving a full bond to the application surface.

- Initial Adhesion is the bond needed to hold 3M™ DI-NOC™ 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 the application of 3M™ DI-NOC™. A good final adhesion requires all of the following: a suitable application surface with an optimal surface, correct film installation techniques and exposure conditions within those stated for 3M™ DI-NOC.

Please make sure the surface integrity is checked (see page 7).

Adhesion Considerations

- Using a primer can significantly increase the adhesion of 3M™ DI-NOC™.
- If 3M™ DI-NOC™ is stretched during application, it may shrink later, which decreases adhesion. Using a primer may minimize shrinkage.

Primers

Before using a primer, consider these points: 3M™ DI-NOC™ will be more difficult to reposition on the surface due to enhanced adhesion; and removal will be more difficult (or not at all removable) and may cause additional application surface damage, if attempted.

Using Primer

- Primer is recommended at 3M™ DI-NOC™ overlaps, ends, corners or edges, or around fixtures. It should also be used wherever 3M™ DI-NOC™ is stretched.
- Primers are often not needed on flat or high energy application surfaces, such as metal or glass.
- Allow primers to dry per manufacturer's instructions.
 - Allow the water-based primer to dry at least 1 hour before the installation of 3M™ DI-NOC™.
 - Allow the solvent-based primer to dry at least 30 minutes before the installation of 3M™ DI-NOC™.

Primer Properties

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

Primer Properties	WP-2000 (water-based)	3M™ Tape Primer 94 (solvent-based)
Type	Synthetic rubber	Acrylic
Container Size	3.75 litres can	Multiple sizes
Usage	Optional dilution with maximum 3 parts water	Do not dilute
Coverage	12.5 - 25.1 m ² /litre	14.7 m ² /litre
Colour	Blue	Clear light yellow - clear dark orange
Solids	48%	6%
Viscosity	2400 cps (mPa-s)	1-10 cps (mPa-s)
Compatible	Plaster board Calcium Silicate (with sealer coating) Plywood	Calcium Silicate (with sealer coating) Plywood MDF board Aluminium Stainless steel Painted or coated metals Films (including DI-NOC™ films) PVC laminated steel mortar (with sealer coating)

Primer Application – Surface Energy



Low surface energy (hard to adhere): has to be primed completely.



Normal surface energy: only edges and corrugations have to be primed.



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

The following table contains peel adhesion information for 3M™ DI-NOC™ peeled from various surfaces. A number of surfaces have acceptable adhesion without the use of primer. Examples of increased adhesion with primers 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. Please check adequate adhesion before installation.

Application Surface		Primer		
		NO Primer (N/25 mm)	WP-2000 (water-based) (N/25 mm)	3M™ Tape Primer 94 (solvent-based) (N/25 mm)
Wood	MDF (w/ sealer)	• 8 ³	• 51	• 18
	Painted MDF	• 20	• 52	• 31
Boards	Gypsum board (w/skim coat & sealer)	• 8 ³	• 35	• 19
Metals	Aluminium	• 47	• 48	• 47
	Anodized aluminium	• 23	• 56	• 49
	Stainless steel	• 26	• 56	• 28
Glass	Glass	• 26	• 58	• 26
Plastics ¹	ABS	• 28	• 56	• 44
	Acrylic	• 22	• 54	• 43
	Polyester (PETG)	• 29	• 51	• 45
	Polypropylene	○ 2	• 17	• 20
	Polyethylene	○ 3	• 21	○ 3
	Polycarbonate	• 28	• 53	• 44
	3M™ DI-NOC™ film	• 24 ²	• 49	• 42

Typical peel 24 hours after application on substrate.

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 3M™ DI-NOC™ is wrapped and overlapped around edges, use of a primer is highly recommended due to additional stress from wrapping 3M™ DI-NOC™.

³ Sealer was wiped with Isopropyl alcohol to improve adhesion.

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 of 3M™ DI-NOC™, 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 3M™ DI-NOC™ may perform well on one paint and poorly on another paint.

