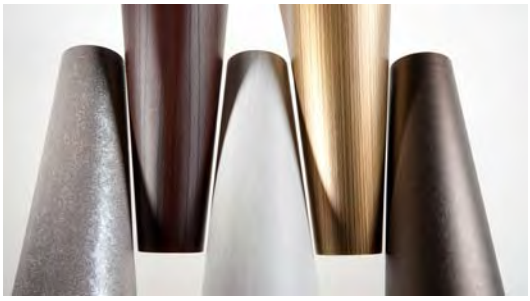
# 3M Architectural Markets featuring 3M™ DI-NOC™ Architectural Finishes

Technical Data Sheet DI-NOC
Release B, Effective May 2013
*(replaces Release A, October 2012)*

3M™ DI-NOC™ Architectural Finishes are decorative surface finishes available in 500+ designs. 3M DI-NOC designs offer the warmth of wood grain, sleek feel of metal, cool of natural stone and hundreds of other designs.

### Featured Benefits

- Applications — 3M™ DI-NOC™ Architectural Finishes are ideal for casework, doors, columns and walls.
- Substrates — Use 3M™ DI-NOC™ Architectural Finishes on metal, wood, glass and more.
- Aesthetics — 3M™ DI-NOC™ Architectural Finishes resemble natural materials and other types of surfaces to deliver the look you want, at the price you need.
- Remodel and Reuse — 3M™ DI-NOC™ Architectural Finishes go up fast,with less likelihood of error and waste, and bring life to existing assets. The architectural finishes convert wood or metallic spaces to reflect an entirely new design with abstract or colored finishes.
- Easy Application — 3M™ Comply™ Adhesive technology is repositionable and virtually eliminates bubbles, simplifying and speeding application. It also bonds powerfully to many substrates.
- Custom Design Availability — Work with 3M Architectural Markets to explore the option of creating a design specifically for your space.



3M™ DI-NOC™ Architectural Finishes are flexible finish films, able to contour to most surfaces.

Patterns FW-7017, FW-522 and MW-1074 are used in the retail setting above.

### 3M™ DI-NOC™ Architectural Finishes Specifications

| Material | Form — Standard | Thickness | Weight |
|---|---|---|---|
| Vinyl | 48" x 164 ft (1220mm x 50m) roll<br>Roll length options based on availability. | 8 mils (0.2mm) nominal (release paper excluded). Some designs vary slightly in thickness due to embossing. | Approximately 44 lbs (20kg) (for a 50m roll) |

### General Characteristics Data

| Material | Evaluation | Results |
|---|---|---|
| Dimensional Stability | 4" x 4" (100mm x 100mm) crosscut was made in the center of 6" x 6" (150mm x 150mm) film applied to an 8"x 8" (200mm x 200mm) aluminum plate. After 2 days, the largest gap at the crosscut point was measured. | Largest gap: under 0.01" (0.3mm) |
| Heat Resistance | Film was applied to an aluminum plate and aged at a temperature of 150°F (65°C) for 28 days. | No delamination or visible change |
| Thermal Cycle Resistance | Film was applied to an aluminum plate and cycled between 22 and 150°F (-30 and 65°C) for 12 days. | No delamination or visible change |
| Moisture Resistance | Film was applied to an aluminum plate and aged at a temperature of 113°F (45°C ) and 95% humidity for 30 days. | No delamination or visible change |
| Cold Impact Resistance | Film was applied to an aluminum plate and a weight of 2 lbs (907g) was dropped from 5 inches (12.7cm) high at a temperature of 32°F (0°C) using a Gardner Impact Tester. | No cracks in film |
| Weatherability | Exposed to a Sunshine Weather Meter for 250 hours. | No visible change |
| Flammability | Most DI-NOC architectural finishes received a Class A rating when tested per ASTM E84. | Class A |
| Abrasion Resistance | 7,000 cycles with no wear-through of surface finish (JIS K7204) CS-17 wheel, loading weight 1kg. | — |

