



3M™ Di-Noc™ Film

Description




3M™ DI-NOC™ Films are durable, cleanable, flexible PVC films with 3M's Comply™ Adhesive air release channels for fast, easy and virtually bubble-free application. Use DI-NOC film in place of or to enhance natural materials. These films have excellent adhesion and flexibility, allowing them to be used indoors or outdoors on flat or complex curved substrates, walls, furniture, fixtures, etc. Some of the films can also be applied to 3-dimensional surfaces and/or thermoformed. These films are ideal for both new construction and remodeling.

3M offers a Basic Product Warranty for these films. Please see page 3 for additional details.

Product Line

The current product line includes 513 unique designs and patterns categorized in 21 major pattern types.

The following symbols indicate special restrictions or considerations for some DI-NOC films. Please refer to the DI-NOC film catalog to determine which symbols are associated with the film you are applying.

-  Suitable for outdoor use as well as PVC (poly vinyl chloride) coated steel.
-  Suitable for outdoor use. Cannot be applied on PVC coated substrates. Film color will change over time as it is exposed to UV light.
- W** Film will shrink over time. Apply a substrate primer at all film overlaps. Do not use butt joints.
-  ! Do not use on 3-dimensional surfaces or for thermoforming.

Design Category	Product Series	General Product Description
Fine Wood	FW	Wood grain appearance and texture closely resembles authentic wood. Available in 75 different designs from 21 timber species.
Wood Grain	WG	Wood grain appearance that creates a warm and elegant atmosphere. 120 different designs of 33 timber species, in light to dark colorations.
Metallic Wood	MW	Wood grain look with a metallic finish. Use where a high quality, special look is needed. Available in 2 designs.
Metallic	VM / ME	Colorful films with variations that include anodized and embossed appearance. Available in 30 designs.
Hyper Metallic	HM	A high impact metallic finish. Available in 4 designs.
Single Color	PS	Solid colors that have built-in bacteria resistance, making them suitable for hospital, clean rooms and food processing environments. Available in 92 soft and vivid color groups.
Floor	DF	Select marble and wood designs have built-in bacteria resistance, making them suitable for the floors, counters and tables of hospital, clean rooms and food processing environments. Its top surface has excellent resistance to scratch, wear and dirt. Available in 9 standard designs.
Carbon	CA	Woven carbon fiber patterns produced with 3M's micro-replication technology. Choose from 7 designs.
Chic	PA	A soft textured metallic appearance. Available in 21 designs, most of which can be used outdoors.
Sand	PC	An authentic sandstone appearance in modern colors and realistic pattern. Available in 13 designs.
Stone	ST	Simulates the appearance of real stone. For indoor use. Available in 11 designs.
Terracotta	FA	Simulating the appearance of kiln-fired ceramic tile, this product is suitable for 3-dimensional indoor applications. Available in 3 designs.

Design Category	Product Series	General Product Description
Stucco	SE	Simulates the appearance of Italian plaster. Available in 13 designs and 2 product variations: muted and vibrant shades.
Leather	LE	The look and feel of real leather. Suitable for 3-dimensional applications. Some can be used outdoors. Available in 25 designs.
Weave	FE	A woven-look design with an embossed pattern that is soft to the touch yet resists dirt and abrasion. Suitable for indoor applications on both flat and curved surfaces. Some can also be used in 3-dimensional applications. Available in 12 patterns.
Suede	NX / VS	Special textured pattern looks like suede. The VS version is stain resistant. For indoor use. Available in 4 designs.
21	D 21	Geometric designs with a metallic base film. Available in 26 designs.
Abstract Hard	PG / LZ	A semi-reflective quartz-like appearance. For indoor use. Available in 15 designs.
Abstract Soft	PT / PX / TX / FA / SE	A variety of soft tint designs in 5 different series, some of which can be used outdoors as well as indoors. Available in 26 designs.
G-Emboss	GE	Unique, contemporary geometric patterns in plain and metallic colors, which create an interesting effect when lit by indirect ambient lighting. Some can be used outdoors. Available in 8 designs.
Protect Film	DPF-100	A glossy transparent overlamine that provides additional scratch and damage protection to the DI-NOC base films.

Physical Characteristics

Characteristic	Description
Material	Vinyl
Color	See the Web site at www.3M.com/graphics or contact your 3M Sales Representative
Thickness with adhesive	212 micron (μM) <i>typical</i>
Adhesive type	Pressure sensitive with air release channels; good hiding power on many of the films
Liner	Polyethylene coated paper
Chemical resistance	Resists mild alkalis, mild acids and salt Resists many stains for up to 18 hours Excellent resistance to water (<i>this does not include immersion</i>)

Application Characteristics

Characteristic	Description
Application temperature	15°-38°C
Application method	Dry only
Graphic removal	May be removed with heat; substrate damage is possible

Adhesion

24 hours after application

* Indicates material damage was observed during testing.

Material	Adhesion Level	
	No primer	Primer DP900N
	N/25 mm	N/25 mm
Luaun veneer	4.9	34.3
China veneer	4.9	30.4
Plaster board	n/a	4.9*
Asbestos slate board	4.9	34.3
Melamine-baked steel sheet	30.4	52
Phosphate-coated steel sheet	24.5	54
PCV-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

Recommended Substrates for DI-NOC Film

KEY	Film Series	
	D21 Series GE-923 GE-924 GE-443 GE-444VM ME PA WG-GN MW HM CA	All Other DI-NOC Film
● = Good adhesion ○ = Good adhesion but poor appearance		
Wood Substrate		
Veneer wood	○	●
Particle board	○	●
MDF	○	●
Board Substrate		
Plaster board	○	●
Volcanic silicate material composite board	○	●
Silicate calcium board	○	●
UV-coated silicate calcium	●	●
Mortar Substrate		
Mortar	○	●
Stone Substrate		
Artificial marble	●	●
Metal Substrate		
Baked enamel painted steel plate	●	●
Galvanized steel plate	●	●
PVC-coated steel plate	○	●
Aluminum	●	●
Stainless	●	●
Overlay Substrate		
Overlay on DI-NOC film	○	●
Decorated Board Substrate		
HPL	●	●
LPL	●	●
Glass Substrate		
Glass	●	●
Plastic Substrate		
Acrylic board	●	●
ABS	●	●
Rigid PVC	●	●

Substrates Not Recommended for DI-NOC Film

DI-NOC film does not have acceptable adhesion to the following substrates:

- Wood: unseasoned
- Plastic: soft PVC, polycarbonate, polyethylene, polypropylene, nylon, fluoroplastic, rubber sealing
- Metal: copper, brass, lead, tin

Graphic Performance Life

This product is covered by the 3M Basic Product Warranty, which warrants that if this product has any physical product or manufacturing defects that 3M's sole liability under the terms of the Warranty is replacement or credit for the returned, unused material. There is no finished or applied graphic warranty nor warranted durability.

However, thorough testing and use of this product throughout the world for many years indicates that it is highly durable when used in vertical installations as described in the applicable 3M Product and Instruction Bulletins.

Exposure Definition



Vertical Exposure

The face of the graphic is $\pm 10^\circ$ from vertical.

Expected Durability for Vertically Applied Film

DI-Noc	Zone 1	Zone 2	Zone 3
Outdoors for films having the sun symbol	5	4	3
Indoors, no direct UV light exposure, with or without the sun symbol	12	12	12
<i>If exposed to direct UV light, expect a shorter durability</i>			

Zone 1 = Northern /Central Europe

Zone 2 = Mediterranean Europe

Zone 3 = Middle East/North Africa

Exceptions and Limitations

- Horizontal indoor wall decoration with no direct UV light exposure is a satisfactory application but no expected durability has been determined.

