

3

DI-NOC™ Film

Planning Guide

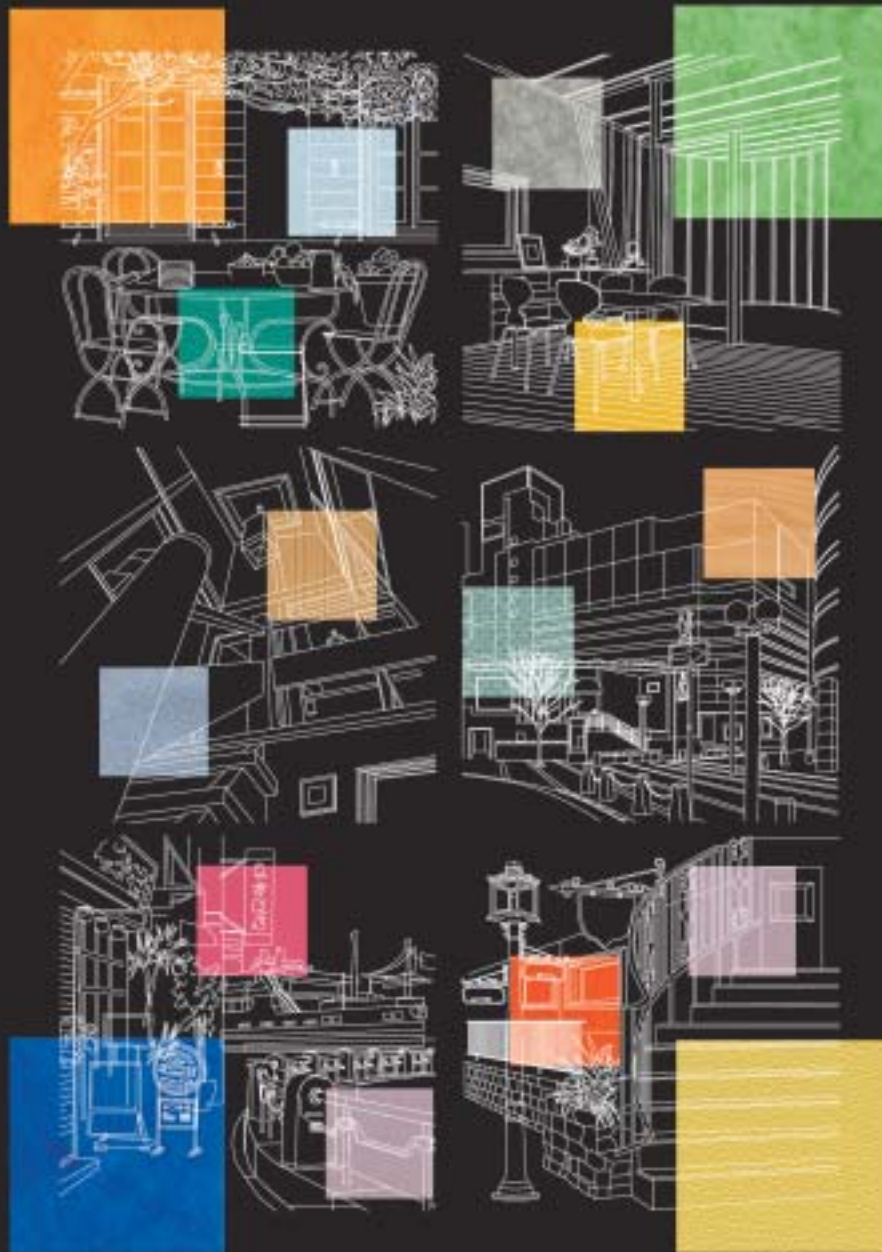
DI-NOC™ Film

DI-NOC™ 21

DI-NOC™ Floor

D-Board

Fasara™

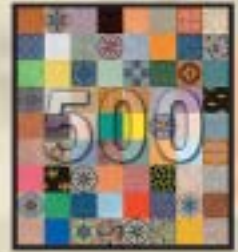


Design Freedom

If it's Di-Noc™, you can do it.

Thin, light and seamless, Di-Noc™ film is used by many designers as a creative and decorative interior material.

Three special characteristics, colourful patterns, design quality and texture of the material, combine to create special architectural features.



Colourful

We have created many designs to provide you with a great degree of freedom when developing designs for indoor and outdoor spaces and décor.



Tough

Durable, wide range of applications, long lasting beauty.

DI-Noc™ Film

Di-Noc™ film was originally designed approximately 70 years ago, for application to the outside panels of automobiles. It was therefore constructed to withstand the effects of weather and wear and tear. With these strengths, it has become an indispensable tool for many architects and designers when creating special features and effects. These functional building materials are opening new horizons worldwide.

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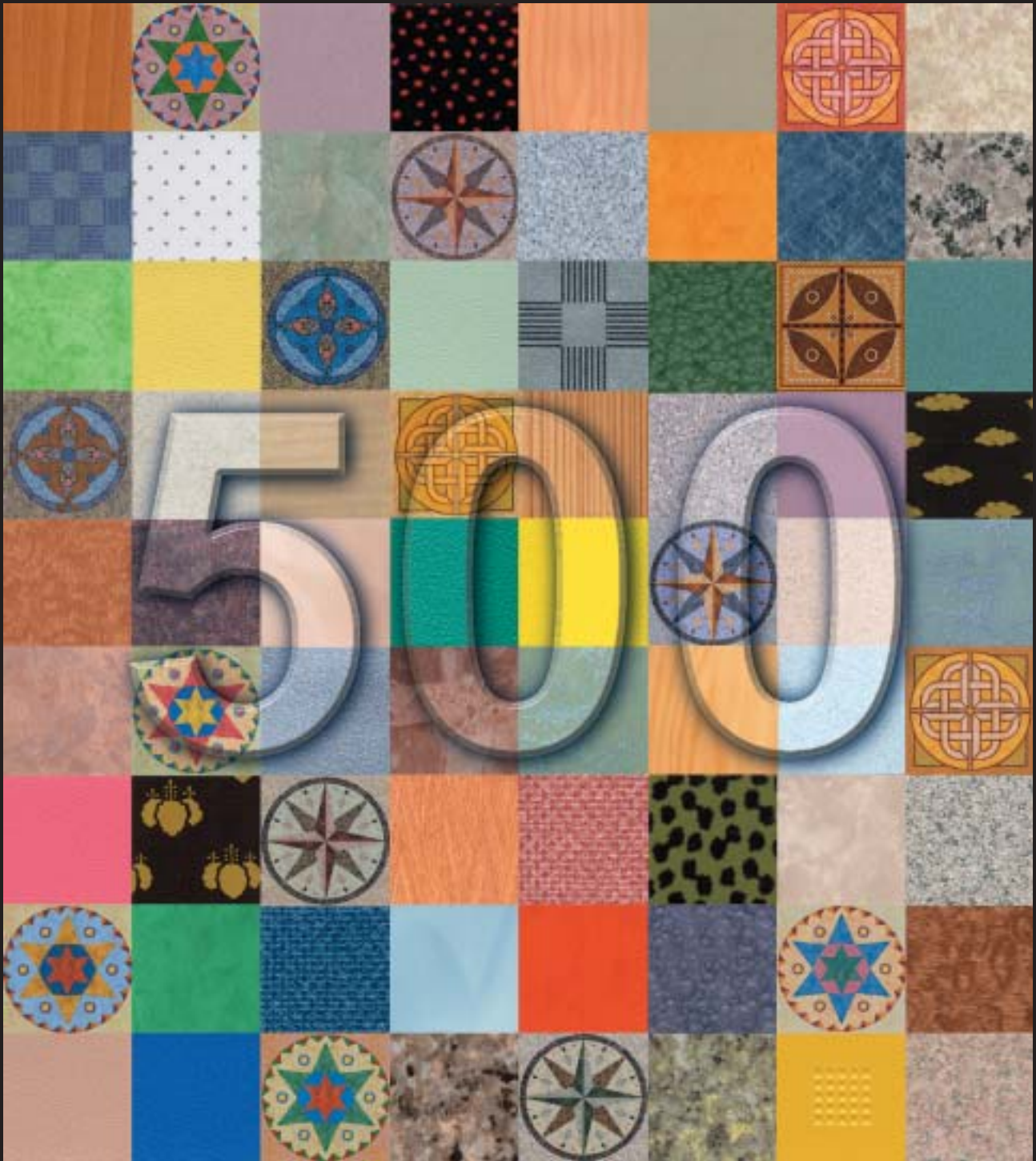
Removal of DI-Noc™ film

