

Product Bulletin & Care Instructions

3M™ Wrap Film Series 1080

Product Description

3M Wrap Film Series 1080 are long-term, removable, dual cast films designed for solid colour passenger vehicle detailing, decoration and full wraps and provide excellent opacity to hide high-contrast surfaces

This film's pressure-activated 3M™ Controltac™ adhesive allows for the film to be repositioned on the substrate until the correct position is achieved. As soon as firm squeegee pressure is applied an initial bond is achieved.

Series 1080 also benefits from 3M™ Comply™ Adhesive non-visible air release channels to give fast, easy and bubble-free installations.

These vinyl films (minimum thickness of 90 microns) are sold in 1.54m width rolls, allowing almost any section of a vehicle to be wrapped without joins.

Recommended Types of Graphics and End Uses

- Standard vehicle graphics, detailing and decoration
- Commercial vehicle and fleet graphics, emblems or striping

Limitations of End Uses

This 3M film is not designed or recommended for the following uses. Please contact us to discuss other options.

Film applied to:

- low surface energy substrates or substrates with low surface energy coating
- stainless steel
- non-3M films
- Non-OEM painted substrates on most vehicles
- painted substrates with poor paint-to-substrate, or paint-to-paint bond
- substrate surfaces that are not clean and smooth (little or no variation in texture)
- cut and weed applications where the application tape must adhere to the exposed liner
- graphics subjected to regular petroleum vapours or spills
- other than flat or simple curved surfaces
- films/graphics

Graphic removal from signs or existing graphics that must remain intact

- vehicles which do not have the original OEM paint applied
- surfaces with poor paint to substrate adhesion

Important Notice

- 3M Commercial Graphics Division products are not tested against automotive manufacture specifications
- Non-vertical applications will have a significant decrease in durability
- For water craft/marine applications please consult your 3M representative

Characteristics

These are typical values for unprocessed product. Processing may change the values. Contact your 3M representative for a custom specification.

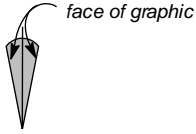
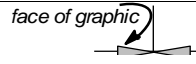
Physical Characteristics 3M™ Wrap Film Series 1080		
Characteristic	Value	
Film	Vinyl, cast	
Product Range	See: Colour Card	
Adhesive colour	Grey	
Thickness	Value for 1080-M12 given; other films may vary Without adhesive: 90 microns With adhesive: 110 microns	
Weight	150 g/sqm (approx)	
Adhesive	Solvent acrylic, pressure-activated, repositionable, air release channels	
Liner	Polyethylene-coated paper	
Adhesion, Typical/approx 24 hours after application	20 N/25 mm FTM 1: 180° peel, substrate: glass; cond: 24 h 23°C/50%RH	
Additional References	Automotive paint ABS Acrylic enamel Automotive clear coats (OEM)	11 N/25 mm - approx. 22 N/25 mm 19 N/25 mm 16 N/25 mm 13 N/25 mm – 22 N/25 mm
Tensile strength	22 N/25 mm at 23° C	
Chemical Resistance – film and adhesive	-Resists mild alkalis, mild acids, and salt -Excellent resistance to water (<i>does not include immersion</i>) -Resists occasional fuel spills	
Storage Conditions	+4°C to +38°C out of sunlight in original packaging, in clean and dry area. Ensure that the film is at the correct application temperature (+18°C - 22°C) before using. Ensure that the temperature is consistent along the length and width of the roll.	
Shelf Life	Total shelf life: 2 years from the date of manufacture on the original packaging. Install immediately after cutting and applying application tape (if used)	

Application Characteristics

Characteristic	Value
Suitable Substrates	Surface type: Flat, simple curves, moderate compound curves typical to private cars Substrate type: ABS resins, aluminium, chrome, paint (check adhesion to powder-coated or water-based paints) fibreglass with gel coat.
Application temperature	18°C to 22°C vinyl, air and substrate
Post Heating temperature	Min of 100 °C

