

## Technical Bulletin 8.0

### Application Instruction for Mactac Protect Pro

#### PRODUCT DESCRIPTION

Mactac Protect Pro (Mactac Product code CK1550001) is an engineered 203 µm top-coated self-adhesive aliphatic thermoplastic Polyurethane (TPU) film created to protect a vehicle's finish. The film is specially designed to reduce stone chipping, road debris and insect damage, mild scratches and color fading on painted metal surfaces. It is also ideal to protect specially exposed vehicle surfaces such as side mirrors, spoilers, rocker panels, etc. It offers optimal protection on vehicles when applied to fully cured painted surfaces.

The self-healing top-coat helps to maintain the look of the vehicle by enabling healing of mild or medium scratches when heated from sunlight or another heat source (eg. Heat-gun, hot water). The design of the film ensures stain resistance and good outdoor performance.

Mactac Protect Pro is a glossy top-coated film delivered with a PET protective sheet in order to maintain its high gloss finish.

#### CONSULT PRODUCT DATA SHEET

Before applying the product, consult the appropriate product data sheet for information to make sure the product is well understood. For further information about the application technique, please also see the following how-to video: "Mactac Protect Pro Application video".

#### TOOLS NEEDED

- **Squeegee:** a Mactac Squeegee Europe (Product Code: EB8860002) with a Mactac Squeegee Strip (Product Code: BR8340001) applied is advised for the positioning of the film. Another one similar to those used for window film or paint protection film application is advised for expelling the application fluid during the squeegeeing process.
- **Mactac Knife** (Product code: BT4280001)
- **Mactac Wrapping Cleaner** (Product code: BZ9490001)
- **MACTransfer 220** (Product code: EB7020001)
- **Application solutions:** One can use distilled water and pH neutral soap solutions to apply any of the paint protection films from Mactac Protect pro: Use distilled water containing a very limited quantity of pH neutral baby shampoo (e.g. 1.5 mL of baby shampoo in 1 L of distilled water). It is recommended to use a pipette or syringe in measuring the quantity of baby-soap added to the water.

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It is advised to:

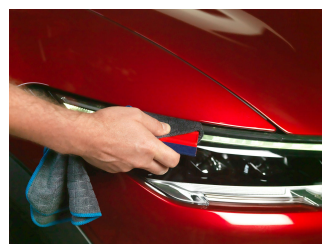
1. Test the effectiveness of the application liquid (water and pH neutral soap mix) on the paint protection films of the Mactac Protect Pro to ensure no marks, milkiness, modification of the adhesive is created by the use of such liquid.
  2. The use of distilled water is preferable. Depending on the tap water quality, higher initial tack might be perceived, making it more difficult to reposition the film.
  3. Avoid adding too much soap in the water since this will increase the risk of edge lifting due to the fact that soap is a greasy substance. Temperature and humidity have an effect on the adhesive tack and consequently on the amount of soap that needs to be added to get optimal application solution. It is recommended to start with a low amount of soap and test the solution.
- **Water and alcohol mixture:** To increase adhesion and tack of the film on edges and concave shape, it is recommended to use a mixture, consisting of 80% water and 20% Ethanol (800 mL water, 200 mL ethanol). Also in this case, temperature and humidity have an effect on the adhesive tack and consequently on the amount of ethanol that needs to be added to get the optimal water and alcohol mixture.

## STORAGE

Mactac Protect Pro should be stored at a Temperature of 22 °C (± 2 °C) with 50 %RH (± 5%), in the original package and in a vertical position or hung on racks. Mactac Protect Pro has a protective PET sheet so it has to be treated with care accordingly. After unwinding these products for use, ensure to store by applying high tension and tightly closing the roll, to avoid formation of tunneling. Improper storage can lead to loss of performance and the user assumes the responsibility of liability of performance loss by improper storage.