- 30. Physical and Chemical Characteristics of Di-Noc™ film
- 31. Guide to Di-Noc™ Application for various surfaces and regulations, including Primer usage guide for all applications.



Easy

Application is simple, leading to a superb finish.



Colourful

From single coloured patterns to the intricate, textures of natural simplicity and more, the film brings around 500 coloured designs to life.

The ability to create a room with a particular image.
The pride of a uniform, yet exquisite finish.

Choose from a Broad Range of Colours

Di-Noc™ 21	<p>New and improved printing techniques, not possible until now, provide an artistic feel to the decorative film.</p> <p>3 design series, include the standard construction, custom made and designers collection.</p> <p>A broad range of leading designs provides answers for every need.</p> <p>Special made-to-order designs can be made in small lots.</p> <p><i>See P21, 25 for examples of product usage.</i></p>
Single Color	<p>An abundance of colours has been developed. The Soft and Vivid colour groups are perfect for many applications.</p> <p>All colours are bacteria resistant and suitable for applications where hygiene is important. These products can also be used outdoors.</p> <p><i>See P14, 15 for examples of product usage.</i></p>

Choose from a range of Surface Textures

Weave	<p>This film has a woven, embossed surface texture.</p> <p>The texture is soft to the touch but resists dirt and abrasion.</p>
G Emboss	<p>New, unique geometric patterns are a design feature of this film.</p> <p>Both plain & metallic colours are available. Lighting enhances the colourful appearance of this film.</p>
Metallic	<p>This colourful product range has a number of designs, from fine anodized appearance to embossed and highly patterned.</p> <p>The metallic texture can be brought to life in a diverse range of locations and applications.</p> <p><i>See P17, 20, 23 for examples of product usage.</i></p>
Stucco	<p>This film simulates the appearance of Italian plaster.</p> <p>There are two product variations – muted and vibrant shades.</p> <p><i>See P15 for examples of product usage.</i></p>
Sand	<p>The modern colours and patterns achieve an authentic sandstone appearance.</p> <p>The soft appearance of stone can be used in many locations.</p>

Complex Designs

Di-Noc™ 21	<p>Designs that cannot be achieved by rotogravure printing can be generated through the use of new printing skills.</p> <p>Working from a range of 40 base colours, more than 10000 designs can be created by combining colour, graphic design and embossing.</p> <p>Small production lots are possible, using this process.</p> <p><i>See P21, 25 for examples of product usage.</i></p>
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Made-to-Order Designs

Customer demands for unique designs can be met by a combination of proven technologies. These special designs are called Di-Noc™ Color Graphics.

Please feel free to suggest your own design. All we need is your design, information on proposed product usage and production quantity, so that the most appropriate combination of product construction and printing process can be selected.

Realistic Timber Appearance

Fine Wood	<p>A combination of unique processing steps results in an Wood grain appearance and texture that closely resembles real wood.</p> <p>Customers are able to choose a design that best suits their need from a selection of 137 colours, encompassing 34 timber species.</p> <p>Timber choices range from traditional wood, through to modern architectural designs.</p> <p>☀ Sun symbol stock can be used for outdoor applications.</p> <p><i>See P11-18 and P20-24 for examples of product usage.</i></p>
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Metal Foil Appearance

Hakurakuten	<p>Film with the luxury appearance of real gold and silver foil is available. This film is very thin, with a thickness of approximately 15 microns.</p> <p>Adhesive has been applied to the film, making it easier to apply than real metal foils. All you need to do is remove the liner and apply the film.</p> <p>This film can be applied to a wide range of surfaces.</p> <p>It can be decorated with oil-based paint.</p>
Hyper Metallic	<p>This film has the same resistance as Di-Noc™ film but is very thin and is made using real gold, water gold, Western gold and Japanese gold.</p> <p>Cost, application time and wear resistance are concerns with real foils, that can be overcome by using these films.</p> <p>The effective use of these films on large surfaces, such as walls is becoming more common.</p>



Tough

The Japanese Ministry of Land Infrastructure and Transport, has approved the fire retardant performance of these products.

We are proud to announce that these products are long lasting, weather and water resistant.

Product series have been developed for outdoor use, as well as for floors. The durable construction and quality of these materials, ensures they can be used in many climatic regions, without deterioration of their long lasting beauty.

Once applied, ongoing costs are low, as these products are simple to maintain.

Outside Use

Outside Use We have an extensive range of 162 elegant colours, designed for outdoor applications. Metallic, Single color, Timber and Abstract product ranges have been thoroughly developed for outside use. Please choose from materials marked with the ☀ symbol. Products marked with ☀ have a weather resistance of 3-5 years for applications such as shop, building and restaurant fascias.
 See P20 for examples of product usage.

Where increased Abrasion Resistance is required

Protection Film Apply film to areas that you don't want damaged. This surface protection film absorbs impacts and abrasions. Gloss and Matte versions of this film have been developed. Being transparent, the design of the base substrate can be clearly seen.
 · This film is not fire proof.
 · Please contact 3M before using this product as it may not completely conform to textured or embossed surfaces.

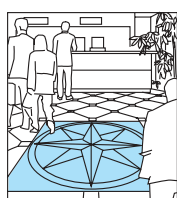
Prevent Glass Breakage

Fasara™ This film combines excellence of design with meeting the JIS Standard for Protection against Glass Breakage. This film has a number of embossed designs and can be used for a wide range of decorative uses. You can use this film to control light and also maintain privacy.
 See P26 for examples of product usage.

