

PRODUCT BULLETIN

APPLICATION AND REMOVAL METHOD

Solar protection film

FILMS FOR AUTOMOBILES

REQUIRED EQUIPMENT

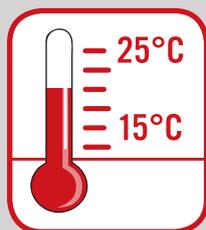
- › 19-l SHAGSPRAY sprayer
- › Three 1-l PULVERISAT sprayers
- › Protection film for the vehicle interior PORTECOV
- › GRATTOIR sponge
- › MARBLEU squeegee
- › MARNOIR squeegee for the finishings
- › PIADZGREY squeegee
- › GRATLAM100 metal scraper
- › LAME100 set
- › POIGNVITR with MAXBLUE squeegee
- › Small blade cutter CUTVITRE
- › Blade refill CUTLAME
- › PISTHERMIQ heat gun
- › Nylon brush (e.g. washing-up brush) with a long handle
- › Stainless-steel scouring pads
- › Circle template
- › White vinegar
- › Detergent (such as washing-up liquid)
- › Absorbent paper
- › Dust pad
- › Hand lamp

STORE YOUR FILMS UNDER APPROPRIATE CONDITIONS

Keep the films away from any major sources of heat (radiators and heaters, direct exposure to sunlight, etc.): the ideal temperature ranges from 15 °C to 25 °C (from 59 °F to 77 °F).

Store your films in their original packaging, in a dry environment. The rolls are wrapped in sealed polyethylene bags and are maintained in their cardboard packaging by plastic suspension flanges to prevent the windings from being crushed by their own weight.

- A roll that is stored correctly can be kept for 1 year.
- Never store the rolls upright.



FEATURES

HEXIS solar protection films for vehicles are premium multilayered and fully-thermoformable films. They have wide ranging features, making it possible to either reduce glare and visual fatigue for the people in the vehicle, prevent viewing of objects inside the vehicle, or prevent carjacking.

PREPARING YOUR APPLICATION SURFACE

HEXIS solar protection films can be applied to any kind of automobile windows as long as the target surface is clean, dry, smooth, non-porous and free from any traces of oil, grease, wax, silicone or other contaminants. To avoid unexpected outcomes, always assume that every substrate is dirty and needs to be cleaned (cf. chapter 2. CLEANING:, page 2).

Caution: It is the responsibility of the installer to make sure that the modifications to the vehicle's glazing aspect comply with the country's current legislation. The responsibility of HEXIS cannot be engaged in the event of violation noted concerning the glazings' transparency modification.

> The technical data sheets of the films used are available on our website www.hexis-graphics.com.

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1. RECOMMENDATIONS:

- › Clean the windows only with the products listed in chapter 2. CLEANING; page 2.
- › Cleaning must not be carried out with strong abrasive items (especially on the ceramic de-icing system) or with scraper squeegees.
- › Ensure the external cleanliness of the vehicle.
- › Solar film can only be applied to side and rear windows.
- › In compliance with the legislation in effect in your country and for safety reasons, some solar films cannot be applied to front side windows.
- › Cut it to the correct dimensions and thermoform the compound (solar film/adhesive/liner) on the outside of the windows. Position and apply the solar film to the inside of the windows.
- › All HEXIS solar films for automobiles are applied indoors.
- See the technical data sheets on www.hexis-graphics.com.
- › During thermoforming, the tunnels should always form vertically.

2. CLEANING:

- › Prepare the application liquid in the 19-l sprayer (SHAGSPRAY) with around 20 capfuls of detergent and water. (A)
- › Prepare three 1-l PULVERISAT sprayers:
 - one with white vinegar (handle with care);
 - one with the SHAGSPRAY (A) mixture (to make handling easier);
 - one with thermoform liquid: 70 % detergent and 30 % water. (B)

 *Clean the inner side of the vehicle windows.*

- › Protect the doors, fittings and rear shelf with the PORTECOV film against splashes of soapy water.

2.1. Cleaning of the side windows:

- › Wind the windows to be covered completely down.
- › Clean the seals with a nylon brush (such as a washing-up brush) with a long handle.

 *Particular care must be taken to clean the seals as some abrasive impurities (sand, earth, etc.) may have been deposited and could damage the glass during film application.*

- › Rinse.
- › Wind up the window halfway.
- › Clean the upper edge of the window with a GRATTOIR sponge.