## Resistance to Solvent and Chemicals

Film was applied to an aluminum plate, left for 72 hours, then immersed in the following chemicals:

| Classification | Solvent | Immersion Time | Result |
|---|---|---|---|
| Water | Water | 24 hours | No visible change |
| Acid | Chloride (10%) | 24 hours | No visible change |
| Base ( Alkali) | Sodium Hydroxide (10%) | 24 hours | No visible change |
| Alcohol | Ethanol | 24 hours | No visible change |
| Ester | Ethyl Acetate | 5 minutes | Deterioration observed |
| Ketone | Methyl Ethyl Ketone | 5 minutes | Deterioration observed |
| Aromatic | Toluene | 5 minutes | Deterioration observed |

## Adhesive Strength to a Base Material

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.

| Classification | Substrate | With No Primer lbs/in (N/25mm) | Primer Application DP-900N lbs/in (N/25mm) |
|---|---|---|---|
| Wood | Luan Veneer | 2.7 (12) | 6.3 (28) |
| | China Veneer | 2.7 (12) | 7.4 (33) |
| | MDF | — | 5.8 (26) |
| Boards | Gypsum Board | — | 1.3 (6)* |
| | Calcium Silicate Board | — | 5.4 (24)** |
| | Slate Board | 4.3 (19) | 8.8 (39) |
| Metals | Baked Enamel Steel Finish | 4.0 (18) | 6.5 (29) |
| | Bonderized Steel Plate | 6.6 (28) | 6.7 (30) |
| | Vinyl Chloride Steel Plate | 9.4 (42)*** | — |
| | Aluminum | 5.6 (25) | — |
| | Stainless Steel | 6.1 (27) | — |
| | Galvanized Steel Plate | 5.4 (24) | 8.8 (39) |
| Plastics | Acrylic | 6.5 (29) | 7.4 (33) |
| | ABS | 5.6 (25) | 9.4 (42) |
| | Melamine | 4.0 (18) | 6.3 (28) |
| | Polyester | 5.4 (24) | 6.7 (30) |
| Inorganic | Mortar | 2.2 (10) | 9.0 (40) |
| Glass | Glass | 4.7 (21) | — |

* Cohesive failure of substrate's paper layer.
** We applied DP-900N for comparison, although the recommended primer was EC-138NT.
*** Although a vinyl-chloride steel substrate is sufficient in primary adhesive performance without the primer treatment, it is highly recommended to apply the primer due to adhesive reduction over time.

## Stain Resistance

Contaminant was in contact with the film surface for 24 hours and then removed using water or mild detergent.

| Classification | Contaminant | Result |
|---|---|---|
| Food and Beverages | Coffee | ● |
| | Tea | ○ |
| | Cola | ● |
| | Milk | ● |
| | Red Wine | ● |
| | Ketchup | ● |
| | Soy Sauce | ● |
| | Oleic Acid Oil | ● |
| | Vinegar | ● |

| Classification | Contaminant | Result |
|---|---|---|
| Cleaning Solutions | Salt Water (1%) | ● |
| | Soap suds (1%) | ● |
| | Ammonia Solution (10%) | ● |
| | Oxygenated Water (3%) | ● |
| | Citrate Solution (10%) | ● |
| | Formalin (36%) | ● |
| | Ethyl Alcohol (50%) | ● |
| Other* | Crayon | ○ |
| | Shoe Polish | ◉ |

● Wiped with water
○ Wiped with mild detergent
◉ A little stain remained

* Results may different depending on the manufacturer.