In use temperature range	-60° to +107°C			
Application method	Dry only			
Applied shrinkage	< 0.4 mm (0.015 inches) FTM14			
Cleaning Important Notice	Isopropyl Alcohol (IPA) is not a recommended cleaning product for vehicle wrapping, because it evaporates too quickly. 3M Surface preparation system is the only 3M recommended cleaning product,			
Graphic Removal	Removable with heat from most substrates within the warranty period at 10°C minimum (air and substrate). Use 3M™ Surface Preparation System to remove any adhesive residue.			
Important Notice	<p>Post Heating: A minimum temperature of 100°C should be used for the post heating procedure. See Instruction Bulletin 5.4: Special Applications and Vehicles for information on why and how to post heat.</p> <p>Squeegees with soft sleeves are recommended in order to avoid scratches on film surface during application.</p> <p>Stretching of film at the edges should be avoided in order to avoid shrinkage and colour fading.</p> <p>Excessive heat and stretch of light colours might result in change of gloss and colours.</p> <p>Inlays and relief cuts must be used where film is to be applied into recesses. Ensure that the adhesive does not come into contact with adjacent surfaces to avoid unwanted adhesion.</p> <p>The colour of the substrate may affect the finished colour of the wrap; it is the user's responsibility to test and approve on each application.</p>			
Durability/Expected Performance Life	Graphic durability is largely determined by the climate and the angle of exposure. Find below a table showing the durability the films according to the angle of exposure and the in-use geographical location.			
	Interior: Interior means an application inside a building without direct exposure to elements.			
	Vertical outdoor exposure	Zone 1	Zone 2	Zone 3
	white/black	6 years	4 years	3 years
	colours	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
	colours	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
	colours	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

Definitions - Exposure Types

Vertical		The face of the graphic is +/- 10° from vertical.
Horizontal		The face of the graphic is +/- 5° from horizontal.

Graphic Manufacture

Shipping Finished Graphics	Flat, or rolled colour-side-out on a 15cm (6 inch) or larger core. This helps prevent the liner from wrinkling or application tape (if used), from popping off.
Important Information	<p>3M™ Wrap Film Series 1080 is designed for vehicle wrapping, rather than cut text or graphics. If cutting the film, always use clean, sharp, correctly aligned blades. It is the user’s responsibility to ensure the best outcome and should therefore test and approve before completing a large job.</p> <p>The texture of film series 1080 affects the adhesion of application tapes. If application tape is to be used, apply to the graphic immediately after cutting. The user should test and approve the use of application tape before committing to a job.</p> <p>3M™ Prespacing Tape SCPS-55 can be used for applying large cut graphics. The user should be aware, that, although SCPS-55 will adhere to the face of series 1080 films, it will not adhere to the exposed liner. The user should test on a job-by-job basis.</p>
Graphic Application	First, ensure that the substrate/vehicle is thoroughly washed and dried. Using a lint free cloth, wipe and dry with 3M™ Surface Preparation System to remove any surface contamination prior to application.
Cleaning/Important	Important Notice: Isopropyl Alcohol is not a recommended cleaning product for vehicle wrapping: because it evaporates too quickly, IPA (Isopropyl Alcohol) is not an appropriate cleaner. 3M™ Surface preparation system is the only 3M recommended cleaning product.
Important	Never use a wet application method for series 1080.
Important	Certain film colours, such as satin pearl white, metallic and the brushed metal patterns, have a directional characteristic in their appearance. For the best overall results, do not alternate between lengthwise and widthwise graphic panels. Additionally, for satin pearl white, do not rotate the film by 180 degrees; use the same orientation between panels. NB: film colours can vary slightly from lot to lot. For the most consistent looking wraps, use film from the same roll, or manufacturing lot number, for an entire vehicle.
Maintenance & Cleaning	<p>Maintenance: Care must be taken to avoid scratching the film. Avoid using harsh chemicals and brushes when cleaning your vehicle and avoid parking near shrubs and trees or any other items than could scratch the vehicle.</p> <p>It may be possible to reduce the appearance of fine scratches by heating with a heat gun/hair dryer to approx. 50°C often makes them disappear. Keep the heat gun moving across the film in a circular motion, do not aim the heat at a single spot for a long time.</p> <p>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). Rinse thoroughly after cleaning and dry with a clean, soft cloth or soft rubber squeegee to avoid water spots.</p>