- Horizontal indoor counters and ledges that are exposed to abrasion results in premature wear or damage. Applying 3M™ DI-NOC™ Protection Film DPF 100 provides reasonable resistance to abrasion and soil, but also changes the gloss and may change the appearance of the DI-NOC film over which it is applied.
- Horizontal outdoor decoration is not recommended. Exposure to maximum sunlight and environmental conditions can cause color change, loss of gloss, chalking and premature failure.

Screen Printing and Clear Coating

This film can be screen printed with 3M™ Screen Printing Ink Series 1900 and clear coated with 3M™ Screen Print Gloss Clear 1920 but the results may not meet your needs or expectations. We recommend testing and approving each type of film before specifying it in a job.

Substrate Preparation

Refer to Instruction Bulletin 5.41.

Substrate Primer

Primer is required at any overlap, at the end/edge of the film--such as under a butt joint--and wherever the material is stretched--such as a sharp radius. It is also recommended if the surface energy of the substrate is low. Additional details are provided in Instruction Bulletin 5.41.

Primer	Substrate
DP-900N Solvent based	Gypsum board Calcium silicate (with sealer coating) Plywood MDF board Painted or coated metals Films (including DI-NOC films) PVC laminated steel Mortar (with sealer coating) Painted or coated metals
WP-2000 Water based	Gypsum board Calcium Silicate (with sealer coating) Plywood
EC-1368NT Solvent-Based Adhesive	Gypsum board Calcium silicate (with sealer coating) Plywood MDF board Aluminum Stainless steel Painted or coated metals
WP-3000 For small areas Water based	Plywood MDF board Painted or coated metals

A primer is usually not needed on flat surfaces or high energy substrates such as metal or paint.

Cleaning Applied Film

Use a clean, soft cloth with detergent and water. Hot water may be required for heavier soil.

Removal

DI-NOC films may be removed by using a heat gun to soften the adhesive to allow the film to be pulled off. A wallpaper steam remover may also be used for the same purpose.

Shelf Life, Storage, Shipping

Activity	Recommendation
Shelf life	Total shelf life: 2 years Up to 2 years unprocessed, OR process within 1 year and apply within 1 year of processing
Storage conditions	<ul style="list-style-type: none">• 35°C maximum• Out of sunlight• Clean dry area• Original container• Do not stack boxes over six (6) units high. Excessive weight can damage the film.

3M Related Literature

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

Subject	Bulletin No.
Design of markings	2.1
Premasking and prespacing	4.3
Application of 3M™ DI-NOC™ Films; A Guide for Indoor and Outdoor Dry Applications	5.4.7
Storage, maintenance and removal	6.5

Glossary of Terms

Permanent Adhesive

Films with a permanent adhesive can be difficult to remove and will often require heat and/or chemicals for effective removal.

Health & Safety

Refer to the package label and the Material Safety Data Sheet for health, safety, and handling information on the products referenced in this bulletin. For 3M products, if necessary, you may contact our Toxicology/Product Responsibility Department on 01344 858000.

Safety Information

Refer to the package label and the Material Safety Data Sheet for health, safety, and handling information on the products referenced in this bulletin. For 3M products, if necessary, you may contact our Toxicology/Product Responsibility Department on 01344 858000.

Important Notice to Purchaser

The 3M products described in this publication are covered by a 3M warranty and limitation of liability.

3M's warranty provides that if 3M finds that goods are defective in material or workmanship they will be replaced or the price refunded at 3M's option but note that 3M does not accept liability for other direct losses (except for personal injury or death) or consequential losses relating to defective products or from information supplied by 3M.

Purchasers and users of 3M products, and not 3M supplying companies, are always solely responsible for deciding on the suitability of the 3M product for their required or intended use.

Technical Assistance

For help on specific questions relating to 3M Commercial Graphics Division Products, contact your local Technical Service Representative.

Commercial Graphics Department
3M United Kingdom PLC
3M Centre, Cain Road, Bracknell
Berkshire, RG12 8HT
Tel: 01344 857850
Fax: 01344 857939
e-mail: commgraphics.uk@mmm.com
www.3m.com/uk/graphicsolutions

Sales Assistance

Commercial Graphics Group
3M United Kingdom PLC
3M House, 28 Great Jackson Street
Manchester, M15 4PA
Tel: (0161) 237 6394
Free Fax: (0800) 378127
e-mail: commgraphics.uk@mmm.com
www.3m.com/uk/graphicsolutions

The use of trademark signs and brand names in this bulletin is based upon US standards. These standards may vary from country to country outside the USA

Commercial Graphics Department
3M United Kingdom PLC
3M Centre, Cain Road
Bracknell, Berkshire
RG12 8HT
Tel: 01344 857850
Fax: 01344 857939
e-mail: commgraphics.uk@mmm.com
www.3m.com/uk/graphicsolutions

Commercial Graphics Group
3M United Kingdom PLC
3M House, 28 Great Jackson Street
Manchester M15 4PA
Tel: 0161 237 6394
Free Fax: 0800 378127
e-mail: commgraphics.uk@mmm.com
www.3m.com/uk/graphicsolutions

Commercial Graphics Group
3M Ireland (Dublin)
Adelphi Centre, Dun Laoghaire
County Dublin, Ireland
Tel: +353 1 280 3278
Fax: +353 1 280 3509
e-mail: commgraphics.uk@mmm.com
www.3m.com/uk/graphicsolutions



3M™ DI-NOC™ Architectural Finishes

Description

3M DI-NOC Architectural Finishes are flexible calendared PVC films with Comply™ adhesive intended to cover all type of the surfaces, such as wall covering, furniture, fixture, ceiling, doors, elevators and exterior/interior applications.

3M DI-NOC Architectural Finishes are durable, dimensionally stable, vinyl films that were specifically developed for interior/exterior decorations and refurbishment.

3M DI-NOC Architectural Finishes are CE marked according the Construction Products Directive 89/106 /EEC and tested according the EN 15102: 2008 Decorative wall covering.

For performance characteristics please see the referring Declaration of Conformity by comparing the listed design series with our product catalogue.

Product Line

PS (single color), WG (wood grain), LE (leather), ME/VM (metallic), MW (metallic wood), SE (stucco), PC (sand), ST (stone), FA/PT/PX/SE (abstract soft), RT/PG/LZ (abstract hard), FW (fine wood), LW (little wave), FE (weave), RS (random squares), CA (carbon), PA (chic), GE (G-emboss), RS (random squares), HG (High Gloss).

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.

Warranty 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
Film applied outdoor (vertical surface and only for films which has the outdoor recommendation)	5	4	3
Film applied to the indoor interior decoration (no direct UV light, vertical surface)	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 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 a transparent protection film 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 is not treated with antistatic charges.

Screen Printing and Clear Coating

Whilst 3M DI-NOC Series PS can be screen printed, other products such as the Controltac™

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

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 products at 12° - 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

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 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

Flammability standards are different from country to country. Please ask your local 3M contact for details.

DIN EN 13823 European SBI. Part of the new Norm 13501-1.

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 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
Solvent based (Generally used on low surface energy substrate) 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	Plaster 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.

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.