Floor Finishes

Di-Noc™ Floor This product can be easily applied to existing floors and is suitable for remodelling and decorative purposes. The Super AR top surface has excellent resistance to scratches, wear and dirt, so can handle medium exposure to foot traffic, such as shop floors.
Other Applications:
 This film is not limited to floor applications. It can be used for applications where added wear protection is required, such as counter and table tops.
 · This film is not authorised to be fire proof
 · Please contact 3M for assistance in qualifying suitable floor surfaces
 · Do not apply this film where people will be walking barefoot, where the floor will be wet from water or snow, on surfaces with a slope, or outdoors.
 See P19 for examples of product usage.

Di-Noc™ Floor Medallion Type We have developed a range of special features for floor areas. 2 types, 5 series and 16 designs are available in a various sizes.
 See P5 for an example (design MD1-B)





Easy

The Comply™ adhesive on these products (not high gloss product ranges) has air channels, arranged in a grid that allows trapped air bubbles to easily escape during application. This makes the products easier to apply. These materials provide a beautiful finish on any surface. An added benefit is that application times and chances of application errors have been dramatically reduced. Addition of heat allows most product series to be applied to 3 Dimensional surfaces. As Innovators, we have given you the opportunity to quickly create an image or architectural design feature.

Ready to Install Decorated Substrate

D Board This is a fireproof material that is laminated with Di-Noc™ film. It creates a simple to install wall panel system with clean, sharp edges for accurate placement. This modular system is easy to work with and quick to install. Consistent quality is ensured.

See P11, 14, 16 for examples of product usage.

D Mould Di-Noc™ can be applied to moulded surfaces. In the past, this was not possible but product development now makes this technique possible. We can promise a finish without colour and paint consistency concerns. Repairs are easily performed. Customers can choose from the Lamination Layered type or V cut type.



D Mould (Lamination Layered type)



D Mould (V Cut type) is light and can be easily constructed into box shapes.



D Span This aluminium molding can be used outdoors and in wet areas. Di-Noc™ film is applied to it to achieve the desired appearance. Almost all Di-Noc™ film patterns can be applied to D Span. Please contact 3M for more details. Typical uses include house shutters, ceilings and bathrooms.

See P23, 24 for examples of product usage.

Using Di-Noc™ Film for Construction Repairs

3M Entrance Door Refurbishment Sheet This product is suitable for refurbishing doors made from steel and PVC board. It can be applied to moulded, curved surfaces.

The dry application method makes it easier to apply than painting. It is easy to maintain and is resistant to sunlight and abrasion.

• Please consult 3M, as there are some shaped surfaces that this product can not be applied to.

Di-Noc™ Floor Medallion type There are many floor film designs, so pattern matching is easy.

The Medallion designs are applied simply to the existing floor surface. They add a beautiful feature to entrances and halls.

Single sheets can be ordered to make repairs.

See P19 for examples of product usage.

Di-Noc™ Floor This material is easy to apply. Just clean the existing floor and adhere the film. It can also be used for table and counter tops.

See P19 for examples of product usage.

• This film is not authorised to be fire proof

• Please contact 3M for assistance in qualifying suitable floor surfaces

• Do not apply this film where people will be walking barefoot, where the floor will be wet from water or snow, on surfaces with a slope, or outdoors.

Aqueous Primer This material enables speedy repairs, with no odour in crowded areas, such as shops and stations.

Application to 3 Dimensional Surfaces

By adding heat, most Di-Noc™ films can be stretched, making it possible to apply onto 3 Dimensional spaces and objects.

• Please consult 3M, as some surfaces and products are not suited to this application.





DI-NOC™ Film

Practical Applications

Offices: Halls

The use of Di-Noc™ Woodgrain film for walls and ceilings creates an atmosphere of warmth. The film allows freedom of design, as it is flexible, responding to various needs. The non-flammable characteristic of the D-Board base material resolves the demand for interior fireproofing.

Product used **D-Board (Woodgrain)**



In order to produce good acoustics, the Di-Noc™ covered panels first have slits cut into them in the factory and are lined with foam boards made from a mixture of glass fibres, inorganic matter and phenolic resin. The rate of sound absorption is improved by the long slits, which also create a layered design pattern. This construction was also applied to the ceiling to reduce construction time.

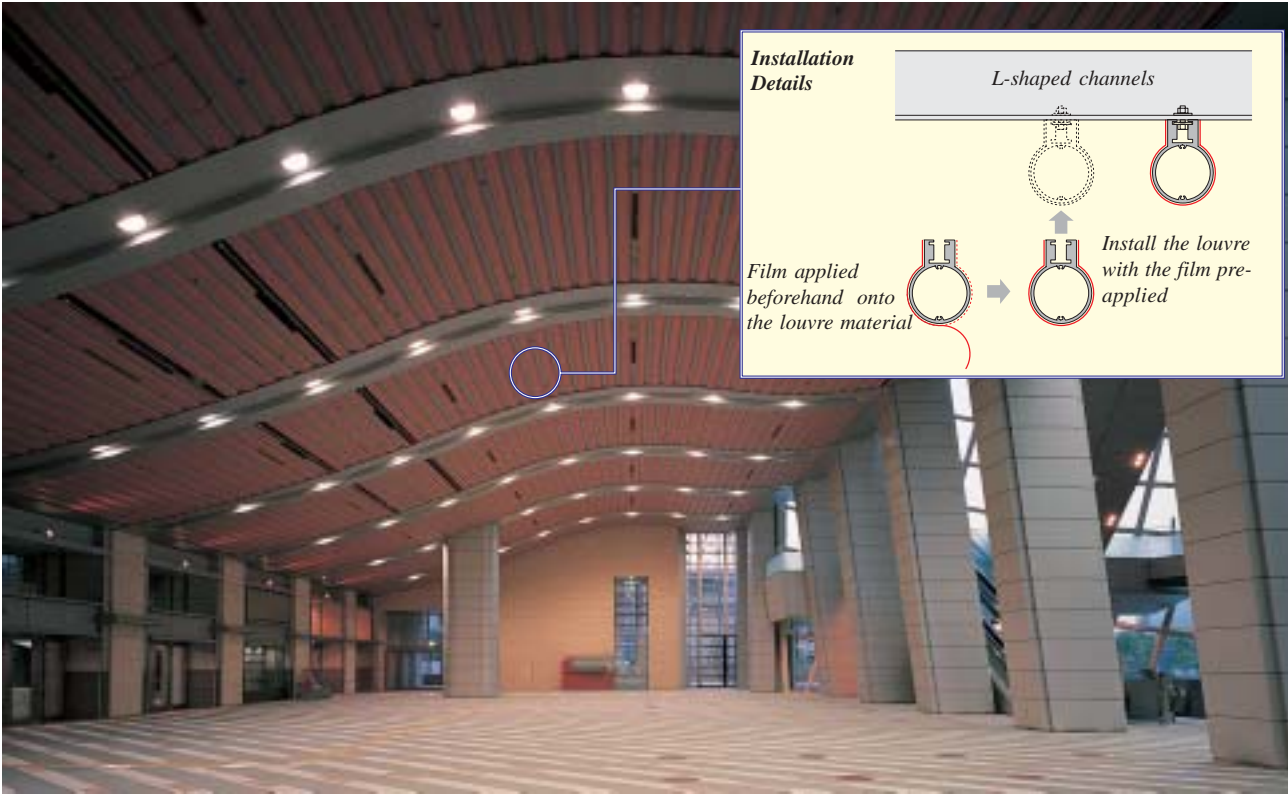


Sound Absorption Wall

Multi-purpose Venues: Entrance Halls

Factory application of this film produces a beautiful finish. When applying to high ceilings, there is less need for scaffolding and construction period is shortened. This results in lower cost, as well as creating a beautiful design feature.