## SURFACE PREPARATION

- The vehicle surface should be conditioned to a temperature of between 13°C and 25°C. It is recommended to carry out the application of Mactac Protect in a clean indoor space to avoid any disturbances by weather conditions or different pollutants..
- The application should be carried out in a clean (dust-free) and well lit area.
- Mactac Protect Pro should never be applied on a freshly painted vehicle or before the paint is completely cured. Applying a protective film to a paint that is not fully cured may result in a poor visible aspect (bubbling due to paint outgassing) and damage of the paint upon removal of the product. Please consult your paint manufacturer's instructions regarding the paint curing process.
- To have a perfectly clear appearance, the surface where the film will be applied needs to be perfectly clean and free from tar, grease and any other contaminants. Use a degreasing agent like Mactac Wrapping Cleaner before the application. This step is critical for the success of the application.
- The film can be manually or digitally cut. When using manual cutting, it is advised to cut the film from the roll directly to the approximate size and shape of the selected area and during the application to fine-tune the shape. When using digital cutting systems, remove the protective sheet before plotting.



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## WET APPLICATION METHOD

- Wet application is necessary to obtain a perfectly clear professional appearance. Hands must be perfectly clean or wear cloth gloves in order to avoid contamination of the film with dirt or fingerprints.
- Car lights are today often made of polycarbonate onto which Mactac Protect Pro adhere strongly. For this reason, clean removability of Mactac Protect Pro on car lights is not guaranteed. To avoid having adhesive stains onto the car lights, cover them with removable tape (MACtransfer 220).
- Cut a piece of Mactac Protect Pro to the required dimension and lay the film on a clean surface.
- Generously spray the application solution on the vehicle surface. If you don't wear gloves, wet your fingers to avoid fingerprints and contamination.
- Lay down the film onto the hood or any other supportive available panel with the liner facing up. Then remove the liner and generously spray the application solution onto the adhesive side of the film. This will significantly ease positioning the film on the vehicle.
- Take the film and position the material onto the vehicle surface to be applied with the liner facing the paint surface. You can slide the film until the right position is found (make sure the surface is properly wet).
- Mactac Protect Pro has a protective sheet and it needs to be removed. Spray the film with your application solution to wet the protective sheet and remove the protective layer. Having wet the protective sheet will help to avoid electrostatic electricity. This step can be done before starting the application or after having positioned the film in the right area. Do not stretch Mactac Protect Pro with the protective sheet still on it.
- Once the film is correctly positioned and the protective sheet is removed, spray the top face of the film with an application solution to allow the squeegee to slide smoothly.
- At this stage, please use the squeegee to start adhering the film to the substrate in the right position. For curved areas, it is necessary to firmly pull and stretch the film in order to conform the film around the surfaces. Identifying some fixing points, where the adhesive can be activated by applying pressure, will help in the stretching and fitting process. It is recommended to stretch the material without applying any heat, making use of the intrinsic flexibility of the film. Please make sure not to over stretch the material to avoid whitening or top coat cracking.



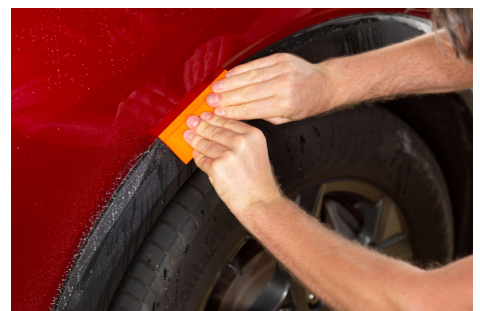
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- If higher tack/faster adhesion is needed when stretching the film, a mixture of water and ethanol can be used (1 part ethanol 4 parts water in volume).
- For the mirror: it is recommended to first tack the most curved area of the mirror and then stretch the film along the central line of the mirror and use that line for initial adhesion. This will help to keep the film in place while squeegeeing the rest of the mirror surface.
- Start to apply pressure to the film, working with half of the film at a time, using a squeegee specific for paint protection applications from the center towards the edges to remove 100% of air and liquid from under the film.
- Apply the pressure as constant as possible on all parts of the film to avoid film distortion which may cause appearance defects. When reaching places where substrate deformation gets stronger, stretch the film gently without using any heat and conform it to the surface. Do not over stretch the material.
- Continue to push out all the remaining water or air bubbles from under the film ensuring the squeegee slides smoothly from the middle area of the film to the outside edges. Removing the water will provide a clear appearance of the film on the vehicle.
- If the film needs to be repositioned during the application process, remove it partially and respray some liquid on both the car body and the adhesive side of the film. Please note that re-positioning of the film is only possible when low squeegee pressure has been applied and the adhesion is still low. If done at a later stage, small marks or lines might remain visible on the film surfaces. Insert the film edges into the body panel gaps, making sure all the water has been expelled from under the film.
- Use a new sharp knife blade to trim the edges of the film (1-2 mm before the edge) making sure you apply the right pressure on the blade in order not to damage the paint. Use your squeegee to firmly apply the film in the gap. To facilitate and speed up application of the film on edges, it is possible to use a mixture of water and ethanol. Remove the cut stripe pulling in the same direction as the cutting one. The use of external heat can facilitate adhesion to the edges, but do not overheat the film any further than 40-50 °C.
- Conventional shapes of vehicles are mostly suitable to be wrapped by Mactac Protect Pro, but in some deeper corrugations, an incision is advised in order to avoid any form of air/water entrapment in the deep recesses as well as relieve the tensions (relief cut). This incision does not jeopardize the functionality or durability of the product.



