3M™ Wrap Film Series 1380

Application on Substrates with Recesses

Instruction Bulletin

Product Description

3M™ Wrap Film 1380 is an extremely flexible cast film, specially designed for full wrapping of vehicles and application onto substrates with contours and deep channels.

3M™ Wrap Film 1380 uses 3M™ Controltac™ and 3M™ Comply™ technology.

3M™ Controltac™ minimizes the initial contact area of the adhesive and allows the applicator to reposition the film during application.
This allows easier installation of large format graphics in a wide temperature range.

3M™ Comply™ are air release channels allowing fast and easy, bubble-free application of films.

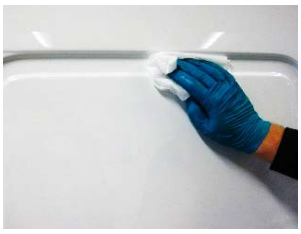
Important Notice!

3M™ Wrap Film is not intended for wet applications. Residual water will cause lifting in the recesses after application.

Cleaning

Clean the substrate thoroughly with 3M™ Surface Preparation System as grease and oil prevent the film from adhering properly. Use lint-free paper towels. After cleaning make sure that the substrate is completely dry.





Note: Do not use isopropyl alcohol as this can affect the lifting resistance of the film in the recessed area. Other solvents than 3M™ Surface Preparation System may affect the expected lifting resistance performance of the film, too.

Application

There are basically two different types of recesses:


U-Shape Recess


Single Recess

The following describes how to apply 3M™ Wrap Film 1380 onto both U-shape and single recesses.

Application to U-Shape Recesses

- Position the panel onto the substrate and fix the panel with magnets or masking tape on the top.
- Roll the panel up to the top.
- Remove the liner carefully from the film.
- Start the application on the flat part of the substrate and bridge the film over the recess (deep channel).

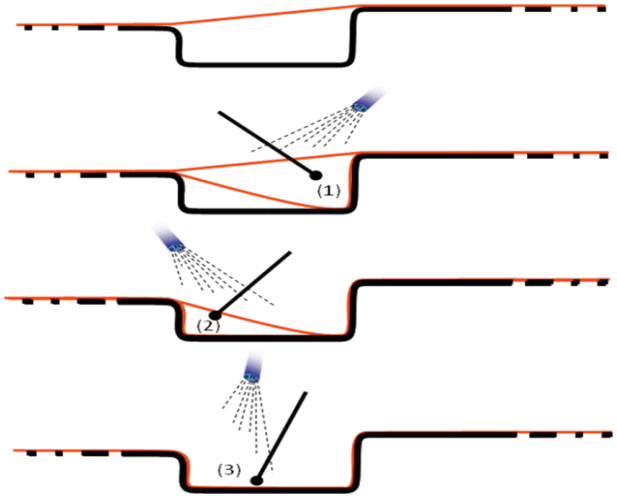
Films require high squeegee pressure to avoid air entrapment between film and substrate. Therefore the use of 3M™ PA-1 Gold Squeegee with thin and soft sleeve (e.g. microfibre) is recommended. Wetting of sleeves helps to avoid scratches on film surface during application.

Apply the film manually or with appropriate tools on the recessed areas. Beside manual application, specially developed hand-rollers can be used for the application of the film into recessed areas. The hand-rollers (3M™ Roller S and L) allow the film to be applied with uniform, continuous pressure and low friction.

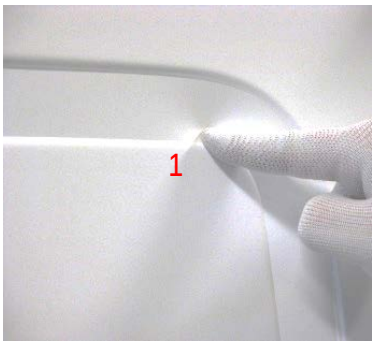
(3M™ Roller S and L)

When applying manually, wear textile gloves to lower the friction between finger and film. Heat the film around the recess area with a hair dryer or professional heat-gun to a temperature of a minimum of 50°C.

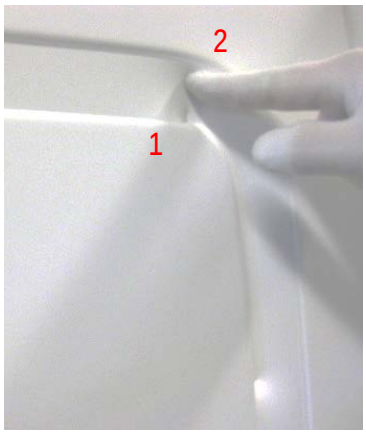
Start film application in the recess in the deepest point first (1). Then continue at the opposite point of the recess (2). Last apply the film in the middle part of the recess (3).