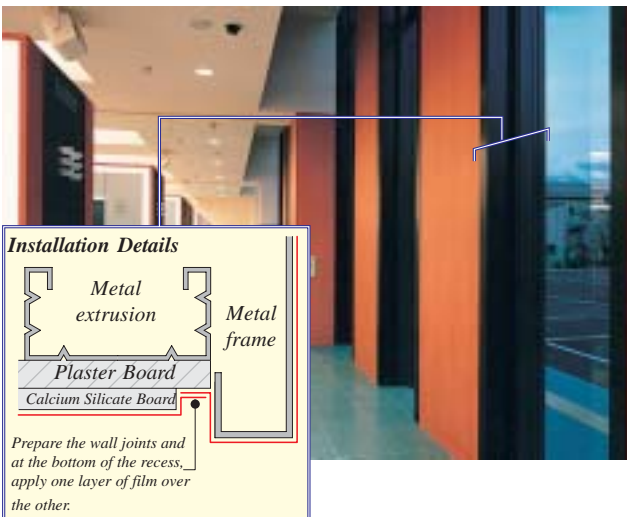
Product used Woodgrain



Public Buildings: Passageway

The combination of dark shades with the wood grain tone, creates an atmosphere of natural warmth. Superior quality control ensures consistency for multiple panel shop and building designs.

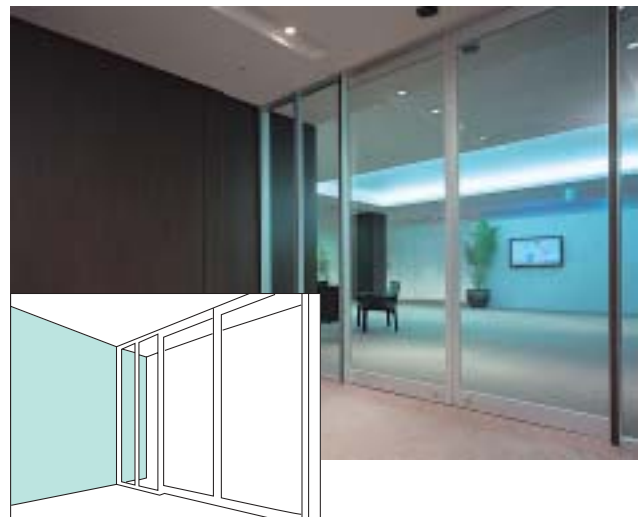
Product used Wood grain



Offices: Conference Rooms

We can shorten construction time, allowing quick tenant change over. The natural wood grain appearance creates a feeling of prestige.

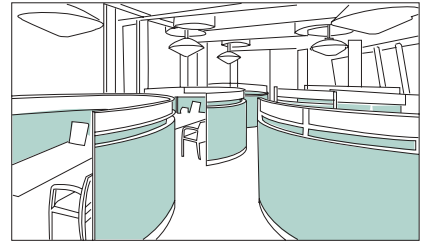
Product used Fine Wood



Banks: Customer Service Area

A suitable customer service area, combining wood grain and silver design features, was created with the curved company logo in mind.

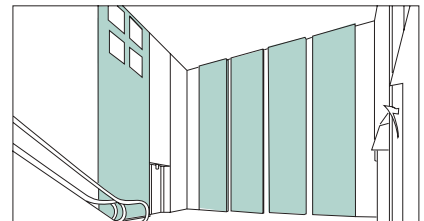
Product used Fine Wood



Multi-purpose Venue: Foyers

There are no joins in the film, so an exquisite finish can be achieved on high walls, such as in this foyer area.

Product used Fine Wood



Offices: Passage Ways

The rich shades of Fine Wood create a feeling of composure and dignity to the office.

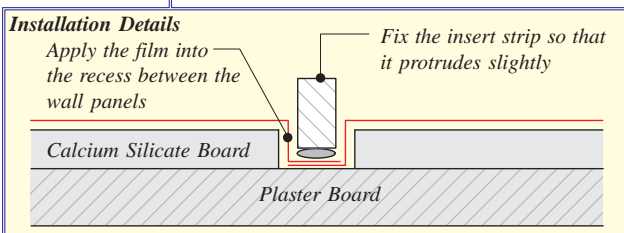
Product used Fine Wood



Offices: Elevator Lobby

Light wood grain tones create a light, spacious and high class appearance. Being fire resistant, the product is ideal for this type of area.

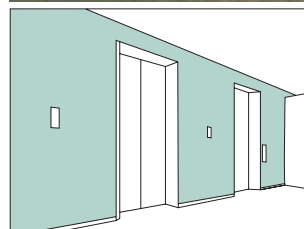
Product Used Wood Grain



Offices: Elevator Lobby

D-Board creates a clean, well-defined panel appearance. Factory application creates a perfect finish and reduces the complication of on-the-spot construction.

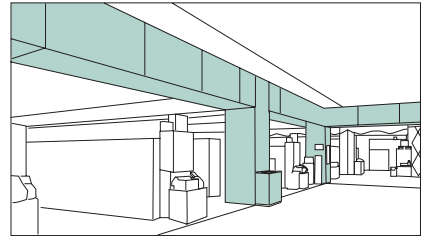
Product Used D-Board (Single Colour)



Gaming Area: Passage Ways

Beautiful, vivid colour crates a lively and appealing appearance. Film has even been applied to the trash container to provide continuity of design.

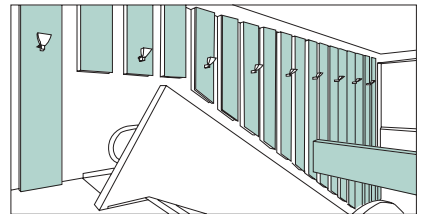
Product Used Stucco



Public Buildings/Clubs: Stairways

White can be difficult to maintain but with this easy-to-clean film, removal of dirt and stains is no problem. This stylish appearance can be quickly created due to ease of product application.