Do not apply waxes or polishes to these films.
Refer to instruction bulletin 6.5 Storage, Handling, Maintenance and Removal of films and Sheetings, for general maintenance and cleaning information.

Graphic Removal

Removable with heat from most substrates within the warranty period at 10°C (50°F) minimum (air and substrate)

- Use a removal angle of <math><90^\circ</math> for optimal results (i.e. at low angle)

Angle of pull-off

- No liability is given for ease or speed of removal of any graphic.

3M Related Literature	Subject	Bulletin No.
	<i>Design of graphics</i>	<u>2.1</u>
	<i>Scoring and cutting</i>	<u>4.1</u>
	<i>Using 3M application tapes; premasking and prespacing for films</i>	<u>4.3</u>
	<i>Application, substrate selection, preparation and substrate-specific application techniques</i>	<u>5.1</u>
	<i>Application, special applications and vehicles</i>	<u>5.4</u>
	<i>Storage, handling, maintenance, removal</i>	<u>6.5</u>
<i>3M, Controltac, Comply, and MCS are trademarks and Scotchprint is a registered trademark of 3M Company.</i>		

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.

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.

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Questions and Answers for 3M™ Wrap Film Series 1080

1. Can I use an overlamine?

3M does not recommend or warrant using an overlamine or clear coat on this film. Customers may use only on a test-and-approve basis and where they are ready to assume all risk.
2. Can I print on film series 1080?

3M does not recommend or warrant printing on this film. If printed, an overlamine would provide protection for the ink, but could alter the appearance of the film. Customers who choose to print on the film must do so on a test-and-approve basis and assume all risk.
3. Are stripes in carbon fibre Films normal?

Yes. All films in this series have some texture that is integral in creating these unique looks. The carbon fibre films have the most texture which appears to have more depth in certain lighting conditions, giving a striped look.
4. Installation tools
 - A. Masking tape

Always use masking tape to mark alignment. Do not use a grease pencil, which will embed in the film's texture and attempting to remove it may damage the texture.
 - B. Covered squeegee

The unique finish on film series 1080 is sensitive to scratches and requires careful handling during installation. We recommend using a 3M™ Gold Squeegee PA1-G with a 3M Cotton Sleeve, or a felt edged plastic squeegee. Glossy films require extra care while handling/applying. Please ask your 3M designated for support if needed.
 - C. Heat gun

A heat gun, instead of a torch, must be used. A torch will alter the appearance of the finish.
5. Do I need to use an application tape?

This new film series features a dual cast construction that is 90 microns thick. It has just enough rigidity to allow easy installation without an overlamine or application tape. Due to the film's texture, application tape may not work well with cut and pre spaced graphics. Customers may choose to test and approve an application tape. 3M™ Pre spacing Tape SCPS-55 is a good one to try.
6. Can I apply film series 1080 to an older vehicle?

All wrap films, including film series 1080, should be applied to a "like new" vehicle finish for the best results. 3M's warranty only applies to vehicles that have an excellent bond of the paint and its finish to the vehicle substrate. Any rust, bubbling, scratches, dents or other damage will be visible through the film, and such surface imperfections may damage the film or cause the film to fail.
7. Does film series 1080 install the same way as film IJ180Cv3?