 *Check the film's capacity to fit with the whole glass surface.*

- › Rinse the edge.
- › Wind up the window.
- › Wet, then scrape the inside of the window with a scraper blade (LAME100).
- › Rinse.

2.2. Inside cleaning of the rear window:

- › Wet the rear window with the SHAGSPRAY (Liquid (A)) or PULVERISAT (white vinegar).
- › Scrape the window with the stainless-steel scouring pad or GRATTOIR sponge.

- › Dry with absorbent paper.

2.3. Cleaning of the rear quarter windows:

- › Wet the window with PULVERISAT (Liquid (A)).
- › Scrape with the scraper (GRATLAM100 + LAME100) to remove all adhesive residues.

⚠ *Caution: For rear quarters with integrated antennas, please refer to chapter 2.2. Inside cleaning of the rear window.; page 2.*

- › Rinse.

3. FILM APPLICATION:

The solar films for automobiles supplied by HEXIS are applied to the inside of the vehicle (see technical data sheets). The preparation process is nevertheless carried out on the outside of the windows.

3.1. Sliding side windows:

The cleaning of the pane is carried out with window closed. Protect the doors and fittings with the PORTECOV film against splashes of soapy water.

3.1.1. Cuts on the side windows:

- › Wet the outer pane generously with the SHAGSPRAY (Liquid (A)).
- › Position the compound as follows:
 - The roll is vertical, and the film is unwound horizontally from the front towards the rear of the vehicle. (FIG. 01)
 - The film must cover the door from one side to the other.
 - The bottom end of the film must be against the upper part of the weather strip.

Reminder: The liner is facing you and the solar film side is facing the outside of the window.

- › Cut the compound with 1 cm overhang on the outside of the door.
- › Cut the entire film from bottom to top, on the glass, flush with the wing mirror base or glass run channel. (FIG. 02)
- › Shift the film by about 5 mm horizontally towards the front of the vehicle (approximately the width of the seal).
- › Cut the entire film from bottom to top, on the glass, flush with the rear glass run channel. (FIG. 02)

⚠ *To protect the glass from scratches, the cut must be made with 5 blades of the CUTVITRE pulled out with the first being a new one.*

- › Shift the film horizontally by 2 cm towards the front of the vehicle and vertically by 4 cm upwards.

⚠ *This shift is essential to prevent, at the next stage, the window from being scratched by any contamination trapped under the seals.*

- › Smooth the film with a MARBLEU squeegee along the seals, starting from the middle of the upper seal down to the bottom of the rear glass run channel of the door ①. (FIG. 03)
- › Finally, start from the middle of the upper seal to the bottom and smooth the film with the squeegee, along the wing mirror base or front glass run channel of the door ②. (FIG. 03)

This operation will favour the formation of vertical tunnels. This is absolutely normal.

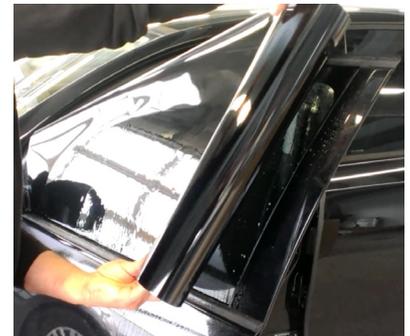


Figure 01



Figure 02



Figure 03



Figure 04

- › Thermoform the bottom part of the film with the heat gun (PISTHERMIQ) and smooth the tunnels with the MARBLEU squeegee by moving up and down. (FIG. 04) Continue until the surface is smooth.

⚠ Use the heat gun reasonably so as not to burn the film.



Figure 05

- › Remove the film and generously moisten the glass with the SHAGSPRAY (Liquid (A)).

Doors with two glass guidance systems of the same size:

- › Reposition the compound on the glass, leaving a space of 4 cm from the lower weather strip and 2 cm from the front glass run channel.

- › Repeat the smoothing (①, ②) and thermoforming operations on the other side of the film. (FIG. 05)

- › Remove the film and generously moisten the glass with the SHAGSPRAY (Liquid (A)).

3.1.2. Upper cut:

- › Reposition the film so that:
 - the film is placed laterally in an impeccable manner on the lateral weather strips.
 - the lower weather strip is covered by the 5 mm of film.