For Further Assistance

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

3M Deutschland GmbH
Display & Graphics Laboratory
Carl-Schurz-Str. 1
D-41453 Neuss
Germany

Internet: www.3M.eu/ArchitecturalMarkets

DI-NOC™ Design-Strukturfolie

für Innen- und Außenanwendungen, mit Comply™

Beschreibung

Die DI-NOC Design-Strukturfolie ist eine flexible, gegossene Folie mit permanentem Klebstoff. Sie wurde für den Einsatz als dekorative Oberflächenbeschichtung auf einer Vielzahl von Untergründen, wie z.B. Wandpaneele, Türen, Möbel, Aufzüge, Säulen, etc. entwickelt. Ihre zu erwartende Mindestfunktionsdauer liegt bei 5 Jahren in der Außenanwendung bzw. bis zu 12 Jahren im Innenbereich.

Produktvorteile

- Rund 500 verschiedenste Dekore, wie z.B. Metalle, Hölzer, Leder oder abstrakte und technische Oberflächen mit detailreicher, präziser Oberflächennachbildung.
- Comply Klebstofftechnologie für einfachstes, blasenfreies Verkleben.
- Sehr gute Verarbeitbarkeit, auch geeignet für dreidimensional verformte Untergründe.
- Abgestimmte Haftvermittler (Primer) gewährleisten lange Haltbarkeit auf unterschiedlichsten Untergründen.

Anwendung und Einsatzgebiet

DI-NOC Design-Strukturfolie ist für folgende Einsatzzwecke im Innen- und Außenbereich vorgesehen:

- Zur Raumgestaltung, z.B. als Wandbelag oder für dekorative Elemente, auch in Zügen oder auf Schiffen.
- Für die optische Erneuerung oder Aufwertung von alten oder abgenutzten Oberflächen, wie z.B. Wandpaneele, Tresen, Theken, Möbel, Aufzugstüren und Fahrkorbausrüstung.
- Als Oberflächenbeschichtung für z.B. Eingangsportale, Pylone, Lichtwerbeanlagen und Schilder von Wegeleitsystemen.
- Als Designelemente auf Fahrzeugen (Exterieur und Interieur).

Hinweis: Andere als die zuvor genannten Einsatzzwecke sind nicht von 3M getestet und freigegeben und fallen somit nicht unter das weltweite 3M™ MCS™ Gewährleistungsprogramm. In Ausnahmefällen muss vor Einsatz des Materials eine individuelle Vereinbarung mit 3M getroffen werden.

Einschränkungen

Folgende Anwendungsbeispiele werden ausdrücklich nicht durch das 3M MCS Gewährleistungsprogramm abgedeckt:

- Applikationen auf Untergründen, die keine ausreichende Haftung ermöglichen (z.B. poröse oder spröde Untergründe).
- Applikationen, die (häufig) mechanisch beansprucht werden, wie z.B. horizontale Arbeitsbereiche von Theken oder Kassengebieten (das Material kann hier frühzeitig verschleifen)
- Nicht-vertikale Applikationen im Außenbereich (mehr als $\pm 10^\circ$ vom Lot abweichend)

Der Einsatz von Haftvermittlern kann die Klebkraft auf vielen kritischen Untergründen erhöhen. Dies ist aber kein Garant für eine dauerhaft funktionierende Verbindung. Hier muss im Einzelfall geprüft werden, welcher Primer einzusetzen ist und in welchem Umfang (partiell oder vollflächig) er Verwendung findet.

Verarbeitung

Abdecken, Vorspationieren

Für die Applikation von Flächen wird in der Regel kein Übertragungsklebeband benötigt. Möchten Sie die Folie bei der Verklebung abdecken, empfehlen wir die Verwendung von 3M™ Übertragungsklebeband SCPM-19. Verwenden Sie SCPS-100 für das Vorspationieren von geschnittenen Schriften oder Logos.

Verklebung

Folie, Umgebung und Untergrund sollten eine Temperatur zwischen +16°C und +28°C aufweisen. Eine Nassapplikation wird wegen der verwendeten Comply Klebstofftechnologie nicht empfohlen. Verwenden Sie die besonders harte und gut gleitende, original 3M DI-NOC Rakel (Farbe: weiß) für die Verklebung oder eine Goldrakel mit Filzmanschette.

Tipp: Entfernen Sie zum leichteren Fixieren größerer Folienstücke zunächst einen schmalen Streifen Schutzpapier vom Rand oder aus der Mitte des zu verklebenden Stückes. Verwenden Sie dazu einen speziellen Folienschneider mit abgedeckter Klinge, um nicht in die Folie zu schneiden. Richten Sie die Folie aus und fixieren Sie diese mit dem freigelegten Klebstoffstreifen. Rakeln Sie anschließend, ausgehend vom fixierten Streifen, die übrige Folie an.

Plotten, Entgittern

DI-NOC Design-Strukturfolie kann mit Hilfe von elektronischen Flachbett- oder Rollenplottern geschnitten werden. Bitte beachten Sie, dass Sie je nach Serie und Struktur ggf. mit unterschiedlichem Messergewicht bzw. -druck arbeiten müssen. Wir empfehlen zum Erhalt bester Entgitterungseigenschaften, die Folienreste direkt nach dem Schneiden auszuheben.

Hinweis: Die Verarbeitung fällt im Vergleich zu „regulären“ Plotterfolien etwas schwieriger und zeitaufwändiger aus. Dies stellt keinen Produktmangel dar.

Bedrucken

Andere Folienserien von 3M eignen sich besser für Siebdruck oder digitale Druckverfahren, als DI-NOC Design-Strukturfolie. Eine Bedruckung ist dennoch möglich. Bitte beachten Sie dabei aber, dass Schutzlamine oder Klarlacke die ursprüngliche Oberflächenbeschaffenheit der DI-NOC Design-Strukturfolie maßgeblich verändern (Glanzgrad, Struktur).

Siebdruck, Klarlack

Wir empfehlen den Einsatz von 3M™ Scotchcal™ Serie 1900 Siebdruckfarbe und Scotchcal™ 1920DR Klarlack. 4-Farb-Rasterdruck wird weder empfohlen noch garantiert.

Digitaldruck

Digitaldruck ist mit gängigen Lösemittel- oder UV-Tinten-basierten Drucksystemen möglich.

Entfernen

Die Folie ist mit einem permanenten Klebstoff ausgestattet. Sie lässt dennoch von vielen festen, versiegelten Untergründen wieder ablösen.

Beim Ablösen kann Klebstoff auf dem Untergrund zurückbleiben. Dieser kann mit 3M Industriereiniger auf Limonenbasis oder mit 3M Klebstoffentferner 231 entfernt werden.

Tipp: Für eine möglichst einfache Entfernung schneiden Sie die abzulösende DI-NOC Folie mit einem scharfen Cutter-Messer in etwa 20 cm breite Streifen (die Folie muss nicht vollständig bis zum Untergrund durchschnitten werden, ein Anritzen des Folienfilms genügt). Erwärmen Sie mit einem Heißluftgebläse, Haartrockner oder Dampfreiniger die zu entfernenden Folienbahnen und ziehen Sie diese vom Untergrund ab.