Installation is very similar to film 3M™ Controltac™ Graphic Film with Comply™ Adhesive Series IJ180Cv3 . Film series 1080 has the same features as Controltac Films with Comply Adhesive, i.e. it has a slideable and repositionable adhesive with virtually invisible air release channels. We also recommend that, after application of 1080, all film edges are heated to approximately 40°C and re-squeegee.
8. How will I know if the bodywork on my vehicle is an appropriate?

Refer to the vehicle supplier/dealership for confirmation of the vehicle's history. Top Tip: Use of a magnet over vehicle panels may reveal areas of filler, because the magnet will not adhere on areas of where filler has been used or where there is poor paintwork.
9. Can I wet apply film series 1080?

No. 3M does not recommend or warrant wet installations for any film with air release channels.
10. Will fingerprints show on the film?

The matt product may show finger prints, but they can be cleaned off after the installation is complete by saturating a clean, lint free towel with water (soap can be added with a ratio of 1:100) or straight rubbing water and then wiping and drying the film.

11. Can scratches be removed?
- It may be possible to reduce the appearance of fine scratches by heating with a heat gun/hair dryer to approx. 50°C often makes them disappear. Keep the heat gun moving in a circular motion, do not aim the heat at a single spot for a long time.
- Deeper scratches will not come out. Always use care to avoid scratching during installation, maintenance, use and storage of the applied film.
12. How do I maintain the graphics?
- A. Gentle cleaning is best
- Soften difficult contaminants such as bug splatter, bird droppings, tree sap and similar contaminants by soaking them for several minutes with very hot, soapy water. Rinse thoroughly and dry. If further cleaning is needed, test one of these products in an inconspicuous area to ensure no damage to the graphics: Meguiar's Gold Class™ Bug and Tar Remover or 3M™ Citrus Base Cleaner. Spot clean the contaminants. Do not use rough scrubbing or abrasive tools, which will scratch the film. Wash and rinse off all residue immediately.
 - For the best results, use hand washing and a wet, non-abrasive detergent such as 3M™ Car Wash Soap 39000 or Meguiar's NXT Generation® Car Wash or Deep Crystal® Car Wash and a soft, clean cloth or sponge.
 - Always rinse thoroughly with clean water. To reduce water spotting, immediately use a silicone squeegee to remove water and finish with a clean microfibre cloth.
- B. Power washing is an option
- You can take the vehicle through a brushless car wash.
 - Pressure washing may be used provided these recommendations are strictly followed:-
 - Ensure the water pressure is kept below 2000 psi (14 MPa).
 - Keep water temperature below 80°C (180°F).
 - Use a spray nozzle with a 40 degree wide angle spray pattern.
 - Keep the nozzle at least 300 mm (1 foot) away from and perpendicular (at 90 degrees) to the graphic.

NOTE: Holding the nozzle of a pressure washer at an angle to the graphic may lift the edges of the film.

 - For the best results, hand dry as described in Item 11.A.
- C. Polish or wax?
- For the carbon fibre and brushed metal films in 3M™ Wrap Film Series 1080, a polishing product such as 3M™ Tire Restorer or Meguiars® Natural Shine Protectant may be used. No polish is recommended for matt or textured films, and no wax-based product is recommended for any of film series 1080. In these instances, the product tends to fill in the inherent texture of the film's surface and can cause the film to develop a haze.
- D. Film series 1080 can be removed?
- Film series 1080 is warranted to be removable with heat for up to five years after installation, providing the film has not been printed and no overlamine has been applied. Some adhesive residue may be left on the vehicle, which can be easily cleaned off with a product such as 3M™ Surface Preparation Cleaner or 3M™ Citrus Base Cleaner. Refer to 3M Product Bulletin 1080 and 3M Instruction Bulletin 6.5 for more details.
- E. Removal should not cause damage?
- When used, applied, maintained and removed according to 3M's instructions, film series 1080 should not damage an OEM paint finish upon removal.
- F. Store the car indoors when possible?
- Vinyl graphics (just like paint) are degraded by prolonged exposure to sun and atmospheric pollutants, particularly on the horizontal surfaces such as bonnet, boot lid and roof. Whenever possible, store in a garage or at least in a shaded area during the day. At night protect the car from dew or rain, which may contain acidic pollutants (a common problem in many large metropolitan areas). When a garage is not available, consider using a cloth car cover at night. If your graphics start to discolour or turn brown (which is caused by acidic pollution), immediately remove the graphics from the vehicle to avoid staining the underlying paint.