- › Cut the film on the glass flush with the lower weather strip.

⚠ To protect the glass from scratches, the cut must be made with 5 blades of the CUTVITRE pulled out with the first being a new one.



Figure 06

- › Apply the film with the MARBLEU squeegee to a wide band at the top and in the centre of the window. (FIG. 06)

- › Lift the lower part of the film.

- › Lower the window by about 5 cm.



Figure 07

- › Cut the top of the compound with a close cut along the open window with the CUTVITRE. (FIG. 07)

Advice: To obtain a neat cut, hold the cut off piece while cutting.



Figure 08

- › Round off all angles with the CUTVITRE using the glass or squeegee as a support. (FIG. 08)

At this stage, the film is exactly the same size as the glass to be covered. Proceed in the same way with the other sliding side windows.

3.1.3. Removing the liner:

- › Reposition the compound on the glass leaving a space of 5 cm from the top edge of the window. (FIG. 09)
- › Thoroughly dry and clean this area inside and outside the window.

This operation aims to limit the contamination of dust on the film during liner removal.

- › While generously wetting with the SHAGSPRAY (Liquid (A)), lift and fold the upper angles of the liner towards the centre.
- › Lift and then roughly roll up the newly shaped tip until the solar film appears at 3/4. (FIG. 10)

⚠ *The film's dust contamination at this stage will be visible on the final outcome.*

3.1.4. Application:

The application method described below is applicable for both the front and rear windows.

- › Generously wet the inside of the window with PULVERISAT (Liquid (A)).
- › Remove the solar film from the outer pane.
- › Position the adhesive-coated side of the film on the inner pane by first sliding the upper part of the film under the seal of the major side pillar.
- › Adjust the solar film with the top of the pane so that it is adjacent to the round part of the window (about 1 to 2 mm from the edge). (FIG. 11)

⚠ *Keep the film as smooth as possible to avoid leaving permanent marks.*

- › Apply the film to the top of the pane with the POIGNVITR + MAXBLUE squeegee starting from the centre towards the top of the glass while carrying out circular arcs ①. (FIG. 12)
- › Apply about 10 cm of the film ② under the left and right seals using the squeegee. (FIG. 12)
- › Heat the upper external angle with the heat gun (PISTHERMIQ).

⚠ *Use the heat gun reasonably so as not to burn the film.*

- › Close the window.
- › Remove the remaining liner while generously wetting the glass and the film with the PULVERISAT (Liquid (A)).
- › Slide with your fingers, under the weather strip and the seal, the angle of the film directed towards the bottom and the rear of the vehicle. (FIG. 13)



Figure 09

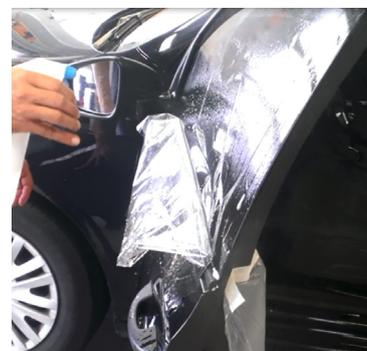


Figure 10



Figure 11



Figure 12



Figure 13



Figure 14

- › Using your hand, slide all film edges under the weather strip and the seals.

If necessary, slightly lift the weather strip with a PIADZGREY. (FIG. 14)



Figure 15

- › Firmly apply the film with the POIGNVITR + MAXBLUE squeegee moving from the top towards the bottom ①. (FIG. 15)

- › Finish by firmly applying the film under the weather strip and the seals ②. (FIG. 15)

Note: If small tunnels appear, thermoform them with the heat gun (PISTHERMIQ).

3.2. Rear quarter windows or fixed windows:

For easier application to rear quarter windows that open, dismantle, if possible, the closing mechanism of the window.

- › Wet the outside of the window generously with the SHAGSPRAY (liquid (A)).
- › Position the compound as follows:
 - The roll is vertical, and the film unrolls horizontally from the front towards the rear of the vehicle.
 - The film must cover the pane from one side to the other.

Reminder: The liner is facing you and the solar film side is facing the outside of the window.

