DI-NOC™ Architectural Finishes

Description

Advantages

- 3M™ DI-NOC™ Architectural Finishes are flexible cast PVC films with Comply™ adhesive intended to cover all type of the surfaces, such as wall covering, furniture, fixture, ceiling, doors, elevators, exterior/interior applications.
- 3M™ DI-NOC™ Architectural Finishes are durable, dimensionally stable, vinyl films that were specifically developed for interior/exterior decorations and refurbishment.

Product Line

PS (single color), WG (wood grain), LE (leather), ME/VM (metallic), NX (suede), HM (hyper metallic), SE (stucco), PC (sand), ST (stone), FA/PT/SE (abstract soft), RT/PG/LZ (abstract bold), FA (terracotta), FW (fine wood), LW (little wave), FE (weave), RS (random squares), CA (carbon), HG (high gloss), PA (chic), GE (G-emboss), DPF (protect film).

Construction

- Film – approx. 215 microns (film/adhesive) PVC, cadmium-free. Thickness will vary between designs.
- Adhesive – Permanent acrylic adhesive with Comply™ performance.
- Liner – PE coated Kraft paper.

Effective Performance Life

The warranty for 3M™ DI-NOC™ Architectural Finishes for interior/exterior decoration as stated here does not extend to automotive or personal vehicle applications which have to conform to OEM automotive specifications. The warranty applies to films that are exposed interior/exterior at a vertical angle (defined as +/-10°). A significant decrease in durability may be experienced if films are exposed other than vertically. Such non-vertical application should be based on 3M tests results and approval to determine acceptability. Effective Performance Life of unprinted interior/exterior 3M™ DI-NOC™ Architectural Finishes depends on application exposure zones as follows.

Vertical Exposure

Zone 1 Northern/Central Europe

Zone 2 Mediterranean Europe

Zone 3 Middle East/North Africa

DI-NOC™	**Zone 1** in years	**Zone 2** in years	**Zone 3** in years
Sun Symbol outdoor*	5	4	3
With/out sun symbol, indoor but no direct UV exposure	10	8	6
With/out sun symbol, indoor but no UV exposure	12	12	12

- For fleet application on vertical flat and simple curved surfaces an application is possible but not warranted.

Without a warranty it is also possible to print onto 3M™ DI-NOC™ Architectural Finishes PS series with PIJ, 3M™ 1900 inks and clear coated with 3M™ 1920DR or laminated with 3M™ 8519/8520.

Application performance statements are based upon representative values obtained from testing throughout Japan/Europe, however, actual performance will be determined by substrate selection and preparation, exposure conditions and maintenance of the marking.

Horizontal applications of markings and stripping can be used for indoor decoration where no UV light is exposed. 3M does not recommend/warrant horizontal outdoor application of 3M™ DI-NOC™ Architectural Finishes products as horizontal applications are subjected to maximum sunlight and environmental effects. Therefore, color change, loss of gloss and chalking may occur.
Also when 3M™ DI-NOC™ Architectural Finishes is used horizontally, for example on a counter, it can be exposed to abrasion which is greater than normal. This can lead to premature wear and/or damage to the film. In these cases the 3M™ DI-NOC™ Architectural Finishes protection film DPF 100 can be used. Be aware that the use of an over laminate can change the appearance of the design.

Fabrication Cutting with Electronic Systems

3M™ DI-NOC™ Architectural Finishes is normally applied in sheets directly from the roll. In case people want to cut or screen print that is possible but not the primary intention of the film. Knife adjustment may be required as the product construction may differ from comparable products. The minimum height for text is 10 mm.

Weeding

It is recommended to weed 3M™ DI-NOC™ Architectural Finishes immediately after cutting. This is to minimize the effect of possible adhesive flow 24 hours or more after cutting.

Note: 3M™ DI-NOC™ Architectural Finishes is not treated with antistatic charges.