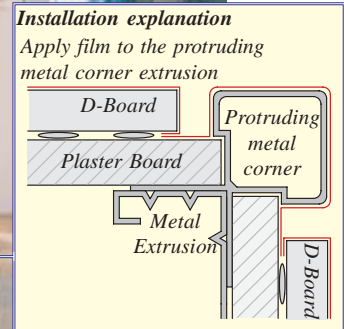
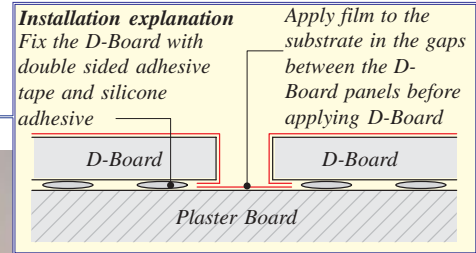
Product Used Single Colour



Buildings: Foyers

The use of D-Board on the wall paneling creates an exquisite finish. Using metallic film as an accent for the skirting boards, gives depth to the design.

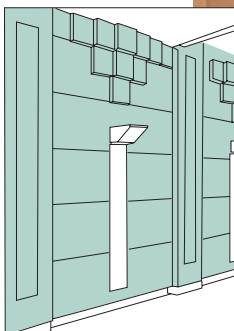
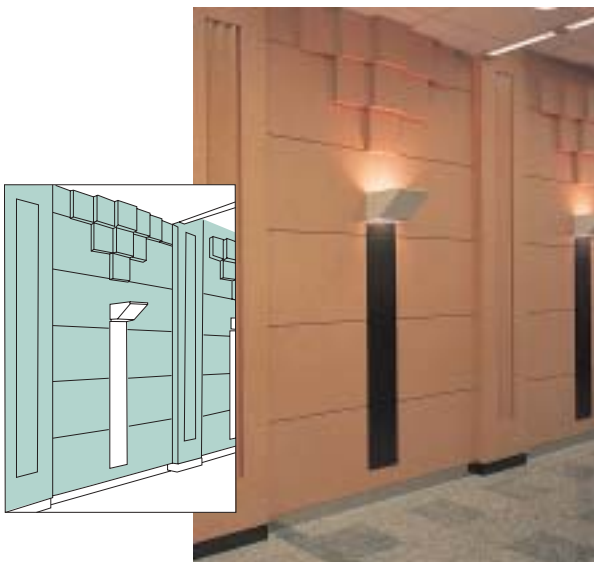
Product Used D-Board (Abstract Design)



Building: Hallways

The flexibility of the product means it can be applied over curved and irregular shapes.

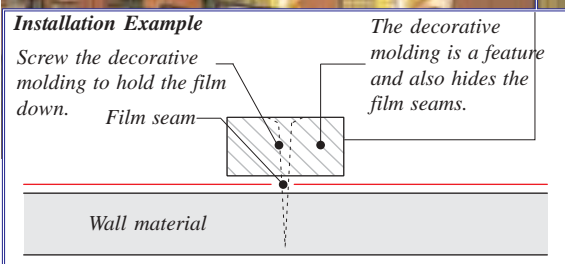
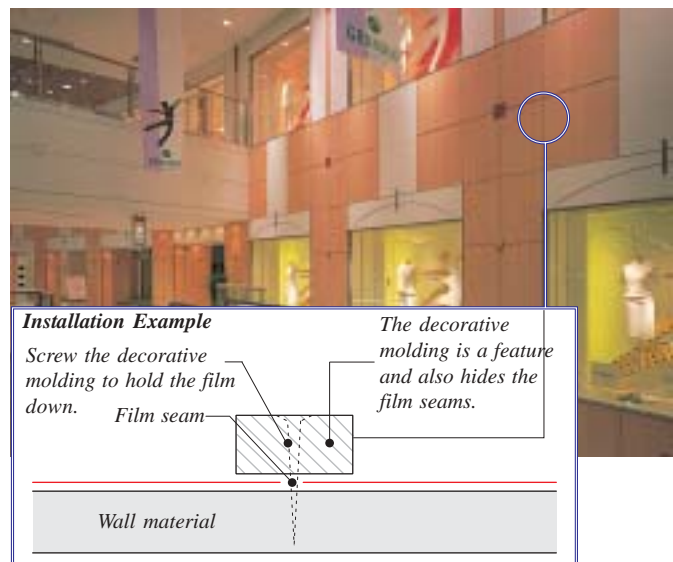
Product Used Laser



Building: Stairwells

In commercial facilities that are open to the general public, the film combines the appearance of natural materials, while being easy to maintain, repair and quick to apply.

Product Used Wood Grain



Department Stores: Elevator Vestibules

The film can be applied over existing surfaces, so construction time and costs are reduced. The result is an appealing appearance that is durable and easy to maintain.

Product used Wood Grain and Metallic



Offices: Elevator Vestibules

The combination of stainless steel and wood grain creates a high-class appearance. Flexibility of design can be achieved by combining the film with other materials.

Product used Fine Wood



Hospitals: Elevator Interior

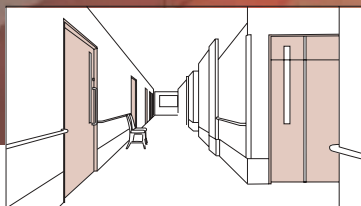
Damage to elevator walls from wheelchairs and other equipment is always possible in hospitals but the film is easy to maintain and repair if damage does occur. The film designs can also create an impression of warmth that is often lacking in service areas.

Product used Wood Grain



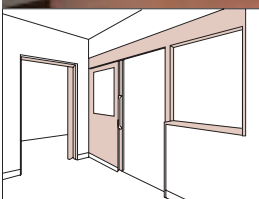
The film creates an impression of warmth that would otherwise leave a cold, utilitarian impression. Repairs are easy and the level of cleanliness required in medical facilities can be maintained.

Hospitals: Entrances and Exits



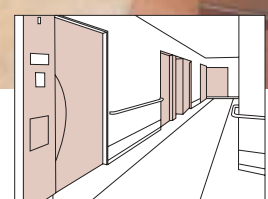
Product used Wood Grain

Hospitals: Entrances and Exits



Product used Wood Grain

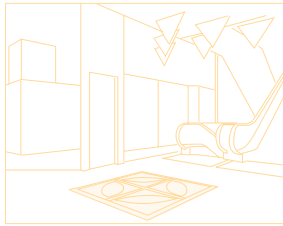
Hospital : Entrances and Exits



Product used Wood Grain

Department Stores: Shop Floors

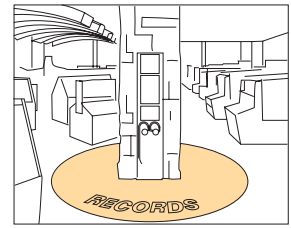
The use of Di-Noc™ Floor Medallion designs enables you to simply add a highlight design to a plain floor. You can use the same or different designs on each level.



Product used **Di-Noc™ Floor Medallion**

Music Stores: Shop Floors

Effective visual communication can be achieved by adding a logo or product branding to the film. The film is easily removed, so that the existing floor appearance can be returned or a new design added.