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- If the car is equipped with sensors, do not forget to cut the film around these. For the bonnet: either cut the Mactac Protect Pro on the edge/contour of the bonnet or leave ~ 5mm of extra film to fold the film back towards the inside of the car body. In this case, the inside edge of the bonnet should be carefully cleaned before applying Mactac Protect Pro in order to avoid edge lifting due to dust, grease etc. Also in this case, it is possible to use a water and ethanol mixture to speed up application of the film on the edges.



## MAINTENANCE AND REMOVAL OF THE FILM

### Maintenance:

Mactac Protect Pro has to be maintained and cleaned in the best possible manner in order to ensure that the product will perform as intended and designed. These indications represent general guidelines and therefore do not guarantee the complete removal of stains or dirt.

Avoid cleaning the film within the first week after application. After this initial period it is recommended to clean Mactac Protect Pro at least once a month, or more frequently depending on the end-use conditions or user preference. It is recommended to clean Mactac Protect Pro from stains as early as possible in order to maintain the best look of the film.

Applied Mactac Protect Pro films may be cleaned with commercially available detergents suitable for paint protection films. Manual cleaning is always preferred over automatic cleaning. Some wax and soaps contain colors and aggressive solvents that can damage or discolor the paint protection films. Please, use professional standard cleaning agents for maintenance of vehicles and always test them against Mactac Protection Pro prior use. It is recommended to test an inconspicuous area prior to using any cleaners, wax, and polish to ensure no color shift or change in finish is caused to the film. Always, avoid the use of solvents and/or abrasive cleaning agents that may damage the films. After having used any cleaning product, please ensure the removal of any residue of these cleaning products from the surfaces of the film in order to prevent any chemical damage.

- The recommended cleaning solution should have a pH of 3-11.
- Dilution ratios of the cleaning solutions, as recommended by the manufacturer, should be closely followed to reduce/minimize film degradation.
- Cleaning products must be grit free to avoid severe deep scratching and it is recommended to always use a soft chamois or microfiber cloth.
- Do not use brushes and sponges.
- During cleaning, water temperatures should not exceed 50°C.
- Final clean water rinse is necessary.
- Dry with a soft non-scratching absorbent cloth to avoid spots.

When using a high pressure cleaning equipment, the following conditions must be respected:

- Maximum pressure : 80 bars (1200 psi)
- Maximum water temperature : 50 °C
- Minimum nozzle distance : 75 cm (between graphics and dispenser nozzle)

The dispenser nozzle should preferably be aimed perpendicular to applied film to be cleaned, certainly not angled.

Note: Sharp angled power cleaner jets of water may damage the edges of applied film and cause delamination. High pressure steam cleaning should not be used as the extreme heat can interfere with the adhesion of the film to the substrate.

In case of questions on the content of this technical bulletin, please contact your local Mactac representative for further clarification.

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## Removal:

- Mactac Protect Pro can be removed using heat.
- Here below the steps on how to proceed:
  - 1) Heat the film to a temperature of 40-60°C using a heat gun or steamer.
  - 2) Pull the material firmly keeping an angle of 60 to 90° between the substrate and the film. You might also peel off the permanent material in small pieces at a time.
  - 3) Any residue of adhesive can be removed by using Mactac Remover (Product Code BO7710001) and a lint-free towel or the hard part of a squeegee.

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