Funktionsdauer

Die nachfolgenden Werte basieren auf Feldversuchen, die in verschiedenen Regionen Europas durchgeführt wurden. Nach unseren derzeitigen Erkenntnissen kann die unten angegebene Funktionsdauer erwartet werden, sofern die Folien nach 3M Empfehlung fachgerecht verarbeitet und verklebt werden. Die Funktionsdauer wird unter anderem von folgenden Faktoren beeinflusst:

- Art des Untergrunds sowie dessen gründliche Vorbereitung
- Verklebverfahren
- Umweltbedingungen
- Reinigungshäufigkeit und -methode

Material	Zone Nord- und Zentraleuropa
Außenanwendung (vertikale Applikation)	5 Jahre (nur mit ☀ oder ☀ gekennzeichnete Folien)
Innenanwendung mit Tageslichteinfall	10 Jahre
Innenanwendung ohne Tageslichteinfall	12 Jahre

Zone Nord- und Zentraleuropa: Österreich, Baltische Staaten, Belgien, Bosnien, Kroatien, Tschechische Republik, Dänemark, Finnland, Frankreich, Deutschland, Grönland, Ungarn, Island, Irland, Italien (nördlicher Teil bis Rom), Lichtenstein, Luxemburg, Niederlande, Norwegen, Polen, Rumänien, Serbien, Slowenien, Slowakei, Schweden, Schweiz, Großbritannien.

Verwendung von Haftvermittler (Primer)

DI-NOC Design-Strukturfolie kann grundsätzlich ohne die Unterstützung von Haftvermittlern appliziert werden (typischerweise auf allen festen, versiegelten Untergründen wie Metall, Lack, Glas und vielen Kunststoffen). In einigen Fällen ist die Untergrundvorbehandlung mit einem Primer jedoch notwendig:

- bei Stoßverklebungen im Bereich der beiden Folienkanten
- wenn die Folie (mit Warmluft) in dreidimensional verformte Bereiche gearbeitet wird
- auf Untergründen mit geringer Oberflächenenergie
- ggf. bei im sichtbaren Bereich liegenden Folienrändern entlang der Kontur

Anwendungsempfehlungen

Substrat	Holz (versiegelt) Furnier Kunststoffe	Gipskarton Kalksandsteinplatten MDF	Putz Mörtel	Emaile Edelstahl (gebondert)	Aluminium Edelstahl (unbehandelt)
Vorbereitung	Nagel- oder Schraubenköpfe komplett versenken		glatt spachteln, trocknen	Korrosion entfernen	
Versiegelung	-----	mit lösemittel- oder wasserbasierter Versiegelung		-----	
Spachteln	Polyesterspachtel	Pulverspachtel		Polyesterspachtel	
Glätten	Schleifpapier mit Körnung 100-180; ggf. vorhandene grobe Unregelmäßigkeiten zuvor abschleifen				
Reinigen	empfohlen: 3M Untergrundreiniger (Surface Preparation System); alternativ: Verdünner auf Alkohol- oder Toluol-Basis				
Primern	DP-900 Scotchmount™ 4297 WP-3000	DP-900 Scotchmount™ 4297 WP-2000		DP-900 Scotchmount™ 4297	
	nur Kanten und Ränder	vollflächig		nur Kanten und Ränder	

Eigenschaften

	Universal-Primer (generelle Verwendung; lösemittelbasiert)		Wasserbasierte Primer (für weniger gut belüftete Bereiche oder minimale Geruchsbelästigung)	
	Scotchmount™ 4297	DP-900N	WP-2000	WP-3000
Typ	Polyamidharz	Kunststoff	Synthetisches Gummi	Kunststoff
Gebinde	1 Liter	1 Liter	4 Liter	120 Milliliter
Verdünnung	Unverdünnt	unverdünnt	1 Teil Primer mit 4 Teilen Wasser	Unverdünnt oder 1 Teil Primer mit 0-2 Teilen Wasser
Ungefähre Ergiebigkeit	30-60 m²/l	20-30 m²/l (auf nichtsaugenden Untergründen)	15-30 m²/l (verdünnt)	1,2 m²/Dose (verdünnt)
Farbe	leicht gelblich	transparent	nahezu transparent	milchig weiß
Feststoffanteil	ca. 13%	ca. 13%	ca. 48%	ca. 40%
Viskosität	200 mPa s	4,5 mPa s	2400 mPa s	500 mPa s
Mindesthaltbarkeit (ungeöffnet)	1 Jahr	1 Jahr	1 Jahr	1 Jahr
Mindest-Trockenzeit*	2-15 Minuten	30 Minuten	2 Stunden	2 Stunden

* Die benötigte Trockenzeit kann sich je nach Umgebungsbedingungen deutlich erhöhen. Bei 10°C Umgebungstemperatur benötigt können z.B. 2 Stunden statt der üblichen 15 Minuten notwendig werden.

Lieferbare Ausführungen

DI-NOC Design-Strukturfolie ist in rund 500 verschiedenen Standard-Designs erhältlich. Die komplette Übersicht finden Sie im Internet unter www.DI-NOC.de oder in unseren aktuellen Farbmusterbüchern.

Lagerung und Versand

Die Folie kann nach Erhalt von 3M unverarbeitet für 2 Jahre gelagert werden, sofern die folgenden Lagerbedingungen eingehalten werden:

Saubere, trockene Umgebung ohne direktes Sonnenlicht, Temperaturen unter +35°C.

Vorspationierte Schriften oder Grafiken und bedruckte Folien sollten entweder in Flachlage oder nach außen gerollt (Kern mit mindestens 125 mm Durchmesser) gelagert und versandt werden.

Hinweis: Lagern Sie die unverarbeitete Folie so lange wie möglich in Rollenform und rollen Sie auch abgelängte Stücke stets wieder auf. Bei Lagerung in Flachlage kann sich die unverarbeitete Folie in kleinen Wellen vom Schutzpapier abheben. Hierbei kann der Klebstoff verschmutzen. Das reduziert die Klebkraft und kann zu Fehlern in der Applikation führen.

Technische Daten

Produkteigenschaften

Folie	gegossene PVC-Folie, cadmiumfrei
Klebstoff	Acrylatklebstoff, mit Comply Performance
Schutzpapier	PE-beschichtetes Kraft-Papier mit Zentimeter-Raster-Druck
Geeignete Oberflächenformen	Flache, einfach und dreidimensional gebogene Untergründe (bei Verwendung eines passenden Primers)
Verklebetemperatur (Untergrund und Umgebung)	+16°C bis +28°C
Temperaturbeständigkeit	-30°C bis +50°C dauerhaft, kurzzeitig bis +65°C

Physikalische Eigenschaften

Dicke (Folie + Klebstoff) ISO 4593	0,190 bis 0,210 mm
Dehnbarkeit	> 100%
Formstabilität	< 0,3 mm

Alle Prüfungen erfolgen nach 48 Std. Lagerung der Proben in Normalklima (+23°C / 50% rel. Feuchte) nach DIN 50014.

Klebkraft (FTM1)

Untergrund	Klebkraft (N/25mm)
Furnier (typisch)	5 / 33
Putz	- / 5*
Melamin	30 / 52
PVC	44 / 44
Aluminium	27 / -
Edelstahl	37 / -
Acrylglas (PMMA)	38 / 55
Mörtel	4 / 22

Klebkraftangaben ohne Primer / mit Primer (typisch)

*Beschädigung des Untergrundes beim Ablösen

FTM = Finat Test Methods

Alle Prüfungen erfolgen nach 48 Std. Lagerung der Proben in Normalklima (+23°C / 50% rel. Feuchte) nach DIN 50014.

Beständigkeit gegen Chemikalien und Lösungsmittel

Belastungsmittel	Dauer	Resultat
Heptan	5 Std.	Keine Beanstandung
Äthyl-Alkohol	5 Std.	Keine Beanstandung
Wasser	7 Tage	Keine Beanstandung
Salzsprühtest (5% / 43°C)	7 Tage	Keine Beanstandung

*bei +23°C

Folien verklebt auf Aluminium-Panels, geprüft nach 72 Std. Lagerung in Normalklima (+23°C / 50% rel. Feuchte).