Product used **Di-Noc™ Floor**

Convenience Stores: Shop Floors

Convenience stores are normally open for 24 hours. Di-Noc™ Floor enables the floor to be refurbished quickly, without moving the shelving.



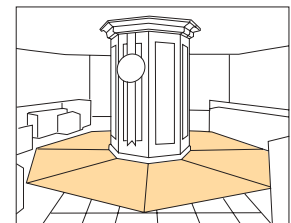
Before

After

Product used **Di-Noc™ Floor**

Department Stores: Shop Floors

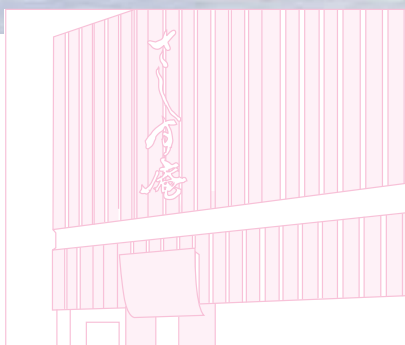
Feature designs, such as around pillars, are an attractive addition to shop décor. Such designs can be quickly added, after the shop has closed or on a public holiday. The film boasts excellent resistance to abrasion from foot traffic.



Product used **Di-Noc™ Floor**

Restaurant: Facades

In this case, the film has been applied to steel panels, the profile of which gives the appearance of real wood. Numerous Di-Noc™ film designs have the durability to withstand outdoor applications.

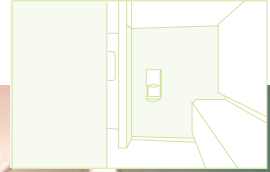


Product use Wood Grain, Metallic and Abstract Designs

Practical Examples Of Di-Noc™ Use Wet Areas

There is a broad range of film designs for use where water resistance is required. This allows many different architectural features to be incorporated. Refurbishment can be rapidly achieved at low cost by applying directly over existing surfaces.

Offices: Bathrooms



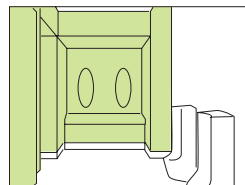
Product used **DI-Noc™ 21**

Reception Venues: Bathrooms



Product used **Fine Wood**

Gaming Facilities: Bathrooms



Product used **Wood Grain**

Offices: Bathrooms



Product used **Fine Wood**

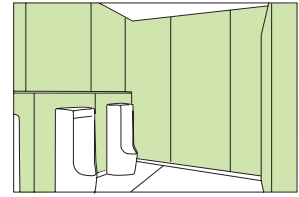
Commercial Buildings: Bathrooms



Product used **Wood Grain**

Public Buildings: Bathrooms

A clean appearance is achieved by using a metallic film with the appearance of aluminium. Simple construction reduces construction cost.



Product used Metallic



Hotels: Bathrooms

The film used around the wash basin even feels like timber. The film is stain resistant and easy to maintain.

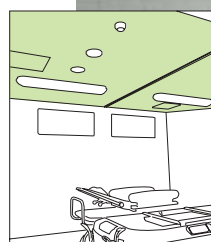
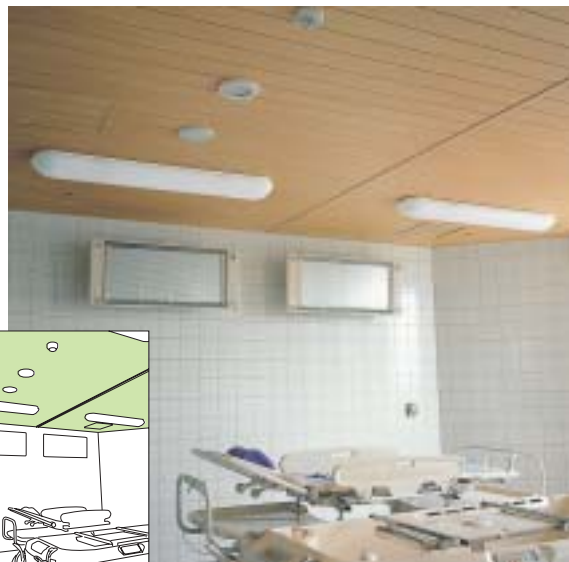


Product used Wood Grain

Clinics: Bathrooms

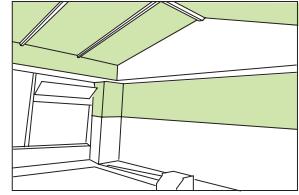
The warm appearance of wood reduces the cold impression created by the other surfaces in this room. The film is resistant to moisture and maintenance is simple, making it easy to clean.

Product used D Span Wood Grain



Hotels: Bathhouses/Indoor Pools

For areas such as spas and steam, the film has excellent moisture resistance and is easy to maintain.



Product used D Span Wood Grain



Offices: Bathrooms

Warmth and colour can be easily added in a short period to plain, single coloured areas.



After

Before

Product used Abstract Design

Restaurants: Partitions

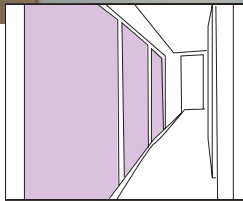
These folding screens are covered with a cloud pattern. The film is durable and can be used for multiple purposes, broadening the utilization of the area where it is used.



Product used Di-Noc™ 21 Designers' Collection

Buildings: Passageways

The soft diffused light creates an appearance of warmth, calm and cleanliness.



Product used Fasara™

Fast Food Outlets: Windows, Doors

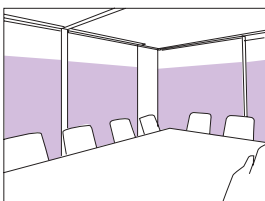
Using Fasara™, an effective Corporate Identity can be achieved on the front of the store.



Product used Fasara™

Offices: Conference Rooms

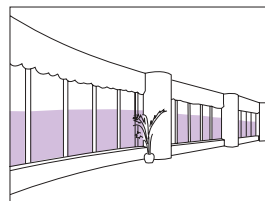
Fasara™ can be applied to all the glass walls, providing a well lit space, while maintaining privacy.



Product used Fasara™

Public Venues: Lobby Areas

Fasara™ can be applied to glass windows and panels in large venues, providing a high quality appearance to the whole area.



Product used Fasara™

Product Usage, Limitations and Construction Guide

Wiping Wood Grain W

This Series has a special surface finish that requires the use of either an overlap join or the use of a spacer to create separate application panels. Do not use butt joints.

* The Wiping Wood Grain products form part of the Wood Grain (WG) Series and are highlighted with the **W** symbol. (WG-156, WG-157, WG-159, WG-160, WG-165, WG-166)

Gloss (Maple/Bubinga) (WG-GN)

Due to the very smooth surface on this Series, please ensure the application surface is prepared so that there is no surface roughness. Any surface texture will be visible through the film.