Caring for Your Vehicle Graphics

Care for your vehicle graphics like you would any fine paint finish. Using high quality products designed specifically for car care and these cleaning and maintenance procedures will help keep your 3M vehicle graphics looking their best.

1. Wash regularly
 - Wash whenever the car appears dirty. Contaminants allowed to remain on the graphic may be more difficult to remove during cleaning.
 - Rinse off as much dirt and grit as possible with water.
 - See item 4, Difficult contaminants, for spot cleaning bird droppings, tar, etc.
 - Use a wet, non-abrasive detergent such as 3M™ Car Wash Soap 39000 or Meguiar's NXTGeneration® Car Wash or Deep Crystal® Car Wash and a soft, clean cloth or sponge.
 - Rinse thoroughly with clean water. To reduce water spotting, immediately use a silicone squeegee to remove water and finish with a clean microfibre cloth.

 2. Automated car washes

Brush-type car washes are not recommended as they can abrade the film and cause edges to lift or chip, as well as dulling the film's appearance. Brushless car washes are acceptable.

 3. Pressure washing

Although hand washing is the preferred cleaning method, pressure washing may be used, providing these conditions are strictly followed:

 - Ensure the water pressure is kept below 2000 psi (14 MPa).
 - Keep water temperature below 80°C (180°F).
 - Use a spray nozzle with a 40 degree wide angle spray pattern.
 - Keep the nozzle at least 300 mm (1 foot) away from and perpendicular (at 90 degrees) to the graphic.
- Important Note!** Holding the nozzle of a pressure washer at an angle to the graphic may lift the edges of the film.
4. Difficult contaminants

Soften difficult contaminants such as bug splatter, bird droppings, tree sap and similar contaminants by soaking them for several minutes with very hot, soapy water *as early as possible*. Rinse thoroughly and dry. If further cleaning is needed, test one of these products in an inconspicuous area to ensure no damage to the graphics: Meguiar's Gold Class™ Bug and Tar Remover or 3M™ Citrus Base Cleaner. Spot clean the contaminants. Do not use rough scrubbing or abrasive tools, which will scratch the film. Wash and rinse off all residue immediately.

 5. Fuel spills

Wipe off immediately to avoid degrading the vinyl and adhesive. Then wash, rinse and dry as in Item 1 as soon as possible.

 6. Polish and wax

Most standard graphic films and overlaminates can be polished or waxed with a high quality car wax. Before use, test and approve in an inconspicuous area. Do not use any abrasive polishes or cutting compounds. For the carbon fibre and brushed metal films in 3M™ Wrap Film Series 1080, a polishing product such as 3M™ Tire Restorer or Meguiar's® Natural Shine Protectant may be used. We do not recommend any polishing or wax product for the matt or textured films.

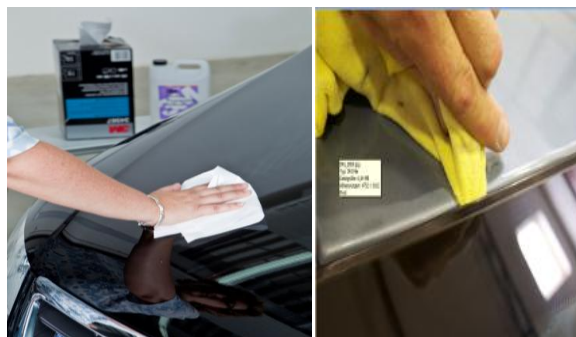
 7. Store indoors or under cover whenever possible

Vinyl graphics (just like paint) are degraded by prolonged exposure to sun and atmospheric pollutants, particularly on the horizontal surfaces such as bonnet, boot lid and roof. Whenever possible, store in a garage or at least in a shaded area during the day. At night protect the car from dew or rain, which may contain acidic pollutants (a common problem in many large metropolitan areas). When a garage is not available, consider using a cloth car cover at night. If your graphics start to discolour or turn brown (which is caused by acidic pollution), immediately remove the graphics from the vehicle to avoid staining the underlying paint.