Beständigkeit gegen weitere Stoffe

Belastungsmittel	Resultat
Milch Kaffee Wein Zitronen- / Orangensaft Tee Natronlauge (10%) Sojabohnenöl Salzwasser (1%) Seifenwasser synthetische Reiniger Essig	Keine Beanstandung

Wichtige Hinweise

Die vorstehenden Angaben stellen unsere gegenwärtigen Erfahrungswerte dar. Es obliegt dem Besteller, vor Verwendung des Produktes selbst zu prüfen, ob es sich, auch im Hinblick auf mögliche anwendungswirksame Einflüsse, für den von ihm vorgesehenen Verwendungszweck eignet. Alle Fragen einer Gewährleistung und Haftung bestimmen sich nach den jeweiligen kaufvertraglichen Regelungen, sofern nicht gesetzliche Vorschriften etwas anderes vorsehen. Bei nicht bestimmungsgemäßer Verwendung und / oder bei einer nicht unseren genauen Anweisungen entsprechenden Verarbeitung ist jede Haftung der 3M Deutschland GmbH, der 3M Schweiz AG bzw. der 3M Österreich GmbH. ausgeschlossen.

Gewährleistung

Alle Fragen der Gewährleistung und Haftung richten sich nach unseren jeweils gültigen Allgemeinen Verkaufsbedingungen, sofern nicht gesetzliche Vorschriften etwas anderes vorsehen. Soweit das 3M™ MCS™ Gewährleistungsprogramm

Anwendung findet, gelten die im Rahmen dieses Programms bestehenden Regelungen, über die wir Sie auf Wunsch gerne informieren.

Die Gewährleistung erfasst insbesondere Abweichungen von der normalen Beschaffenheit in Form eines durch Herstellungs- und/oder Materialfehlers verursachten Ausbleichens, eines Brechens oder Abblätterns sowie eines Verlustes der Klebkraft.

Die Gewährleistung erstreckt sich nicht auf ungeeignete Verarbeitung, unsachgemäße Reinigung, insbesondere häufiges Reinigen mit Hochdruckreinigungsgeschäften, Vandalismus, übermäßige mechanische Beanspruchung, unfachmännische Verklebung, Benutzung ungeeigneter Produktkomponenten, Verklebung auf ungeeigneten Untergründen, übermäßige chemische oder physikalische Beanspruchung.

Da installierte Grafiken in der Außenwerbung Alterungs- und Witterungseinflüssen ausgesetzt sind, kann es zu graduellen Veränderungen kommen, die nicht der Gewährleistung unterliegen, etwa einer Minderung des Glanzgrades, einer geringen Farbabweichung, eines geringfügigen Abhebens um Nieten oder zu geringfügigen Versprödungen in der Oberfläche.

Änderungsverlauf

Version E, 01. September 2007: Primer-Informationen aktualisiert: DP-900 wieder enthalten.

Version D, 26. Februar 2007: Primer EC-1386N und DP-900N entfallen; ersetzt durch Scotchmount™ 4297.

Version C, Januar 2007: Informationen über Primer-Anwendung hinzugefügt.

Technische Unterstützung

Für spezielle Fragen und weitere Auskünfte zu diesen oder anderen Folien der Werbetechnik erreichen Sie unseren Technischen Service wie folgt:

3M Deutschland GmbH
Abteilung Commercial Graphics
Carl-Schurz-Straße 1
41453 Neuss
Telefon 0 21 31 / 14 – 20 90
Fax 0 21 31 / 14 – 23 69

3M Österreich GmbH.
Abteilung Image Graphics
Brunner Feldstraße 63
2380 Perchtoldsdorf
Telefon 01 / 8 66 86 – 2 95
Fax 01 / 8 66 86 – 3 74

3M (Schweiz) AG
Abteilung Image Graphics
Eggstrasse 93, Postfach
8803 Rüschlikon
Telefon 01 / 7 24 91 61
Fax 01 / 7 24 94 90



Application of 3M™ DI-NOC™ Films A Guide for Indoor and Outdoor Dry Applications

Description

3M™ DI-NOC™ Films are durable, cleanable, flexible PVC films with 3M's Comply™ Adhesive air release channels for fast, easy and virtually bubble-free application. Use DI-NOC film in place of or to enhance natural materials. These films have excellent adhesion and flexibility, allowing them to be used indoors or outdoors on flat or complex curved substrates, walls, furniture, fixtures, etc. Some of the films can also be applied to 3-dimensional surfaces and/or thermoformed. These films are ideal for both new construction and remodeling.

Table of Contents

DI-NOC Film Pre-Installation Overview	2
Surface Textures and Compositions	3
Definitions	3
Adhesion	3
Initial and Final Adhesion	3
Substrate Primer	3
Stretching the Film	3
Effect of Overlaminates on Adhesion	3
Primer Recommendations for DI-NOC Film	4
When to Use a Primer	4
Selecting a Primer	4
Primer Properties	4
Inspecting, Repairing and Preparing Substrates	4
Changing the Texture of the Application Surface	4
Common Interior Wall Problems	5
Repairing Damaged Substrate	5
Poor Bonding of Surface Finish or Wall Covering to Substrate	5
Film Processing	5
Overlaminating	5
Screen Printing and Clear Coating	5
Health and Safety	5
Air Quality Regulations	6
Substrate Cleaning and Preparation	6
Special Film Considerations	6
General Application Method	6
Who Can Install DI-NOC Films?	6
Tools and Supplies	6
Dry Application Method Only	6
Application Temperature Range	6
General Application Method	7
Non-Standard Application Techniques	8
Color Matching and Seaming Adjacent Panels of Film	8
Trimming	8
Finishing the Graphic Edges	8
Wrapping Film Around Architectural Structures	8
Using Heat to Conform Film Around Difficult Features	9
Applying Film to a 3-Dimensional Curved Surface	9
Thermoforming	9
Cleaning Film	9
Removing Film	9
Warranty	9

Pre-Installation Overview



Understanding how this film differs from others you may have used will help you achieve a successful application.

1. Consider how surface texture will affect film adhesion and ease of application.
2. Make sure you and your customer understand and agree on these important points:
 - Unless the substrate is very smooth, you may be able to see its texture through the film.
 - Applying compounds to smooth a textured surface permanently changes the substrate.
 - Attempting to remove the film may damage the substrate or its finish. Removal is not warranted.
3. Consider the impact of all human and environmental conditions to which the film will be exposed.
 - Temperature and humidity: constant or variable?
 - Direct UV light (sunlight)
 - Heating or cooling ducts in close proximity
 - Unsealed substrates in front of water sources
 - People, animals or cleaning equipment that will come in physical contact with the film
4. The condition of the application surface impacts adhesion. See page 3 for more details.
 - Be sure any existing paint, surface finish or wall covering has excellent bond to the substrate wherever film will be applied.
 - Repair, prime and paint the substrate, if needed.
5. Substrate primer, which increases film adhesion, may be required. See page 2 for more details.
6. Develop good application techniques for this film, which may be somewhat different from other films you have applied.
 - Clean the substrate immediately prior to applying film.
 - Use a DRY application method.
 - Apply the film with a 3M™ Plastic Applicator PA-1 wrapped with a suitable sleeve protector.
 - To finish the job properly, heat the edges of the film and re-squeegee to secure the edges.

Surface Textures and Composition

Pro's Tip

A very smooth application surface allows the best adhesion and ensures that no surface texture shows through the film.

Consider using a DI–NOC film with more visual design and/or embossed texture if the substrate is not very smooth.