Suede (NX)

1. This Product Series employs a special surface treatment to create the “frosted” appearance. The surface treatment is less resistant to pollution and dirt contamination than other Di-Noc™ films. Therefore, this Series is not suited for applications such as counter tops, restaurants and the inside of elevators, where people’s hands will frequently come into contact with the film.
2. Due to its reduced resistance to natural weathering, apply this Series where it will not be exposed to high levels of ultraviolet rays or direct sunlight.
3. This Series has limited conformability over three-dimensional surfaces. Over-stretching the film may cause surface cracking.

 **Pay particular attention when applying this material to the edges of three dimensional surfaces.**

Chic (PA)

1. If a butt joint is made and the product is viewed under reflected light, the surface texture of the film may result in adjacent panels appearing to have different colours. This can be avoided by checking before application and placing a spacer or leaving a joint of at least 6mm between the individual panels, if this will be a concern.
2. Due to the smooth surface on this Series, ensure the application surface is prepared so that there is no surface roughness. Any surface texture will be visible through the film.


Hammer Finish (HF) Series

1. If a butt joint is made and the product is viewed under reflected light, the surface texture of the film may result in adjacent panels appearing to have different colours. This can be avoided by checking before application and placing a spacer or leaving a joint of at least 6mm between the individual panels, if this will be a concern.
2. A special surface treatment is employed to give this Series its unique surface appearance and this results in reduced flexibility and elasticity than other Di-Noc™ Series. Please take care when applying the material around edges, applying in cold weather or removing the product.
3. This product does not stretch.

 **Do not use on three dimensional surfaces.**

Metallic

VM/HM

1. Ambient and application surface temperatures must be above 12°C for successful application of this film. If the application area is below this temperature, use a heater to warm the area.
 2. Position the film carefully before beginning application. Attempting to reapply the film will result in delamination of the adhesive.
 3. Over-stretching during application will result in changes to the film colour and surface appearance.
-  **Do not use on three dimensional surfaces.**
4. For application of this film a soft cloth should be wrapped around the squeegee. Ensure the cloth does not scratch the film.
 5. Due to the smooth surface on this Series, please ensure the application surface is prepared so that there is no surface roughness. Any surface texture will be visible through the film.
 6. VM-167/VM-168/VM-169 If you bend the film sharply, wrinkles may appear on the surface of the film. Avoid bending the film.


ME-531

ME-536

1. Remove the transparent protection sheet after application.
2. Due to the smooth surface on this Series, please ensure the application surface is prepared so that there is no surface roughness. Any surface texture will be visible through the film.

FE

1. Avoid overlapping because the surface texture is pronounced.
2. Do not overstretch the film as it may tear.

 **Do not use on three dimensional surfaces. Take care when applying to substrate edges in cold weather.**

G-Emboss

1. Remove dust and dirt from the application surface and make sure the surface is completely smooth before application. Any surface roughness will impair the finish of the applied film.
2. When making a butt joint using Metallic Series (GE922, 923, 924, 925 926), reflected light may cause adjacent panels to appear different. Before application, confirm the appearance. It may be necessary to leave a gap between panels to avoid this.

Applying Di-Noc™ Films Outdoors

1. When applying Di-Noc™ films outdoors, please select one of the colours marked with the ☀ symbol.
2. Products with the ☀ are designed to withstand outdoor weather conditions and when applied to a vertical surface, will not fade for 3-5 years.
3. Water will not penetrate the surface of Di-Noc™ films. However, if the application surface is porous or if the edges of the film are not correctly sealed, moisture can permeate under the film and cause failure of the adhesive. Please choose an application surface, such as metal, that is not porous and edge seal the film with modified silicone sealer after application, so that no moisture can collect under the film.
4. Do not use Calcium Silicate board, cement board or wood for outdoor applications. These materials are porous and water collecting under the film will cause it to lift.
5. Remove all traces of dirt before applying to glass. If the glass will be exposed to direct sunlight, there is a possibility of breakage, due to thermal expansion. The risk of this happening is greater with dark colours, which will absorb more heat than light colours.

Overlap Application

1. Apply Primer DP-900 to the Di-Noc™ film that will be overlapped. Wait until the Primer is completely dry before applying the next section of film.
2. Depending on the surface pattern and emboss texture, overlapping may prove to be difficult (eg: Wiping Woodgrain series). For assistance, please contact 3M Commercial Graphics Technical Service.

Application to Counter Tops and Table Tops

Please be aware that there might be a slight colour change in some Di-Noc™ films if applied over highly coloured substrates. Rubber feet on some appliances may stain Di-Noc™ films. Take care not to drag appliances across a Di-Noc™ covered surface.

Surface Patterns and Emboss Textures

When cutting Di-Noc™ films or applying panels of the same design side by side, adjoining panels may contrast significantly in colour. Make sure that material for adjoining panels is applied in the same roll direction and from the same production lot. In addition, there are very subtle changes in grain pattern in the embossed surfaces of the films. Check on the grain direction before applying adjoining panels to minimise any colour shift or gloss change between the panels.

Other Application Issues

1. Do not apply the materials in locations that face direct sunlight and are surrounded by glass. Temperature buildup may cause damage to the glass.
2. Di-Noc™ films are manufactured under strict quality control conditions. However, as slight changes in colour and appearance may occur from lot to lot, please do not apply different lots of the same design side by side.
3. You may occasionally see a splice in a roll.
4. Please consider the colour of the application surface before applying Di-Noc™ films. Highly coloured substrates can cause a slight colour shift in some Di-Noc™ films. A test application should be performed and the result approved by the customer, if the films must be applied to a highly coloured surface.
5. The specifications of Di-Noc™ films may change from time to time, as improvements to the product range are made.

Cleaning Di-Noc™ Film

1. Use commercially available synthetic detergent. Avoid using organic solvents or strong detergents that are either highly alkaline (pH>11) or acidic (pH<3). Check with us for 3M Cleaners that are compatible with Di-Noc™.
2. Use a soft cloth or cleaning sponge. Do not use sponges or cleaning cloths that contain abrasive materials.
3. After cleaning, wash off all remaining detergent with water.
4. For NX Series, a rubber (eraser) can be used to remove stains.

Removal of Di-Noc™ Film

Di-Noc™ films are not designed with removal in mind, as the combination of film adhesive and Primer ensure a very high bond to most surfaces. We recommend applying new material on top of existing Di-Noc™, instead of removal. However, if Di-Noc™ must be removed, the following method can be attempted.

1. Make cuts about 20cm apart in the Di-Noc™ film, making sure not to damage the substrate.
2. Use a hair drier to warm and soften the Di-Noc™ film.
3. Remove the strips of film.
4. If adhesive remains on the substrate, remove it using lacquer thinner, or similar solvent.

Note: Test that the solvent will not damage the substrate before beginning removal.

A. Roll Size

Construction – polyvinyl chloride film with permanent adhesive
Roll size - 1220mm x 50m (D,GN,ME,VM Series 1220mm x 25m)
 (HM-10F – 960mm x 50m)

B. Application Environment

Minimum application temperature – 12°C.