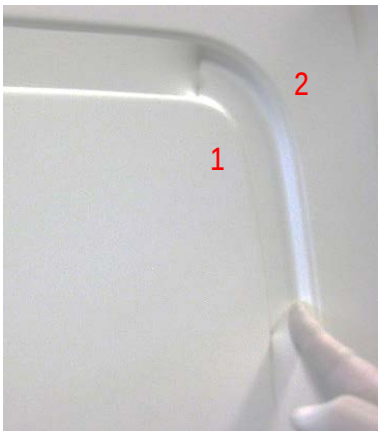


(1) Deepest point first:

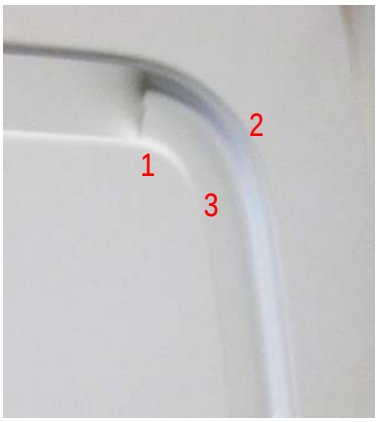


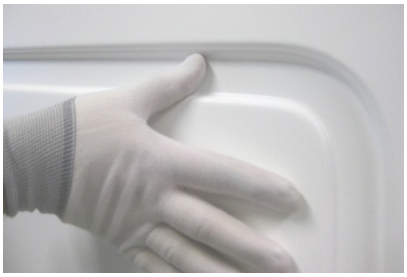
(2) Opposite side:





(3) Center:

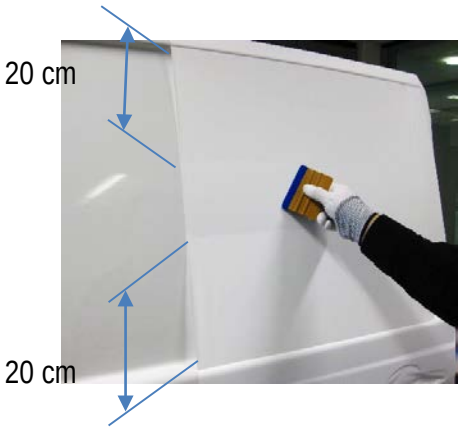




Applications to Single Recesses

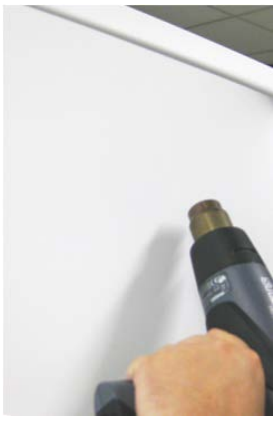
Position the film and apply it from the top and fix the edges of the contours.

In case of applying the graphic within the recess area, do not apply closer than 20 cm to the recess. To minimize the risk of lifting, it is esssential, to have sufficient amount of material left.
Films require high squeegee pressure to avoid air entrapment between film and substrate. Therefore the use of 3M™ PA-1 Gold Squeegee with thin and soft sleeve (e.g. microfibre) is recommended. Wetting of sleeves helps to avoid scratches on film surface during application.



Heat the film around the recess area with a hair dryer or professional heat-gun to a temperature of a minimum of 50°C.

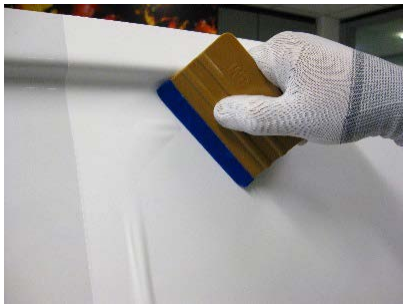
Applying heat to areas of film 20 cm beyond the recess area will reduce the tension of the film when being applied in the recess area.



Apply the film into the recess either with your thumb or with the hand roller (3M™ Roller L or S).

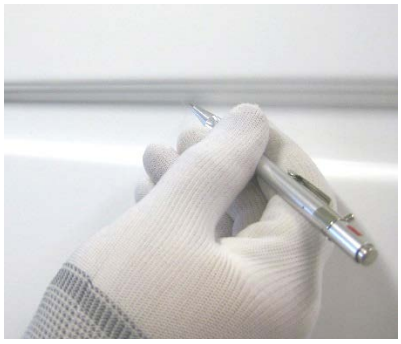
After the film is completely applied into the recess, apply the film on the remaining area within the recess.

