

Technical Bulletin 5.10

Application Instruction for Crystal Protect 150

PRODUCT DESCRIPTION

Crystal Protect 150 is an optically clear, 150 µm thick paint protection film, to be applied directly onto car bodies, for partial or full vehicle protection. The film is specially designed to reduce stone chipping, abrasions and insect damage on vehicle painted surfaces, for protecting side mirrors, spoilers, rocker panels, etc. It offers equal protection on new or used vehicles when applied to fully cured and properly preserved painted surfaces. Crystal Protect 150 also has self-healing properties. Self-healing is intended as the ability to recover under warm sunlight (>30°C) or another source of heat (e.g. heat-gun) from slight abrasion, not from major large scratches.

TOOLS NEEDED

- **Squeegee:** a soft Mactac plastic squeegee (Product Code: EB8860002) with Mactac Squeegee Stripe (Product Code: BR8340001) is advised for the positioning of the film and the application in the curved areas. Another one similar to those used for window film or paint protection film application is advised for expelling the application fluid on flat surfaces.
- **Knife** (Product code: BT4280001)
- **Mactac Cleaner** (Product code: BO7660001)
- **Application solution:** One can choose among the following possibilities to apply Crystal Protect 150: Use distilled water containing a very limited quantity of dishwasher rinse agent or baby shampoo (3 mL of baby shampoo in 2,5L of distilled water). It is recommended to use a pipette or syringe in measuring the quantity of baby-soap added to the water.
The other possibility is using an application gel dedicated to PPF application.

It is advised to:

1. Test the effectiveness of the application liquid/gel onto Crystal Protect to ensure no marks, milkiness, modification of the adhesive is created by the use of such liquid/gel.
 2. Avoid using pure water since it will result in a higher initial tack, 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.
- **Edge solution:** To increase adhesion and tack of the film on edges and concave shape, it is recommended to use an edge solution, mixing water and alcohol components, either Ethanol or Isopropyl Alcohol. The recommended proportion is 80% water, 20% alcohol (800 mL water, 200 mL alcohol component). Also in this case, temperature and humidity have an effect on the adhesive tack and consequently on the amount of alcohol that needs to be added to get optimal edge solution

Contact

Email: contact.mactac@mactac.eu

Website: www.mactacgraphics.eu

SURFACE PREPARATION

- The vehicle surface should be conditioned to a temperature of between 13°C and 25°C. Application in direct sunlight or windy conditions should be avoided.
- Surface of the application must be flat or slightly curved. Due to the strong memory effect of the PU film, it is not advised to apply Crystal Protect 150 on fully 3D surfaces (such as deep corrugations) without cutting the product, using more than one piece.
- It is advised to cut the material to the approximate size of the selected area prior to application, and work on the vehicle covering part by part.
- 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 Cleaner before the application of Crystal Protect 150.
- The application should be carried out in a clean (dust-free) and well lit area.
- Crystal Protect 150 should not 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.

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 Crystal Protect 150 adhere strongly. To avoid having adhesive stains onto the car lights, cover them with removable tape. For this reason, application of Crystal Protect 150 on car lights is also not recommended.
- Cut a piece of Crystal Protect 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. 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.
- Lay the film onto the surface to be protected. Once the film is correctly positioned, spray the top face of the film with an application solution to allow the squeegee to slide smoothly.
- Start applying the film, working with half of the film at a time, using a squeegee from the centre towards the edges to remove 100% of air and liquid from under the film.



Contact

Email: contact.mactac@mactac.eu

Website: www.mactacgraphics.eu

- Apply a 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 gently the film without using any heat and conform it to the surface.
- 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. This will produce a perfectly clear look.
- 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.
- 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 cut the film 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 the adhesion of the film on edges, it is recommended to use the edge solution (water and alcohol). Remove the cut stripe pulling in the same direction as the cutting one.
- If the car is equipped with parking sensors, do not forget to cut the film around these.
- For the bonnet: either cut the Crystal Protect on the edge/contour of the bonnet or leave ~ 5mm of film 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 the Crystal Protect 150 in order to avoid edge lifting due to dust, grease etc. Also in this case, it is possible to use a water and alcohol solution to speed up adhesion of the film on the edges.
- If necessary, a heat-gun can be used to dry the film, provided the T° does not exceed 80°C.



Contact

Email: contact.mactac@mactac.eu

Website: www.mactacgraphics.eu



MAINTENANCE AND REMOVAL OF THE FILM

Maintenance:

The graphics have 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 graphics within the first 48 hours after applications. After this initial period it is recommended to clean the graphics at least once a month, or more frequently depending on the end-use conditions or user preference.

Applied graphics may be cleaned with commercially available detergents, which are common to the professional maintenance of vehicles. Avoid the use of solvents and/or abrasive cleaning agents that may damage the graphics.

- 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.
- For the cleaning and maintenance of the films with matt finish, 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.
- Cleaning products must be grit free to avoid scratching and it is recommended to always use a soft chamois or microfiber cloth.
- Do not use brushes.
- 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 the graphics to be cleaned, certainly not angled.

Note: Sharp angled power cleaner jets of water may damage the edges of the graphics 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.

Contact

Email: contact.mactac@mactac.eu

Website: www.mactacgraphics.eu



Removal:

- Mactac Crystal Protect 150 can be removed using heat.
- Here below the steps on how to proceed:
- 1) Heat the vinyl to a temperature of 50-60°C using a heat gun.
- 2) Peel off the permanent material in small pieces at a time. Pull the material firmly keeping an angle of 60 to 90° between the substrate and the film.
- 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.

Disclaimer and warranty: Avery Dennison warrants that its Products meet its specifications. Avery Dennison gives no other express or implied guarantees or warranties with respect to the Products, including, but not limited to, any implied warranties of merchantability, fitness for any particular use and/or non infringement. All Avery Dennison products are sold with the understanding that the purchaser has independently determined the suitability of such products for its purposes. The period of warranty is one (1) year from the date of shipment unless expressly provided otherwise in the product data sheet. All Avery Dennison's products are sold subject to Avery Dennison's general terms and conditions of sale, see <http://terms.europe.averydennison.com>. Avery Dennison's aggregate liability to Purchaser, whether for negligence, breach of contract, misrepresentation or otherwise, shall in no circumstances exceed the price of the defective, non-conforming, damaged or undelivered Products which give rise to such liability as determined by net price invoices to Purchaser in respect of any occurrence or series of occurrences. In no circumstances shall Avery Dennison be liable to Purchaser for any indirect, incidental or consequential loss, damage or injury, including without limitation, loss of anticipated profits, goodwill, reputation, or losses or expenses resulting from third party claims.

Contact

Email: contact.mactac@mactac.eu

Website: www.mactacgraphics.eu