C. Recommended Application Temperature Range

16-28°C (20-25°C preferred)

D. Storage Conditions

Store film in a clean, dry environment, free from direct sunlight and at an ambient temperature below 38°C. Use within 1 year of purchase.

E. Dimensional Stability

A 100mm x 100mm "X" gash was made in a 150mm x 150mm film sample that was applied to an aluminium plate. The sample was exposed to a temperature of 65°C for 48 hours and the maximum opening of the gash was measured.

Test Result: 0.3mm maximum

F. Service Temperature

The film was applied to an aluminium plate and exposed to temperatures in the range of –30°C to 65°C for 12 days.

Test Result: No peeling or discolouration.

G. Weatherability

The product was exposed to UV light, heat and humidity in a Carbon Arc weatherometer for 250 hours.

Test Result: No effect on the film, with the exception of the Suede (NX) Series.

For the best results in outdoor applications use only films with the ☀ symbol.

H. Abrasion Resistance

Product applied to an aluminum plate and exposed to 7000 cycles using a Taber Abrader CS-17 with a 1kg load weight.

Test Result: No pattern change.

I. Heat Resistance

Product applied to an aluminium plate and aged for 28 days at 65°C.

Test Result: Minimal change to adhesion and film appearance.

J. Humidity Resistance

Product applied to an aluminium plate and aged for 28 days at 40°C, 90% RH.

Test Result: Minimal change to adhesion and film appearance.

K. Low Temperature Impact Resistance

Product applied to an aluminium plate.

Equipment used – Gardiner Impact Tester

Drop height: 12.7mm (5") Weight of bob: 907g (2lb)

Temperature: 0°C

Test Result: No effect on the surface of the film.

L. Chemical Resistance

Product applied to an aluminium plate, conditioned for 72 hours and then immersed in the chemical agents. Test Result:

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

M. Stain Resistance

Product applied to an aluminium plate and placed in direct contact with the substances.

Test conditions are 20°C, 65%RH. Substances tested are as follows:

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

N. Adhesion

Strips of film 25.4mm x 180mm were applied to various substrates and conditioned at 20°C, 65%RH for 24 hours. Each strip was then removed using a tensile tester, by pulling the file back at 180 degrees at a rate of 300mm/minute.

Substrate	Adhesion (no Primer)	Adhesion w/DP-900 Primer	Substrate	Adhesion (no Primer)	Adhesion w/DP-900 Primer
Luan Veneer	4.9	34.3	PVC-coated Steel Sheet	44.1	44.1
China Veneer	4.9	30.4	Aluminium Board	27.1	-
Plaster Board	-	4.9*	Stainless Steel Sheet	37.2	-
Asbestos Slate Board	4.9	34.3	Acrylic Board	38.2	54.9
Melamine-baked Steel Sheet	30.4	51.9	Mortar	3.9	21.6
Phosphate-coated Steel Sheet	24.5	53.9	* Material damage		(N/25mm)

O. Flammability

Information about the new Di-Noc™ approval numbers, following the amendment of the Japanese Ministry of Construction standard building regulations.

Approval Number	Product Type	Test Substrate	Classification
NM-0095	Polyvinyl Chloride Resin	Non-flammable Material (metal)	Non-Combustible
NM-0131	Polyvinyl Chloride Resin	Non-flammable Material (non-metal)	Non-Combustible

P. Other Information

Rail Carriages	Standard for Rail Carriage Interiors	Non-combustible
Marine	JG and NK	Non-combustible

Please contact 3M for details.

*The abovementioned physical and chemical data is representative of manufactured goods but there is no guaranteed value. Please contact this company for more details.

Application of Di-Noc™ Film

SUBSTRATE SURFACE PREPARATION	Wood Luan Veneer Chinese Veneer Hardboard	Plaster Board Calcium Silicate Board Asbestos Slate	PVC Coated Steel Di-Noc applied over Di-Noc	Mortar	Bonderized Steel Plate Baked Enamel Paint on Steel	Aluminium Plate Stainless Steel
Conditioning	Remove/grind down protruding nail heads			Trowel finish Dry Surface	Remove surface rust	
Sealing	_____	Solvent or Water Based Sealer	_____	Solvent or Water Based Sealer	_____	
Puttying	Putty over surface roughness, screw holes, etc. Fine putty for finishing		Polyester putty	Putty over surface roughness, etc	Polyester putty	
Polishing	#100-180 Grit Sandpaper				Use grinder to remove lugs and welds #100-180 Grit Sandpaper	
Surface Cleaning	Alcohol or Toluene-based thinner					
Primer	EC-1368, JA-7618 or DP-900	EC-1368, WP-2000, JA-7618, DP-900	DP-900		EC-1368, DP-900, JA-7618	EC-1368, JA-7618
	Whole Surface				Edge of surface only	

- Depending on the application surface, EC-1368 will need to be diluted 2 –3 times with toluene.
- Wait 15 – 30 minutes after priming with EC-1368 or DP-900, before applying Di-Noc™. However, if the application surface temperature is below 10°C, you will need to wait 2-3 hours after applying DP-900.
- For porous (absorbent) surfaces, apply a sealer before priming.
- For veneer substrates, remove any oily residue before applying Di-Noc™.
- Do not apply Di-Noc™ to unsealed wood as bubbles will occur (wood is porous).
- Do not apply Di-Noc™ to copper, brass, bronze, tin and lead because of poor adhesion to these materials.
- Water proof plasterboard must be sealed and primed before film application.

When applying Di-Noc™ to glass, ensure heat cracking will not occur when the glass is exposed to direct sunlight. Dark colours are more likely to cause cracking problems as they absorb more heat than light colours. Apply Di-Noc™ immediately after removing any surface contamination.

Priming of Di-Noc™ Film

	Solvent Based Primers			Water Based Primers	
	EC-1368	JA-7618	DP-900	WP-2000	WP-3000
Type	Synthetic Rubber	Synthetic Rubber	Synthetic Rubber	Synthetic Rubber	Synthetic Rubber
Substrate Features	Refer above	Refer above	Refer above	Calcium Silicate & Plaster boards	Complex surfaces only
Container Size	1L, 18L	1L	1L	4L	120ml
Usage	Mix with 2-3 parts solvent	Do not dilute	Do not dilute	Mix with 4 parts water	Either undiluted or mix with 2 parts water
Coverage	10-15 sqm/l	15-30 sqm/l	20-30 sqm/l	15-30 sqm/l	1.2 sqm/container
Colour	Yellow-brown	Yellow-brown	Slightly Yellow(will go brown if exposed to UV)	Blue-white	Milky
Solids	24%	8%	13%	48%	40%
Viscosity	200mPa.s	10mPa.s	4.5mPa.s	2400mPa.s	500mPa.s
Shelf Life	Use within 1 year of purchase	Use within 1 year of purchase	Use within 1 year of purchase	Use within 1 year of purchase	Use within 1 year of purchase

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3M Asia Pacific Pte Ltd
Innovation Centre
100 Woodlands Ave 7
Singapore 738205