Preparation of Substrates, Application, Maintenance and Removal

Recommended Types of Graphics and End Uses	<p>3M™ Wrap Film 1080 is a long-term, dual cast film designed for solid colour vehicle detailing, decoration and full wraps without the need of additional graphic protection.</p> <p>3M™ Wrap Film 1080 uses Controltac™ and Comply™ technology. Controltac™ minimizes the initial contact area of the adhesive and allows the applicator to reposition the graphic during application. This allows easier installation of large formats in a wide temperature range.</p> <p>Comply™ are air release channels allowing fast and easy, bubble free installation of graphics.</p>
General Information	Refer also to the Product Bulletin of this Wrap Film Series for more specific details.
Important Notice	3M™ Wrap Film is not intended for wet applications. Residual water reduces adhesion and can cause lifting after application.
Application of Metallic Films	On adjacent car parts application of metallic and satin wrap films should be done in the same pattern direction of the roll in order to maintain the same appearance.
Light Colours	Prestretching and overstretching (e.g. for side mirror application) of light coloured films (in particular, satin finishes) might lead to slight colour change.
Cleaning	<p>Cleaning the application surface properly is an important step for a good application result. First step is a car wash (without hot wax) and thorough drying of the vehicle. Then clean the surface thoroughly with 3M™ Surface Preparation System as grease and oil prevent the film from adhering properly. Use lint-free wipe and use the wipe-on/wipe-off technique. Any remaining car wax and polish must be completely removed. Edges and recesses must be properly cleaned. After cleaning make sure that the substrate, edges and seams are completely dry. Film adheres poorly even to a properly cleaned substrate if there is any remaining liquid on the substrate, edges or seams.</p>

Note: Do not use isopropyl alcohol as this can affect the adhesion of the film. Solvents other than 3M™ Surface Preparation System may affect the adhering properties of the film.



Application Tools Notice: Use thin, soft sleeves when applying Wrap Film 1080-G.

- 3M™ Squeegee PA-1 Gold
- Felt or sleeves
- Cutter (always use a sharp or new blade)
- Magnets
- Industrial heat gun
- Infrared pyrometer
- Gloves
- 3M™ MaskingTape
- Knifeless™ Tape
- Ruler/measuring tape
- Air release tool

Application Temperature

Optimum application temperature: +18°C to +22°C (substrate, film and room)

Application

General Procedure Remove the liner carefully from the film (not the film from the liner)

Application on Flat Surface Position the film onto the substrate:



Span the film wrinkle-free with moderate tension on the substrate. Easy sliding and repositioning of the film is given by 3M™ Controltac™ Adhesive. Squeegee lengthwise from the center outwards with overlapping strokes.

Gloss and satin films need higher squeegee pressure to avoid air entrapment between film and substrate.





It is very important NOT to squeegee the film directly after heating. Let the film cool down for a few seconds after heating, then firmly squeegee without stretching the film. Stretching at the edges might cause shrinkage of the film and colour fading.

Squeegee Pressure

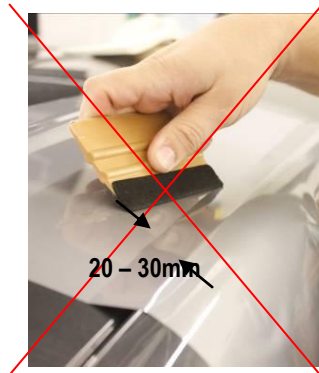
3M™ Wrap Film Series 1080 uses 3M™ Controltac™ technology which minimises the initial contact area of the adhesive and allows the applicator to reposition the graphic during application. This allows easier installation of large formats in a wide temperature range.