Definitions

Application Surface. The actual product to which a graphic is applied. This may be the finish (paint, varnish, putty, laminate) or the bare substrate.

Porosity. Some application substrates are porous. Although the film may appear to adhere well initially, adhesion can decrease significantly over time. We recommend applying an appropriate sealer to porous surfaces.

Substrate. The supporting structure of a wall, such as wood or steel framing members covered by wallboard, or hard surfaces such as brick, concrete block, stucco, steel.

Texture. This is the tactile feeling that every surface has. Texture can range from smooth as glass or as rough as heavily textured concrete. Texture has a significant affect on film choice, ease of application, adhesion and removal. The following descriptions provide general categories for texture but are subject to interpretation.

- **Very smooth texture.** No surface variation; almost glass–like, like unpainted aluminum plate. Allows the easiest film application.
- **Fairly smooth texture.** Little surface texture, such as painted wallboard. Allows easy film application and good adhesion, but the texture may show through the film on solid colors or films have little graphic design.
- **Unsmooth texture.** Has obvious visual and tactile variations in the surface, such as concrete block, brick, textured wallpaper, etc. Application is difficult and the film may not adhere well because the film's adhesive does not come into full contact with the substrate. This type of texture will show through almost all films. If feasible, apply a coating to smooth the texture. See **Changing the Texture of the Application Surface**, page 3.

Adhesion

Initial and Final Adhesion

The adhesion of any film is defined by both the initial adhesion and final adhesion to which it builds over time. These values vary depending on the type of adhesive used on any particular film, the type and texture of the application surface, application temperature, application techniques, and exposure conditions. Any of these variables can prevent the film from achieving a full bond.

- **Initial adhesion** is the amount of bond needed to hold the film in place during application. Good initial adhesion requires that a substantial portion of the adhesive come in contact with the substrate.
- **Final adhesion**, or maximum bond, is achieved in 24 to 48 hours after applying the DI–NOC film. Good final adhesion requires that a suitable substrate was used and was in good condition and the film was firmly applied using the correct techniques.

Substrate Primer

A substrate primer may be appropriate for some applications. See below.

Stretching the Film

Film that is stretched during application may later shrink, which decreases adhesion to the substrate and the film may fall off prematurely. Using a primer minimizes shrinkage and increases adhesion.

Effect of Overlamine on Adhesion

The film must retain some flexibility in order to achieve maximum adhesion. If an overlamine is required, use only 3M™ DI–NOC™ Protect Film DPF–100.

Primer Recommendations for DI–NOC Film

Pro's Tip

Using a substrate primer can significantly increase the film's adhesion, making it easier to apply film to challenging surfaces.

A primer applied to the substrate before applying film helps achieve a good bond between the substrate and film. However, the increased adhesion also makes it difficult to reposition the film during application and may damage the substrate below the primer. Be sure you consider this before using a primer. 3M is not responsible for damages.

When to Use a Primer

Primer should always be used at any overlap, at the end or edge of the film—such as under a butt joint—and wherever the material is stretched—such as at a sharp radius. It is also recommended if the surface energy of the substrate is low.

If the application surface temperature is below 50°F (10°C), allow the primer to dry 2 to 3 hours before applying film. At warmer temperatures, allow the primer to dry for 15 to 30 minutes before applying the film.

Continued on the next page

Selecting a Primer

Primer	Substrate
DP-900N Solvent based	Gypsum board Calcium silicate (with sealer coating) Plywood MDF board Painted or coated metals Films (including DI-NOC films) PVC laminated steel Mortar (with sealer coating) Painted or coated metals
WP-2000 Water based	Gypsum board Calcium Silicate (with sealer coating) Plywood
EC-1368NT Solvent-Based Adhesive	Gypsum board Calcium silicate (with sealer coating) Plywood MDF board Aluminum Stainless steel Painted or coated metals

Note: A primer is usually not needed on flat surfaces or high energy substrates such as metal or paint.

Primer Properties

Property	Solvent Based Primer DP-900N	Water Based Primer WP-2000	Solvent Based Primer EC-1368NT
Type	Polyurethane based	Synthetic rubber	Synthetic rubber
Substrate features	Refer above	Calcium silicate and Plaster boards	Refer above
Container size	1 liter	4 liter	5 gallons
Usage	Do not dilute	Mix with maximum 4 parts water	Dilute with maximum 3 parts lacquer thinner, 1 part EC-1368NT
Coverage	20 – 30 square yards	15 – 30 square yards	10 – 15 square yards
Color	Slightly Yellow (<i>will turn brown if exposed to UV light</i>)	Blue	Yellow
Solids	13%	48%	40%
Viscosity	4.5 m Pa.s	2400 m Pa.s	500 m Pa.s
Shelf life	Use within 1 year of purchase		

Inspecting, Repairing and Preparing Substrates



Inspecting and repairing substrates before you apply DI-NOC film eases installation and helps improve removability, where needed.

Changing the Texture of the Application Surface

There are many substrate-specific products available that can be applied over textured surfaces to make them smooth. Be aware that this permanently changes the substrate/surface.

Contact your building products supplier for assistance in identifying a product that is compatible with your substrate and surface finish. Apply the product as directed by its manufacturer. Allow the material to dry and cure thoroughly and then prime and paint as appropriate before applying the film.

Common Interior Wall Problems

Each of the following problems can contribute to poor film adhesion if not addressed prior to film installation.

- Too much surface texture.
- Poor bond between the paint, finish or wall covering and the substrate.
- Inconsistently applied surface finish.
- Surface finish that is outgassing. As a wall finish dries, it releases certain gases until it is fully dried and cured. Applying film before the finish has cured can result in lifting, bubbles and premature film failure.
- Patched areas that are not smooth and/or have not been primed.
- Moisture behind the substrate, which can cause the film's adhesive to release. Watch for substrates that back up to cooling systems, water pipes, overhead windows or water pipes that could drip on the film, and boarded up windows. These areas are subject to condensation that may not be obvious at the time of installation.
- Any type of contamination on the substrate, including dust, dirt, oil, food, vehicle exhaust, etc. that has not been properly cleaned.

Repairing Damaged Substrate

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

- Smooth the surface by using an appropriate filler and/or sanding. If using a filler, be sure it 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 chemical manufacturer's recommendations for surface preparation and chemical application.
- If you are painting a surface, use a high quality, semi-gloss paint. Do not use matte paint or paint with silicone, graffiti-resistant or texturizing additives.
- Allow the paint or surface finish to cure thoroughly before applying the film.

Poor Bonding of Surface Finish or Wall Covering to Substrate

If the bond of the surface finish or wall covering to the substrate is not excellent, the film may not adhere well, it may have a poor appearance, and it may fall off prematurely.

Repairing a poor paint or finish bond may be as simple as sanding, priming and painting.

If a poorly bonded wall covering is the problem, the best solution is to remove it, clean and repair the substrate, and apply primer and paint or another finish.

Film Processing

DI-NOC film is available in a wide variety of designs, patterns and colors and typically is not printed or used in electronically cut applications.

Some of the films can be conformed to raised areas or protrusions by using a heat gun during the installation, or by thermoforming.

Note: Occasionally you may encounter a splice in a roll.

Overlaminating

Overlamine DPF-100, a glossy transparent film, can be applied to any of the DI-NOC base films to provide additional scratch and damage protection. It will, however, increase the gloss level of most base films and/or diminish the texture of the textured films. Designs with deeply embossed patterns may have an inconsistent appearance due to the adhesive not wetting-out in the embossed areas.