3M™ DI-NOC™ Substrate – Surface Integrity

Before the installation of DI-NOC to a substrate, especially painted/primed/sealed surfaces, an adhesion test should be performed to determine if the film will properly adhere to the substrate.

- Do not assume all surfaces are the same – test them all
- If integrity of the surface is in doubt, do not install DI-NOC and have a discussion with the party responsible for preparing the substrate to get the matter resolved. If the matter can not be resolved, refuse to install the film, or consider having the responsible party sign a waiver protecting you from installation failures that arise from the substrate preparation.

For further indication you might set up yourself a simple initial adhesion test, as described below providing values in N/inch. It may help you to set up repeatable values from substrates you have judged yourself before as acceptable or good ones.

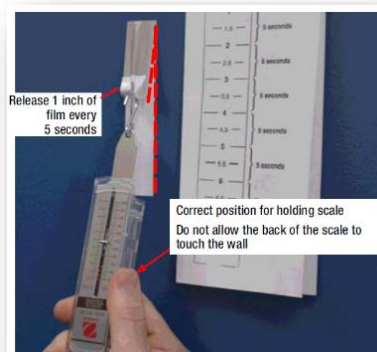
- Wipe substrate with 70% IPA and 30% water
- Wait until area is dry
- Apply a 2.5 cm x 25 cm (approx.) strip of DI-NOC to the substrate in an inconspicuous area. Punch a hole in the top for spring scale
- Use Rivet Brush and make 3 passes on each strip of DI-NOC to gain ultimate adhesion



- Wait 15 minutes
- Zero out the spring scale and measure adhesion by pulling at a rate of 2.5 cm per 5 seconds



- Should be a smooth pull, a 'jerky' pull indicates a problem



Cleaning Recommendations

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 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.
5. Clean the entire application surface with overlapping strokes. You may notice some migrated paint particles on the cloth.



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 in 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 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 installation of DI-NOC™.



Estimated Time for Cleaning

About 30 minutes is required to clean a 12 m² area, which is approximately 2.4 m x 5 m surface. 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 the application of DI-NOC. 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.

Before Installation of DI-NOC 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 DI-NOC film.

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 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 sufficient coats of a primer or sealer. Follow the manufacturer's recommendations for surface preparation. Allow the sealer or primer to fully cure before installation of DI-NOC.

Application

Recommended application temperature: +12°C to +38°C

These are the general application steps for the installation of DI-NOC. It is recommended to work with a 3M trained and certified installer, e.g. 3M Endorsed Installer for Architectural Finishes.

1. Measure the application surface to be covered.
2. Cut DI-NOC film to size with a minimum 1.3 cm extra on all sides for trimming.
3. Put a set line in the liner 15 – 20 cm from the top.
4. Align DI-NOC film with the application surface and set the set line.
5. Pull out the liner approximately 20 cm.
6. Starting in the center, use the squeegee to adhere DI-NOC film 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 (Butt Joint)

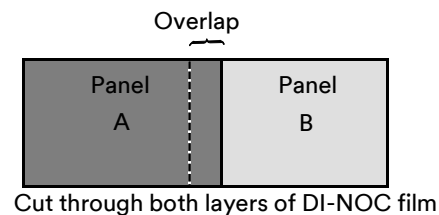
This technique is not recommended for curved surfaces, for which a standard overlap seam is recommended.

NOTE: If the same DI-NOC film will be used on each side of the double cut, be sure to use the film from the same roll or lot.