## Considerations for Design Selection by Product Series

| Product Series | Considerations in Product Design Selection | | | | | Notes |
|---|---|---|---|---|---|---|
| | Smoothness of Substrate Surface | Damage to Film Surface | Pattern Match for Butt Seams | Asymmetry Due to Reflection After Butt Seams | Lighting Environment After Application | |
| **SE Stucco** | | ● | | | | ≈ Wrap squeegee in a soft cloth to prevent damage to the film surface. Replace cloth when it becomes worn or stained |
| **LE Leather/Metallic Leather** | | | | | | ≈ Embossed patterns may appear inconsistent due to the frequency of pattern repetitions. Confirm suitable visual appearance prior to application when applying on a large surface. |
| **SI Silk** | | | ● | ● | ● | ≈ Do not use on compound curves or complex shapes. Avoid damaging film edges during application.<br>≈ The texture of this pattern has a grain: apply each sheet in the same direction and use a butt joint.<br>≈ Confirm suitable visual appearance of gloss both for pattern match and in adjacent sheets prior to application.<br>≈ Delicate lines are visible in the pattern under down lights or spot lights. |
| **NU Nuno** | | | ● | ● Particularly NU-1240, NU-1241 | ● | ≈ Do not use on compound curves or complex shapes. Avoid damaging film edges during application.<br>≈ Confirm suitable visual appearance of gloss and pattern match on butt joints of adjacent sheets prior to application. |
| **FE Weave** | | | ● | | | ≈ Do not overlap seams due to significant textured in embossed pattern.<br>≈ Embossed patterns may appear inconsistent due to the frequency of pattern repetitions. Check for suitable visual appearance when applying on a large surface.<br>≈ Do not use on compound curves or complex shapes. Avoid damaging film edges during application.<br>≈ Use caution during cold weather application; cold stretching may rip film |
| **GE G-Emboss** | ● | ● | ● | ● | | ≈ Surface of film may be damaged when exposed to friction, or dented when subjected to weighted objects.<br>≈ Remove stains immediately. Stains in embossed grooves may be difficult to remove. Follow DI-NOC film cleaning procedure. |
| **RS Random Style** | | ● | ● | | | ≈ Surface of film may be damaged when exposed to friction, or dented when subjected to weighted objects.<br>≈ Remove stains immediately. Stains in embossed grooves may be difficult to remove. Follow DI-NOC film's cleaning procedure.<br>≈ Do not use on compound curves or complex shapes. |
| **CA Carbon** | | ● | ● | ● CA-418, 420, 422, 423 | | ≈ Surface of film may be damaged when exposed to friction, or dented when subjected to weighted objects. |
| **HG High Gloss** | ● | ● | | | ● | ≈ Do not use: outside; in high temperature; in high humidity; on stretchable substrate; on compound curves; on complex surfaces.<br>≈ Do not stretch or attempt to reposition the film during application, which may deform, buckle or ripple the film. Determine starting point and apply carefully.<br>≈ Seams will be visible when using a butt joint.<br>≈ film may bubble due to outgassing if applied to acrylic or polycarbonate that is not fully cured.<br>≈ Fingerprints and other stains may be visible on films' glossy surface; can usually be removed by wiping with a dry or wet cloth. |
| **ME Metallic** | ● | | | | | ≈ ME-536 has a transparent protective liner on the surface to prevent film damage during application. Peel off after application. Keep unused film tightly rolled to prevent protective liner from popping off the face of the film. |
| **VM Metallic** | ● | | ● Particularly VM-425 | | | ≈ Do not attempt to reposition the film during application, which can cause the film to separate from the adhesive.<br>≈ Excessive stretching during application may cause an uneven color and pattern.<br>≈ Test and approve for suitable appearance before applying to compound curves or complex shapes.<br>≈ For VM-167, VM-168, VM-381, VM-383, VM-452: use care not to crease the film during application, which may wrinkle the surface.<br>≈ Film may bubble due to outgassing if applied to acrylic or polycarbonate that is not fully cured. |
| **FW Fine Wood** | | | ● | | | ≈ Do not use the the direction of the logos on the back of the release paper liner as a pattern guide: they may not align with the grain. |
| **MW Metallic Wood** | ● | ● | | | ● | ≈ No notes |