Due to the 3M™ Comply™ technology, trapped air can easily be removed without causing air bubbles.

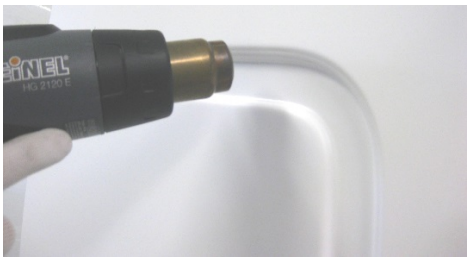


Post-Heating of Film Applied to Single Recesses and U-shape Recesses

For application on recesses, post-heating is required. Ensure that no air bubbles are left trapped between the substrate and the film by re-heating the film in the recessed areas and deep channels with a hot-air gun. By doing this, overlooked air bubbles can be detected. Air bubbles between the film and the substrate must be removed with the air release tool.



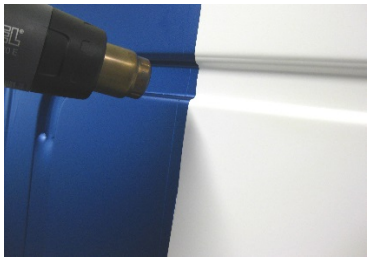
After checking air bubbles, the film should be heated to a temperature of at least 85°C to 100°C. Re-roll immediately the film with the small hand-roller in the recessed areas and deep channels. This softens the adhesive, closes remaining air channels and ensures good final adhesion.

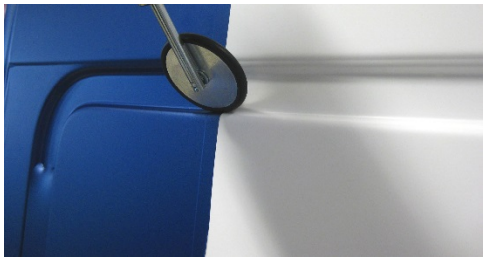


The hand-rollers (3M™ Roller S and L) allow the film to be applied with uniform, continuous pressure and low friction.

Post-Heating of Overlaps

Important: In order to avoid lifting at the overlaps of the panels, post-heating of the overlaps with the hot-air gun of at least 120 °C is necessary to avoid lifting failures.



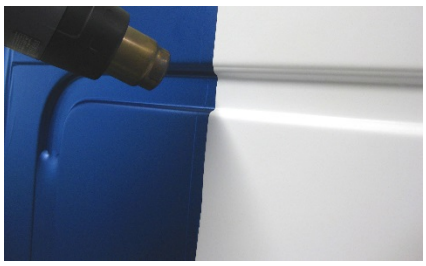


CAUTION: Re-heating of the film and repressing the film into the recesses and deep channels is a quality control to assure a proper application without air bubbles.

Omitting this can lead to lifting failures!

Removal

Applied graphics can be removed with heat or chemicals.
Heat the film up with a hot-air gun at a temperature of at least 50 °C to 60 °C. Lift a corner from the film and pull the film from the substrate at a low pull-off angle.



For fast heating of larger film areas the use of Infrared heater (2000 W, e.g. TERM 2000 CVH from company Burda Worldwide Technologies GmbH) is recommended.

Remarks

This bulletin provides technical information only.

Important Notice

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.

Outdoor exposure of the film might lead to slight color fading, gradual change of gloss and wear over time, which is not covered by a 3M warranty.

Additional Information

Visit the web site http://www.3Mgraphics.com for getting:

- more details about 3M™ MCS™ Warranty
- additional instruction bulletins
- a complete product overview about materials 3M is offering.

3M

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Responsible for this technical product bulletin

3M Deutschland GmbH | Safety & Graphics Laboratory
Carl-Schurz-Str. 1 | 41453 Neuss, Germany

3M™ Wrap Film
Series 1380

Product Bulletin

Product Description

3M™ Wrap Film 1380 is a long-term, cast film designed for solid color vehicle detailing, decoration and full wraps without the need of additional graphic protection.
Wrap Film Series 1380 offer excellent conformability for applications on recesses and deep channels.

These vinyl films are sold in 1.52 m wide rolls, allowing almost any section of a vehicle to be wrapped without seams.

3M™ Wrap Film 1380 uses 3M™ Controltac™ and 3M™ Comply™ technology.

3M™ Controltac™ minimizes the initial contact area of the adhesive and allows the applicator to reposition the film during application.
This allows easier installation of large format graphics in a wide temperature range.

3M™ Comply™ are air release channels allowing fast and easy, bubble-free application of films.