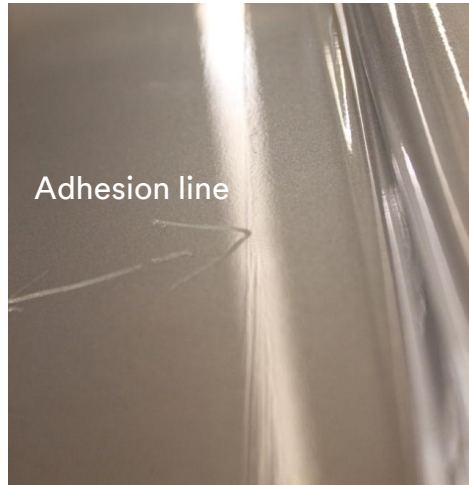
Application on Recesses with Inlays

The film is designed for application on flat and simply curved surfaces. On recesses and deep channels it is recommended to apply the film with inlays. Please refer to the Bulletin: Inlay method for Applications to Recessed Panels and Recessed Areas for details.

Adhesion Lines

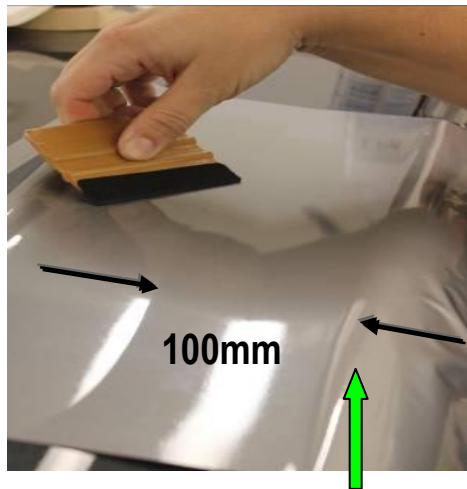
In certain situations, e.g. bridging of the film under tension, undesired effects as adhesion lines can occur. If the film is squeegeed under tension too close to the edge (up to 2 – 3 cm), snapped and re-squeegeed as shown in the pictures below, adhesion lines may become visible which cannot be removed.





Application Recommendation

In bridging situations, stop applying the film at least 10 cm before the edge in order to reduce tension of the film. Then lift the film slightly and continue tension-free squeegeeing to the edge. It is recommended to finish the application in one step without interruption.



Finishing of Edges

It is recommended to heat and re-squeegee the edges of the film in order to assure a good adherence.



1080 Carbon Fiber and Brushed may tear at higher temperatures if being slightly stretched. Therefore, heating temperatures for these films should not be higher than +40°C to +50°C.

Application at Window Trim Gaskets



Cut the film at an overlap of approx. 2 mm on the gasket and apply the film with the squeegee underneath the gasket. For cutting the use of Knifeless Tape is recommended.



Important Notice

Partial wrinkling of the film may occur at window trim gaskets because of possible mechanical movements of the gasket resulting in stress on the film.



Important Notice

The wrapped vehicle should remain in the shop floor for at least 24 hours to allow the adhesive to build up adhesion on the car paint. Car wash should not be done before 7 days after wrapping.

Automated Car Washing and Pressure Washing

Automated car washing may be used. Be aware that brush-type car washes may influence the visual appearance of the film. The use of wax is not recommended.

Pressure washing may be used under these conditions:

- Ensure water pressure is kept below 80 bar.
- Keep water temperature below 60 °C.
- Keep the spray nozzle at least 30 cm away and perpendicular (at 90° +/- 30°) to the graphic.

Difficult Contaminants

Difficult contaminations by bird droppings or tree sap should be removed immediately from the film surface with warm soapy water.

Removal

Applied graphics can be removed with heat or chemicals.

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