## Considerations on Design Selection by Product Series, *continued*

| Product Series | Considerations in Product Design Selection | | | | | Notes |
|---|---|---|---|---|---|---|
| | Smoothness of Substrate Surface | Damage to Film Surface | Pattern Match for Butt Seams | Asymmetry Due to Reflection After Butt Seams | Lighting Environment After Application | |
| **FW Fine Wood Large-patterns product (e.g., FW-791)** | | | ● | | | ≈ To confirm the color, pattern, and suitability for butt seams, always view a film sample of at least a 8.5" x 11". |
| **Wipe Grain WG-156, WG-157, WG-159, WG-166** | | ● | ● | | | ≈ The film surface has a special treatment. Do not use butt joints. Apply with reveals or joint separations. |
| **WG-GN Wood Grain Gloss** | ● | ● | | | ● | ≈ Wrap squeegee in a soft cloth to prevent damage to the film surface. Replace cloth when it becomes worn or stained<br>≈ Immediately after application, clean the film surface with a soft cloth and water or a mild detergent. |

## Base Substrate Material Compatibility

| Substrate Material | Substrate | CA, LW, ME, MW, PA, VM, WG-GN, GE-923, GE-924 | All Other DI-NOC Film |
|---|---|---|---|
| Wood | Luan Veneer | ◉ | ● |
| | Particleboard | ◉ | ● |
| | MDF | ◉ | ● |
| | Pure Wood | ○ | ○ |
| Boards | Gypsum Board | ◉ | ● |
| | Calcium Silicate Board | ◉ | ● |
| Mortar | Mortar | ◉ | ● |
| Metal | Baked Enamel Steel Finish | ○ | ● |
| | Galvanized Steel | ○ | ● |
| | PVC Coated Steel | ◉ | ● |
| | Aluminum | ● | ● |
| | Stainless Steel | ● | ● |
| | Copper | ○ | ○ |
| | Tin | ○ | ○ |
| Overlap Application | Overlap Application | ◉ | ● |

| Substrate Material | Substrate | CA, LW, ME, MW, PA, VM, WG-GN, GE-923, GE-924 | All Other DI-NOC Film |
|---|---|---|---|
| Laminates | Melamine Board | ● | ● |
| | Plastic Laminate | ◉* | ◉* |
| Glass | Glass | ● | ● |
| | Surface is Quality of Glass | ● | ● |
| Plastics | Artificial Marble | ● | ● |
| | Acrylics | ◉* | ◉* |
| | ABS | ◉* | ◉* |
| | Hard Vinyl Chloride | ● | ● |
| | Soft Vinyl Chloride | ○ | ○ |
| | Polycarbonate | ○ | ○ |
| | Polyethylene | ○ | ○ |
| | Polypropylene | ○ | ○ |
| | Nylon | ○ | ○ |
| | Fluoro-Resin | ○ | ○ |
| | Rubbers | ○ | ○ |
| | Sealing Agent | ○ | ○ |

For substrates marked with ◉, please confirm acceptability of appearance with end user.
Substrate irregularities and texture will be visible with VM designs.
*Bubbles may appear under film due to outgassing if plastic or ABS substrate is not fully cured.

● Compatible
○ Fails in adhesion
◉ Surface texture of base substrate is visible

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## Limited Warranty and Limited Remedy

### Limited Warranty

1. 3M warrants that a Product will be free from defect in manufacture ("3M Warranty") on 3M's Product shipment date ("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, 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, and other information or materials relating to 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 this Technical Data Sheet 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; or (d) exposed to excessive heat, humidity, dirt or UV light.

### Limited Remedy

If any Product is proven not to have met the 3M Warranty on the buyer's receipt, then **the buyer's exclusive remedy, and 3M's sole obligation, will be, at 3M's option, to replace that Product quantity or refund the applicable purchase price.**

## Limitation of Liability

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