1. Ensure that the 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

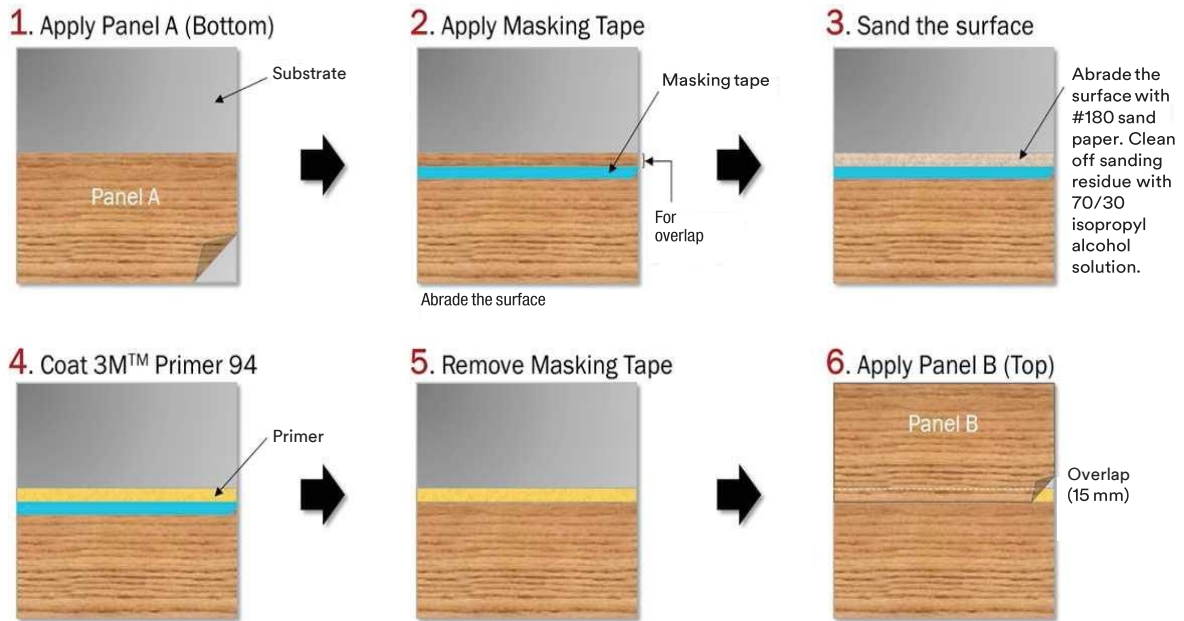
Do not use double cut seaming with DI-NOC patterns that have a **W** designation in the 3M™ DI-NOC™ Architectural Finishes Product Catalogue.



2. On the film side where the seam will be, leave 2.5 cm of the liner on the side of Panel A.
3. Apply Panel A.
4. Apply Panel B overlapping Panel A by 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 DI-NOC film and then the 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 2.5 cm section of the seam before going to the next step.
9. Starting in the middle of the 2.5 cm section, firmly squeegee the seam together with a rocking motion. Work the squeegee along the seam, keeping it tight to the film.

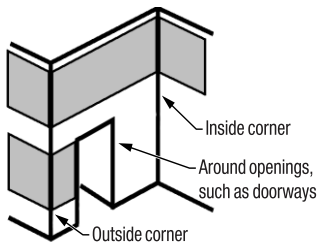
Create an Overlap Seam

NOTE: Use DI-NOC film from the same roll or lot on each side of the seam.



Trimming

After the application of DI-NOC, re-squeegee all edges to help ensure good edge adhesion before trimming.



Outside corners should be cut at a 45 degree angle. Inside corners should have an overlap of 3 mm.

Compound Curves

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

Use Heat to Conform Product Around Three Dimensional Surfaces

You can improve the conformability of many DI-NOC films by heating the surface of DI-NOC until it is pliable enough to form around a three dimensional surface.

Overheating can damage the applied film. Practice this technique on a test piece before attempting on the application.

Note: DI-NOC MT series may form creases on the surface when the film is excessively bent. Exercise care when handling during application.

Do not pierce the film to release air bubbles as it may result in conspicuous white marks.

Be aware when cutting, the cut edge may become noticeably white on deeply colored patterns.

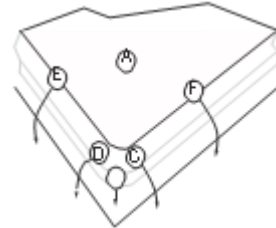
If the product becomes white when wrapping around outside corners, warming with a heat gun will make this less noticeable. Please note that excessive heating may cause discoloration and/or damage to the matte surface.