Product Line	Car wrapping	1380-GX	X = color code, glossy, permanent adhesive with Comply™.
		1380-SX	X = color code, satin, permanent adhesive with Comply™.
		1380-MX	X = color code, matte, permanent adhesive with Comply™.

Product Characteristics

These are indicative values for unprocessed products.
Contact your 3M representative for a custom specification.

Physical & Application

Material	cast vinyl	
Surface finish	glossy, satin and matte	
Thickness (film)	90 µm (0.09 mm)	
Adhesive type	solvent acrylic, pressure-sensitive, repositionable	
Adhesive appearance	clear (on white film layer)	
Liner	double-sided Polyethylene coated paper	
Adhesion	approx. 18 N/25 mm	FTM 1: 180° peel, substrate: glass; cond: 24 h 23°C/50%RH
Additional reference	Automotive paint: approx. 11 N/25 mm - approx. 22 N/25 mm	
Application method	dry only!	
Applied shrinkage	< 0.4 mm	FTM 14
Application temperature minimum (air and substrate)	+16°C	for flat surfaces
	+16°C	for curved to corrugated surfaces with and without rivets
	+16°C	for surfaces with deep channels
Service temperature (after application)	-60°C to +107°C	
Surface type	flat to curved, incl. rivets, corrugations and deep channels	
Substrate type	aluminum, glass, PMMA, PC*, ABS, paint	

*Might require drying with heat before use

	Graphic removal	Removable with heat and/or chemicals from supported substrates. No liability is given for ease or speed of removal of any graphic. Pay attention to adequate air and substrate temperature.

The values above are the results of illustrative lab test measurements and shall not be considered as a commitment from 3M.

Storage

	Shelf life	Use within two years from the date of manufacture on the sealed original box. Use within one year after opening the box.
	Storage conditions	+4°C to +40°C, out of sunlight, original container in clean and dry area.

The shelf life as defined above remains an indicative and maximum data, subject to many external and non-controllable factors. It may never be interpreted as warranty.

Flammability Flammability standards are different from country to country. Ask your local 3M contact for details, please.

Durability

The durabilities mentioned in the table below are the results of illustrative lab tests. The values show the best performance expected from these products, provided that the film will be processed and applied professionally according to 3M's recommendations. The durability statements do not constitute warranties of quality, life and characteristics.
The durability of products is also influenced by:

- the type of substrate and thorough preparation of the surface (with 3M™ Surface Preparation System)
- application procedures
- environmental factors
- the method and the frequency of cleaning

Climatic zones

Graphic durability is largely determined by the climate and the angle of exposure. Find below a table showing the durability of a product according to the angle of exposure and the geographical location of the application.

Zone 1	Northern Europe, Italy (north of Rome), Russia
Zone 2	Mediterranean area without North Africa, South Africa
Zone 3	Gulf area, Africa

Exposure types

Vertical:		The face of the graphic is ±10° from vertical.
Non-vertical:		The face of the graphic is greater than 10° from vertical and greater than 5° from horizontal.
Horizontal:		The face of the graphic is ±5° from horizontal.

Interior: Interior means an application inside a building without direct exposure to sunlight.

Vertical outdoor exposure	Zone 1	Zone 2	Zone 3
white/black	6 years	4 years	3 years
colors	5 years	3 years	2.5 years
metallics	5 years	3 years	2.5 years
Non-vertical outdoor exposure	**Zone 1**	**Zone 2**	**Zone 3**
white/black	4 years	2.5 years	2 years
colors	3 years	1.5 years	12 months
metallics	3 years	1.5 years	12 months
Horizontal outdoor exposure	**Zone 1**	**Zone 2**	**Zone 3**
white/black	3 years	2 years	12 months
colors	2 years	12 months	6 months
metallics	2 years	12 months	6 months
Interior application	**Zone 1**	**Zone 2**	**Zone 3**
interior	10 years	10 years	10 years

3M™ MCS™ Warranty / 3M™ Performance Guarantee

In addition, 3M provides a warranty on a finished applied graphic within the framework of 3M™ MCS™ warranty programs.

For detailed graphic construction and application options along with specific Warranty periods, please see the Warranty matrices and Warranty information on 3M Graphic Solutions/Warranties.

Visit www.3mgraphics.com for getting more details about 3M's comprehensive graphic solutions.

Limitations of End Uses

3M specifically does not recommend or warrant the following uses, but please contact us to discuss your needs to recommend other products.