Do not use any other overlaminates as they will decrease the flexibility and adhesion of the film.

Screen Printing and Clear Coating

This film can be screen printed with 3M™ Screen Printing Ink Series 1900 and cleared with 3M™ Screen Print Gloss Clear 1920DR but the results may not meet your needs or expectations. We recommend testing and approving each type of film before specifying it in a job.

Health and Safety

Caution

When handling any chemical products, read the manufacturers' container labels and the Material Safety Data Sheets (MSDS) for important health, safety and environmental information.

To obtain MSDS sheets for 3M products:

- By fax, call 1-800-364-0768 in the US and Canada or 1-650-556-8417 for all other locations.
- Electronically, visit us at www.3m.com/msds.
- 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.

Caution

Any activity performed for a long period of time in an awkward position or with a high amount of force is potentially a risk for causing musculoskeletal strain, pain or injury. When applying films, follow these practices to improve comfort and avoid injury:

- Alternate your tasks during the application.
- Schedule regular breaks.
- Perform stretches or do exercises to improve circulation.
- Avoid awkward reaching.

Air Quality Regulations

State Volatile Organic Compound (VOC) regulations may prohibit the use of certain cleaning solutions or primers. You should check with your State environmental authorities to determine whether use of this solution is restricted or prohibited.

Substrate Cleaning and Preparation

Dust and other contaminants can collect quickly on the substrate and prevent the film from adhering properly. **Clean the substrate immediately before applying film.** Pay extra attention to cleaning wall edges and corners.

- For most surfaces, wash the substrate with a solution of detergent and lukewarm water. Rinse thoroughly and dry. Avoid soaps or preparations that contain waxes, oils or lotions.
- Tri-sodium phosphate cleaner may be needed for stubborn grease or exhaust contamination.
- 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 applying the film.
- Even if the substrate is freshly painted/finished, dust it immediately before film application using a soft, clean, lint-free cloth.

Special Film Considerations

Avoid applying film in locations that face direct sunlight and are surrounded by glass. Increased temperature may cause damage to the glass, for which 3M is not responsible.

The following symbols indicate special restrictions or considerations for some DI-NOC films. Please refer to the DI-NOC film catalog to determine which symbols are associated with the film you are applying.

- ☀ Suitable for outdoor use as well as PVC coated steel.
- ☀ Suitable for outdoor use. Cannot be applied on PVC coated substrates. Film color will change over time as it is exposed to UV light.
- W Film will shrink over time. Apply a substrate primer at all film overlaps. Do not use butt joints.
- ☐ ! Do not use on 3-dimensional surfaces or for thermoforming.

Standard Application Techniques

Pro's Tip

Read all instructions before you start: these application techniques may be different from other film applications you have done.

Who Can Install DI-NOC Films?

DI-NOC film has air release channels, making it one of the easiest types of films to apply. However, because this film is often applied over complex structures such as door frames, it requires advanced applicator skills for all but the simplest flat applications. A skilled installer will understand how to plan and execute difficult angles and wrap the film around different planes.

The installer, working with the designer and other construction professionals, also needs to understand and agree on how to prepare any substrate that may need to be smoothed.

Tools and Supplies

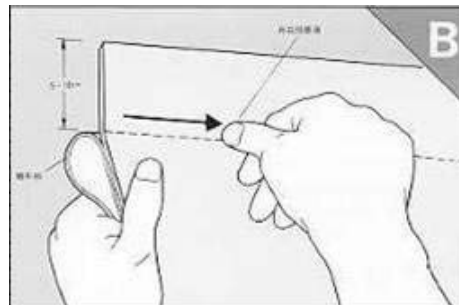
- Scotch™ Masking Tape
- 3M™ Plastic Applicator PA-1
- Suitable sleeve for the applicator
- 3M™ Air Release Tool 391X
- Straight edge (minimum of 1 meter)
- Measuring tape
- Band Paper
- Cutting tools, such as a razor blade with a safety holder
- Primer and brush
- Industrial heat gun; must be capable of attaining and sustaining 260°C to 399°C, or equivalent

*Available from 3M Commercial Graphics Division

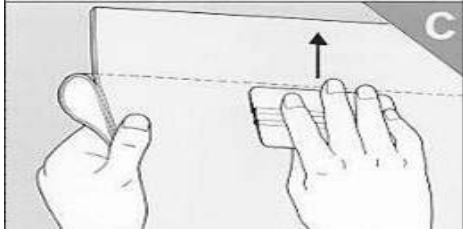
Application Procedure

The following steps provide the general method for applying film to a substrate. If you are an experienced installer, your technique may vary. However, due to the unique qualities of DI-NOC film, we encourage you to review the additional information in this Bulletin before installing the film.

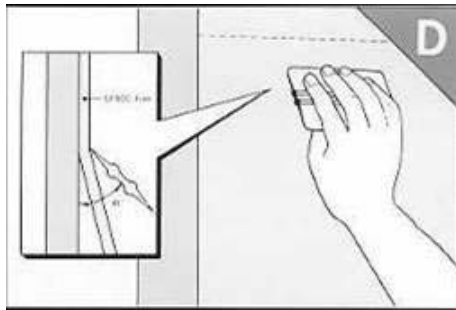
1. Always use only a dry application method.
2. For the most successful film application, the environment and substrate should be 60°–82°F (15°–38° C).
3. Roll back a few inches of the liner from the top of the film. To avoid stretching the film, always remove the liner from the film, not the film from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



- Starting in the center of the film and using firm pressure, squeegee the film, stroking to the closest edge. Work across the film to each outside edge.



- Remove several more inches of liner, and maintaining about a 45 degree angle with the squeegee, stroke downward. Work across the film to each outside edge.
- Continue in this manner to apply the rest of the film.



Finishing the Film Edges

Usually, the area with the least adhesive bond is the outer few inches of the film. To finish the job properly, we recommend heating the edges of the film and re-squeegeeing to secure the edges.

To do this, set a heat gun to 150° F (70° C). Hold the gun about 1 inch from the film and heat it for 1 to 2 seconds. Immediately re-squeegee the edge. Continue until all edges are well sealed.

Non-Standard Application Techniques

Pro's Tip

When applying the film, always look ahead and plan how you will approach and apply the film to complex architectural surfaces so that you take advantage of the film's air release channels and avoid wrinkles and bubbles.

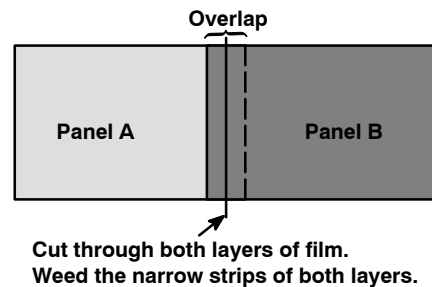
Color Matching and Seaming Adjacent Panels of Film

Whenever you are applying two or more panels of the same DI-NOC film adjacent to one another, use the following techniques to match them to ensure uniform day time color and transmitted night time appearance.

Creating a Butt Seams

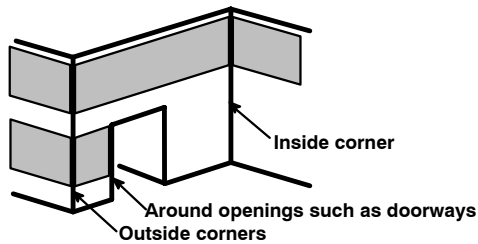
Note: This technique is not recommended for 3-dimensional surfaces or curved substrates. Use a standard overlap for those applications.