3.2.1. Dimensioning:

3.2.1.a. Cutting:

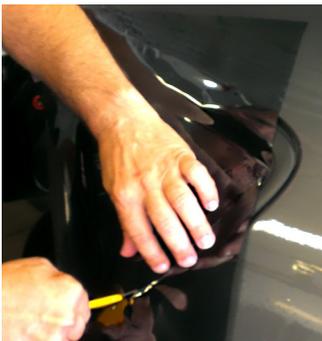


Figure 16

- › For rear quarter windows without silk-screened edges: Cut the film to the dimensions of the pane by pressing the CUTVITRE blade against the seals (without touching them) with 5 blades pulled out of the CUTVITRE. (FIG. 16)



Figure 17

- › For rear quarter windows with silk-screened edges: Make a close cut from the outside of the window with the CUTVITRE with one blade pushed out. (FIG. 17)

3.2.1.b. Applying to panes without silk-screened edges:

- › Apply the compound vertically by moving the MARBLEU squeegee up and down proceeding like for (FIG. 03).

This operation may result in the formation of vertical tunnels. This is absolutely normal.

- › Thermoform the bottom part of the film with the heat gun (PISTHERMIQ) and smooth the tunnels with the MARBLEU squeegee by moving up and down. (FIG. 18)
- › Carry out this step until a smooth surface is obtained.

⚠ Use the heat gun reasonably so as not to burn the film.

3.2.1.c. Applying to panes with silk-screened edges:

- › Cut the film to the dimensions of the holes directly on the window with one blade of the CUTVITRE pushed out.

For opening rear quarter windows that cannot be dismantled:

- › Mark the position of the closing mechanism on the compound using a circle template: (FIG. 19). Insert the outer fittings of the closing mechanism into the adapted hole of the circle template, then rotate it slightly.

- › Remove the compound from the glass and place it on a dust-free surface.
- › Carefully cut the marked holes previously made using the CUTVITRE and the circle template. (FIG. 20)

- › Generously wet the outside of the rear quarter window with the SHAGSPRAY and reposition the compound to make the fixing mechanism insert into the new extrusions.
- › Apply the compound vertically by moving the MARBLEU squeegee up and down along the window's edge. (FIG. 21)

This operation may result in the formation of vertical tunnels. This is absolutely normal.



Figure 18



Figure 19



Figure 20



Figure 21



Figure 22



Figure 23

For all silk-screened rear quarter windows:

- › Lighting the window from the inside, cut the compound 2 mm inside the black screen print around the window. (FIG. 22) or (FIG. 23) as the case may be

⚠ To protect the glass from scratches, the cut must be made with 5 blades of the CUTVITRE pulled out with the first being a new one.

- › Thermoform the lower part of the film with the heat gun (PISTHERMIQ) and smooth the tunnels with the MARBLEU squeegee by moving up and down.

- › Carry out this step until a smooth surface is obtained.

⚠ Use the heat gun reasonably so as not to burn the film.



Figure 24

- › Carry out the cuts of the compound, as short as possible, between the holes and the closest film edges. (FIG. 24)

The purpose of this operation is to position the film on the inside of the window around the closing mechanism of the rear quarter windows.

3.2.2. Application:



Figure 25

- › Remove the liner from the top towards the bottom while generously wetting the compound.
- › Remove the film from the pane, hold it with one hand by the non adhesive-coated side (FIG. 25) and position it on the inner side of the rear quarter window.

- › Apply the film using the squeegee while holding it in place with your hand.

⚠ HEXIS decline all liability when applying their films to deteriorated integrated antennas.

3.3. Rear window:

- › The inner and outer side of the rear window must be cleaned.
- › Protect the rear shelf against splashes of soapy water.

3.3.1. Dimensioning:

- › Spray the thermoforming solution (liquid (B)) three times maximum on the outside of the pane.
- › Wipe and rub the glass with absorbent paper so that it leaves only a very slight soapy film. (FIG. 26)

Advice: When you run your fingers over the rear window, there must not be any sensation of grip and very slight traces of fingers must be visible. (FIG. 26)

- › Unroll the compound horizontally on the rear window and cut it while leaving an overhang of about 1 cm.

Reminder: The liner is facing you and the solar film side is facing the outside of the window.

- › Centre the film on the rear window.
- › Make a rough round cut to make room for the rear wiper. (FIG. 27)

It always remains possible to increase the size of the rounding, if necessary, during the following working steps.