Screen Printing and Clear Coating

Whilst 3M™ DI-NOC™ Architectural Finishes Series PS can be screen printed, other products such as the Controltac™ Plus series of films, for example, are more suitable for this process. If screen printing is necessary, then 3M™ Screen Printing Ink Series 1900 or PIJ printing is recommended. The graphic should be protected with 3M™ 1920DR clear coat or laminated with 3M™ 8519/8520.

The 4 color half tone printing is not recommended or warranted.

Premasking/Prespacing

3M™ SCPS-55 for prespacing of cut letters is recommended.

Preparation of Substrates

Refer to DI-NOC™ Instruction Bulletin.

Application Temperature

3M recommends applying 3M™ DI-NOC™ Architectural Finishes products at 15°C - 38°C. Wet application of 3M™ DI-NOC™ Architectural Finishes is not recommended due to Comply™ adhesive.

Specific information: Instruction Bulletin 3M™ DI-NOC™ Architectural Finishes

Physical and Chemical Properties

Values given are typical and are not for use in specifications. If a custom specification is desired, a request should be submitted through your sales representative. The following data is given for unprinted film.

Physical Properties

Property	Metric Units
Thickness (Film + Adhesive)	0.210 mm – 0.220 mm
Elongation	> 100 %
Dimensional Stability (X-gash)	> 0.3 mm max
Abrasion Resistance Taber abrasion (0.5 kg load, CS-17)	1000 cycles Surface will be damaged
Impact Resistance (Gardner at 0°C), 2 lb X 5 inch at 4°C	 No effect
Humidity Resistance at 40°C (95% RH X 7 days)	No effect
Water Resistance (40°C water X 7 days)	No effect
Stain Resistance 18 hours Milk, Coffee, Wine, Lemon juice, Tea, Vinegar, Soybean oil, Salt water (1%), Ammonium water, Soap water (1%), Synthetic detergent, Hydrochloric acid (10%), Sodium hydroxide (10%)	 No effect

Adhesion (N/25 mm)

Substrate	Adhesion (No Primer)	Adhesion (W/DP-900N)
Lauan Veneer	4.9	34.3
China Veneer	4.9	30.4
Plaster Board	-	4.9*
Asbestos Slate Board	4.9	34.3
Melamine-baked Steel Sheet	30.4	52
Phosphate-coated Steel Sheet	24.5	54
PVC-coated Steel Sheet	44.1	44.1
Aluminum	27.1	39
Stainless Steel Sheet	37.2	42
Acrylic Board	38.2	54.9
Mortar	3.9	21.6

* Material damage

Chemical Resistance

Product applied to an aluminum panel, conditioned for 72 hours and then immersed in the chemical agents.

Test Result

Chemical Agent	Exposure Time	Result
Heptane	5 hours	No
Ethyl alcohol	5 hours	No
Water	7 days	No
Salt Spray (5%, 43°C)	7 days	No
Methyl Ethyl Ketone (MEK)	10 minutes	Severe attack
Xylene	20 minutes	Severe attack

Stain Resistance

3M™ DI-NOC™ Architectural Finishes product applied to an aluminum panel and placed in direct contact with the following substances at 20°C, 65%RH.

Substances

Milk, Coffee, Wine, Lemon Juice, Tea, Sodium Hydroxide (10%), Soybean Oil, Salt Water (1%), Household ammonia, Soapy Water (1%), Synthetic Detergent, Hydrochloric Acid (10%), Vinegar.