Graphics applied to
- low surface energy substrates or substrates with low surface energy coating.
- stainless steel.
- surfaces not clean and more than moderate textured.
- surfaces with poor paint to substrate adhesion.
- watercraft when the graphic is applied below the static water line.
- watercraft graphics that are not edge sealed.
- non-OEM painted substrates on most vehicles.
- vehicles which will be subject to stone chip damage.

Graphic removal from
- signs or existing graphics that must remain intact.
- vehicles which do not have the original OEM paint applied.

Graphics subjected to
- regular exposure to gasoline vapors or spills at gas pumps, automobile fuel-tank ports.
- cut and weed applications where the application tape must adhere to the exposed liner.

Important Notice
- 3M Commercial Solutions products are not tested against automotive manufacturer specifications!

Graphics Manufacturing

Shipping finished graphics

Flat, or rolled film side out on 130 mm (5 inch) or larger core. These methods help to prevent the liner from wrinkling or application tape, if used, from popping off.

Application

See product bulletin ATR ‘application tape recommendations’ for information about selection and use of suitable application tapes for this product, please.

> Product Bulletin Application Tape Recommendations <

Refer to Instruction Bulletin 5.5 ‘General Procedures for Interior and Exterior Dry Application’, for general application information.

> Instruction Bulletin 5.5 'General Procedures for Interior and Exterior Dry Application' <

Important Notice

Post-heating of edges is required at temperatures of at least 85°C.
Post-heating of recesses and deep channels is required at temperatures of 85°C to 100°C.
Air bubbles between film and substrate must be removed to ensure lifting resistance.
If overlaps are necessary, place cut edge to non-visible side.
Post-heating of overlaps in recesses and deep channels is required at least at 120°C.

Films require high squeegee pressure to avoid air entrapment between film and substrate. Therefore the use of 3M™ PA-1 Gold Squeegee with thin and soft sleeve (e.g. microfiber) is recommended.
Wetting of sleeves helps to avoid scratches on film surface during application.

Excessive heat and stretch might result in change of gloss and colors.

Color appearance of light colored films (e.g., white) might slightly change when applied on differently colored car paints.

Color Appearance

To avoid color variations all pieces of applied film of one colored area should be processed out of the same roll of material. If more than one roll is needed for the application, material should be taken from the same lot. Check material on color consistency before application. Color deviations of different lots or from different manufacturing sites cannot be excluded.

It is recommended to apply 1380 metallic films in same direction on visually adjacent car parts as e.g. doors and fenders of car body sides.

Removal of film is recommended at film surface temperatures between 50°C and 60°C. For fast heating of larger film areas the use of infrared heater (2000 W, e.g., TERM 2000 CVH from company Burda Worldwide Technologies GmbH) is recommended.

Refer to Instruction Bulletin 1380 ‘3M™ Wrap Film Series 1380 Application on Substrates with Recesses', for detailed application information.

> Instruction Bulletin 1380 ‘Application on Substrates with Recesses' <

Maintenance and Cleaning

Use a cleaner designed for high-quality painted surfaces. The cleaner must be wet, non-abrasive, without strong solvents, and have a pH value between 3 and 11 (neither strongly acidic nor strongly alkaline).

Refer to Instruction Bulletin 6.5 ‘storage, handling, maintenance and removal of films and sheetings’, for general maintenance and cleaning information.

> Instruction Bulletin 6.5 'Storage, Handling, Maintenance and Removal of Films and Sheetings' <

Do not apply waxes, polishes, paint or clear coat over these films. If there is wax and wax residue on the film, remove with an all-purpose cleaner.

Important Safety Remark

Application to glass

The application of colored or printed film onto glass can lead to glass breakage through thermal expansion of the glass. The local conditions must be examined for the danger of glass break by uneven heat absorption through sun exposure. Type of glass (insulation glass, float glass, LSG - laminated safety glass, toughened safety glass, semi-tempered glass, etc.), glass dimension, joint condition, flexibility of the sealant, quality of the edge finishing, geographical orientation and partial shadow during sun exposure are the determining factors. Light color designs and application on the outside of the window are to be preferred. A free non-applied framework of 4 mm around the entire window front can help to dissipate the absorbed warmth. According to common knowledge a thermal crack can occur at temperature differences of approx. 130°C (toughened safety glass), approx. 40°C (float glass) or approx. 110°C (semi-tempered glass). Coldest place is usually under the framework in the embedded joined window part, the warmest place is typically on the darkest place in the format. Because of the many above mentioned factors, glass breakage cannot be fully predicted, therefore 3M does not accept liability for glass breakage when using this film for window graphics.

Remarks

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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.
Outdoor exposure of the film might lead to slight color fading, gradual change of gloss and wear over time, which is not covered by a 3M warranty.

Additional Information

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