- If the same film will be used on each side of the butt joint, be sure to use film from a single roll or lot.
- Pay attention to the direction of designs and the "grain" of embossed patterns, which should always go in the same direction. Failure to do this may cause obvious shifts in color, gloss and design.
- Use a butt joint only when visibility is important and you are working on a flat surface. Films with a **W** designation in the product catalog should not use butt joints.
- Apply substrate primer to the substrate for 1/2 inch (5 cm) on either side of where the joint line will fall. Allow to dry.
- On the side of the film where the joint will be, leave 1/2 inch (5 cm) of the liner on panel 1.
- Apply panel 1.
- Apply panel 2 overlapping panel 1 by 1/3 to 1/2 inch (3-5 cm).
- Use a straight edge to cut through the center of the overlap.
- Remove the liner and all excess film.
- Firmly squeegee the joint and then continue applying panel 2, always working from the joint to the unapplied opposite edge.



Trimming

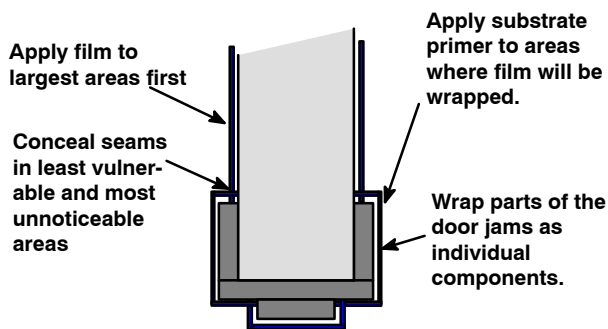
Certain areas of your film applications are more subject to damage than others from people or equipment rubbing against the edges. This includes areas around doors, openings such as vents, outside corners of walls and inside corners. To reduce the risk of damage and lifting, trim the film from the edge. After application, re-squeegee all edges of the film to help ensure good edge adhesion.



Wrapping Film Around Door Jams and Other Complex Structures

DI-NOC film is often applied to complex architectural structures such as door jams. Here are some guidelines to help you achieve a good appearance.

- Apply film to the walls first.
- Apply substrate primer to any surface that requires you to wrap the film around an edge.
- Wrap strips of film around individual parts of the door jam one at a time. Trying to wrap a larger piece over a very complex profile usually results in wrinkles that cannot be worked out.
- Be sure you cut the strips wide enough: wrapping always takes more than you expect.
- Overlap the joints on the inside corners.



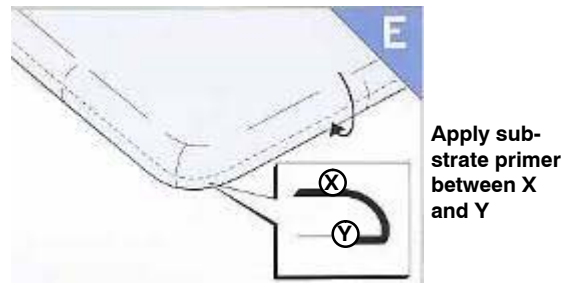
Using Heat to Conform Film Around Difficult Features

You can improve the conformability of many DI-NOC films by heating the film with a heat gun for 1 or 2 seconds and then immediately working the area with a squeegee. This is also a good technique for getting good edge adhesion on overlaps.

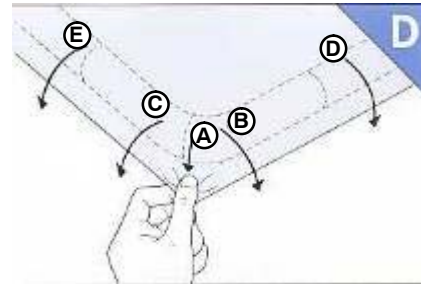
Applying Film to a 3-Dimensional Curved Surface

Note: This technique is not for circular forms.

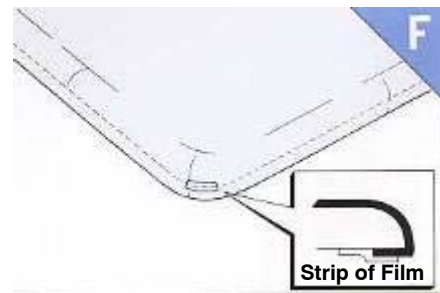
1. Be sure you have enough film to wrap around the edges to the bottom of the surface.
2. Apply substrate primer to the edges, starting about 1/2 inch from where the shape changes (reference **X**) and extending to the back side of the surface for at least 1/2 inch (**Y**). Allow the primer to dry. This will provide excellent adhesion and prevent the film from shrinking.




3. Apply the film at the corner first and then along the straight edges in this sequence: **A**, then **B & C**, then **D & E**, etc.



4. Neatly trim excess film on the back side of the surface.
5. To secure the edges, especially at corners where the film is probably heavier, apply substrate primer, allow to dry, and then apply a small strip of film to the cut edge. This provides additional stabilization and further helps prevent shrinkage.



Thermoforming

Many DI-NOC films are thermoformable, except for film with the symbol  as shown in the product catalog. Excessive stretching may deform the design of DI-NOC film series WG.

Cleaning Applied Film

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.

Removing Film

Although DI–NOC films may be removable, the application techniques and the recommended substrate primers increase adhesion so that clean removal without substantial substrate damage is unlikely. The better alternative is to applying new film or surface covering over the DI–NOC film.

The following removal techniques can be tried, but the effort and results will vary.

1. Make cuts in the film about 4 inches apart, making sure not to damage the substrate.
2. Use a hair drier or heat gun set to 200°F to soften the film's adhesive.
3. Immediately pull the film down at about a 150 degree angle.
4. Heat more of the film and continuing pulling.

Warranty

The information contained and techniques described herein are believed to be reliable, but 3M makes no warranties, express or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose. 3M shall not be liable for any loss or damages, whether direct, indirect, special, incidental or consequential, in any way related to the techniques or information described herein.

3M Related Literature

Before starting any job, be sure you have the most current Product and Instruction Bulletins.

The information in 3M Product and Instruction Bulletins is subject to change. Current Bulletins, as well as a list of all Bulletins updated within the last three months, are available at www.scotchprint.com or through our Fax–on–Demand system. Any warranty, if offered, is based on information in the appropriate Bulletin(s) that was current at the time you purchased the 3M products. The following Product and/or Instruction Bulletins provide the information and processes you need to properly make the graphics described in this Bulletin.

Fax–on–Demand phone numbers:
United States or Canada: 1-800-364-0768
International: 1-651-732-6506

Subject	Bulletin No.	FOD No.
Product Bulletins		
3M™ DI–NOC™ Films	D1	1027
Warranties		
Worldwide 3M Graphics Center Warranty Brochure		9503



Graphics Market Center

3M Center, Building 220-12E-04
PO Box 33220
St. Paul, MN 55144-3220 USA
General Info. 1-800-374-6772
Technical Info. 1-800-328-3908
Fax 1-651-736-4233

Fax-on-Demand 1-800-364-0768 US/Canada or 1-651-732-6506 International
Fax-on-Demand document: 7041
www.3M.com/graphics

3M Canada

P.O. Box 5757
London, Ontario
Canada N6A 4T1
1-800-265-1840
Fax 519-452-6245

3M México, S.A. de C.V.

Av. Santa Fe No. 55
Col. Santa Fe, Del. Alvaro Obregón
México, D.F. 01210
52-55-52-70-04-00
Fax 52-55-52-70-22-77

3M Puerto Rico, Inc.

Puerto Rico Industrial Park
P.O. Box 100
Carolina, PR 00986-0100
787-620-3000
Fax 787-750-3035