Test Result: ***No effect***

Flammability

Information about the new 3M™ DI-NOC™ Architectural Finishes approval numbers according to various test standards

Approval Type, Number	Product Type	Test Substrate	Classification	Copy of Certificate
IMO	FW 646	Non-flammable substrate	Non-combustible	GPRD
SBI EN 13823:2002	ST 553	Non-flammable substrate	B-s2,do	GPRD
DIN 4102-1	Product Group 1-10 (all DI-NOC films)	Non-flammable substrate	B1	GPRD
DIN 54837	PS, WG	Non-flammable substrate	Non-combustible	GPRD
FAR-25.853	WG 165	Non-flammable substrate	Non-combustible	GPRD

- **IMO = International Maritime Organization**

IMO testing for interior finishes

Under requirements established by the International Maritime Organization (IMO), the U.S. Coast Guard and other maritime governing bodies, materials used as interior finishes on maritime vessels must be tested for surface flammability performance. These materials include bulkheads, laminates, ceilings, wall coverings and deck finishes.

- **SBI = Single burning item test according to EN 13823**

SBI TEST

The Single Burning Item (SBI), is a method of test for determining the reaction to fire behaviour of building products (excluding floorings) when exposed to the thermal attack by a single burning item (a sand-box burner supplied with propane). The specimen is mounted on a trolley that is positioned in a frame beneath an exhaust system. The reaction of the specimen to the burner is monitored instrumentally and visually. Heat and smoke release rates are measured instrumentally and physical characteristics are assessed by observation.

- **DIN 4102-1 = German Standards for interior buildings**

Fire behaviour of building materials and building components-
Part 1: Building materials, terminology, requirements and tests.

- **DIN 54837 = German rail test method**

Testing of materials, small components and component sections for rail vehicles, --- Determination of burning behaviour using a gas burner

- **FAR-25.853 = Federal Aviation Authority**

FAR-25.853 is a vertical Bunsen burner test designed for FAA (Federal Aviation administration) for cabin and cargo compartment materials. The test method is intended for use in determining the resistance of materials to flame when tested according to the 60-sec (i) and 12-sec (ii) vertical Bunsen burner tests.

Primer

Generally on flat surfaces primer is not required. Only if the surface energy of the substrate is low or on critical surfaces with sharp radius, edges where 3M™ DI-NOC™ Architectural Finishes is stretched primers can be used. For high surface energy substrates such as metal or paint no primer is required. Primer is required at any overlaps of the film. I.e. underneath the butt joint and wherever the material is stretched, see overview of primers below:

Primer	Substrate
DP-900N Solvent based (Generally used on low surface energy substrate) Alternative solvent primers are 3M™ Scotch mount™ 4297 or Primer 94 from automotive division	Calcium Silicate (with sealer coating) Plywood MDF board Aluminum Stainless steel Painted or coated metals Films (including DI-NOC™ films) PVC laminated steel Mortar (with sealer coating) Painted or coated metals
WP-2000 Water based (can be diluted 1 part primer 2 parts water) Without diluting primer is high in viscosity	Gypsum board Calcium Silicate (with sealer coating) Plywood
WP-3000 (for small area) Water based	Plywood MDF board Painted or coated metals, etc.

Cleaning/Maintenance

For cleaning of applied 3M™ DI-NOC™ Architectural Finishes use a soft textile with detergent and water. For heavy dirt accumulation use detergent and water at 70°C - 80°C.

Removal

3M™ DI-NOC™ Architectural Finishes are removable with a heat gun at 80°C – 100°C or the Bosch steam remover PTL1 can be used.

Shelf Life, Storage, Shipping

The fabricator may store unprinted film for a period of up to two years. Film and markings must be stored in a clean area, free from excessive moisture and direct sunlight, on at least a 3" core with the film facing outward, with ambient temperatures of 35°C or less.

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.

3M Related Literature

Listed below is related 3M technical literature that may be of interest.

Instruction Bulletins	Bulletin No.
Design of Markings	2.1
Premasking and Prespacing	4.3
Surface Preparation Non-vehicular Vehicular	 5.1 5.26
Application	5.5, 5.41
Storage, Maintenance and Removal	6.5

For Further Assistance

For help on specific questions relating to 3M™ DI-NOC™ Architectural Finishes or any other Commercial Graphics Division products, contact your local Technical Service representative or

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