Be aware that VM-MT and PS-MT Series may have spots of uneven gloss (visual defects) indicated by a red label on the edge of the film. Please check the appearance before application for acceptability.

1. Ensure that you have enough DI-NOC film to wrap around the edges of the surface's bottom.
2. Apply primer to the edges, starting about 1.3 cm from where the shape changes (see Reference X) and extending to the back side of the surface for at least 1.3 cm (see Reference Y). Allow the primer to dry to improve adhesion and minimize shrinkage.



3. Apply DI-NOC 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.
4. Neatly trim excess DI-NOC on the surface's back side.



Note: DI-NOC pattern identified in the DI-NOC Architectural Finishes Product Catalogue with the  symbol, and also noted in the 3M™ DI-NOC product bulletin, cannot be wrapped around three dimensional surfaces. Please note that excessive stretching and heat may deform the design and texture of DI-NOC.

Additional Recommendations for DI-NOC MT Matte Architectural Finishes

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

1. This product has a special matte surface texture that will have reduced scratch and stain resistance compared to other series. Avoid applications in medium to high traffic areas.
2. Pressure such as squeezing during installation may leave marks resembling white indentations. Some indentations may recover with time. Wiping with a damp microfiber cloth will shorten the recovery time. Use care when handling lightly patterned or deeply colored products as these marks will be especially noticeable. Use care to avoid impacting the matte surface with hard objects, etc. deep scratches will not recover.
3. 3M™ Hand Applicator PA-1/W must be used in order to avoid scratching of the surface because of its low friction, but ensure sufficient application pressure. In case of scratches, clean film surface using a solution of mild liquid detergent and water. Then use clear water and wipe gently with a soft cloth. Most scratches will recover by applying this procedure.
4. Note: Alternatively, you may
 - a) apply film by covering with 3M™ Application Tape SCPS-100 and then squeegee, or
 - b) cover squeegee with a rubber sleeve, spray film surface with a solution of mild liquid detergent and water (please ensure adhesive side does not get in contact with water), squeegee wet film with the rubber side of the squeegee and then wipe gently with a soft cloth.
5. Handle with care to avoid creases and tears, especially VM-MT Series. Applying and repositioning the product and making cuts requires careful handling.
6. This product is not recommended for application on three dimensional surfaces. Excessive heating may cause discoloration and/or damage of the matte surface.
7. It is not possible to apply the product with overlap joint without additional preparation. When applying overlap joints, sand the surface until it is smooth, then clean with 70/30 Isopropyl alcohol solution and apply 3M™ Tape Primer 94.
8. Creases may form on the surface when the film is excessively bent. Exercise care when handling during application.
9. Do not pierce the film to release air bubbles as it may result in conspicuous white marks.
10. Be aware when cutting, the cut edge may become noticeably white on deeply colored patterns.
11. If the product becomes white when wrapping around outside corners, warming with a heat gun will make this less noticeable. Please note that excessive heating may cause discoloration and/or damage to the matte surface.

12. Be aware that VM-MT and PS-MT Series may have spots of uneven gloss (visual defects) indicated by a red label on the edge of the film. Please check the appearance before application for acceptability.

Cleaning DI-NOC

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, ethanol or citrus cleaner.

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 DI-NOC may be removed, application techniques and primers increase adhesion, so clean removal without substantial damage is unlikely. The following removal techniques can be tried, but effort and results will vary:

1. Use heat to soften adhesive (with heat gun).
2. Cut film into narrow strips to reduce removal force.
3. Immediately pull the heated section of DI-NOC down at about a 180 degree angle.
4. Remove adhesive residue using citrus adhesive remover (e.g. 3M™ Industrial Cleaner 9472) or 3M™ Adhesive Remover R231.

Remarks

Important notice

This bulletin provides technical information only.

All questions of warranty and liability relating to this product are governed by the terms and conditions of the sale, subject, where applicable, to the prevailing law.

Before using, the user must determine the suitability of the product for its required or intended use, and the user assumes all risk and liability whatsoever in connection therewith.

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