- › Press the film and make it adhere in the middle using the MARBLEU squeegee by smoothing the tunnels. (FIG. 28)

- › Cut the film to the dimensions of the rear window:
 - either by a close cut from the outside of the window with one blade of the CUTVITRE pushed out; (FIG. 29)
 - or by pressing the film with the MARBLEU squeegee along the seals and cutting it by following the edge of the squeegee (without touching the seal) with 5 blades of the CUTVITRE pushed out.

- › Thermoform the film with the heat gun (PISTHERMIQ). Firmly press the film on the pane with your thumb. (FIG. 30)

This operation may result in the formation of vertical tunnels. This is absolutely normal.

 Use the heat gun reasonably so as not to burn the film.



Figure 26



Figure 27



Figure 28



Figure 29



Figure 30



Figure 31

- › Vertically smooth the entire film.

Proceed by areas ①②③④:

Using the MARBLEU squeegee, vertically smooth the film from the centre outward by starting from the outer central band to the centre of the film while heating the compound with the heat gun (PISTHERMIQ). (FIG. 31)

⚠ Use the heat gun reasonably so as not to burn the film.

The compound of the rear window is thermoformed.

- › Lighting the window from the inside, cut the film with a margin of 2 mm from the black band of the window. (FIG. 32)

⚠ To protect the glass from scratches, the cut must be made with 5 blades of the CUTVITRE pulled out with the first being a new one.

⚠ HEXIS decline all liability when applying their films to deteriorated ceramic de-icing systems.

- › Thermoform and flatten the tunnels still visible after cutting.



Figure 32

3.3.2. Final cleaning prior to application:

- › Open the rear hatch.
- › Remove all dust from the glazed substrate and from the interior trim using a dust pad. (FIG. 33)



Figure 33

3.3.3. Liner removal:

From the outside of the rear window.

- › Move the compound down by about 5 cm (2 in.).

This will reduce the risk of contamination with dust during liner removal.

- › Generously wet the inside of the rear window with PULVERISAT (LIQUID (A)).
- › Position the rear hatch more or less horizontally.

This will allow to keep an even spread of the liquid on the inner rear window during liner removal.

- › Remove the entire liner in a diagonal movement, starting from one of the corners near the roof, while generously wetting the film with the SHAGSPRAY during this operation. (FIG. 34)

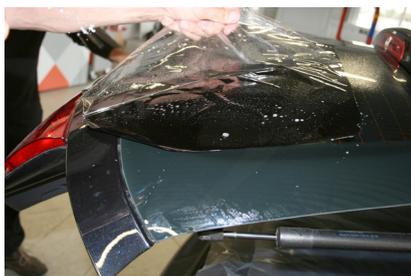


Figure 34

3.3.4. Application:

- › Open the hatch completely.
- › Position the film on the inside of the rear window by starting with the part of the film closest to the roof. (FIG. 35)



Figure 35

- › Then carefully position the part of the film farthest from the roof. (FIG. 36)

⚠ Do not crease the film during this operation.



Figure 36

- › Run the POIGNVITR + MAXBLUE squeegee while respecting the squeegeeing direction: make a cross in the middle with the squeegee ①, then squeegee the four quarters starting from the centre towards the edges. (FIG. 37)

- › Finish by firmly applying the edges right up to the seals using the POIGNVITR + MAXBLUE squeegee ③. (FIG. 37)

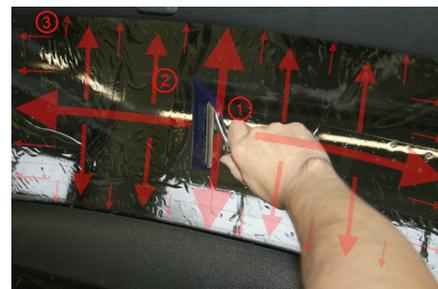


Figure 37

- › Thoroughly clean the outside of the rear window.
- › Check that there are no remaining tunnels, particularly along the edges of the window.
- › Otherwise, carefully heat them with the heat gun (PISTHERMIQ) and smooth the film using the MARBLEU squeegee. (FIG. 38)
- › If, after a few hours, tunnels appear on the edges, use the MARNOIR squeegee to expel the air or water outwards.



Figure 38

4. CLEANING AND MAINTENANCE OF THE FILM:

- › Leave the film to dry for 3 days without touching it and without opening the window.
- › Wait for 30 days after application before cleaning the "film-coated" window as if it were a normal one.
- › Do not use any type of scraper or any abrasive item.

5. REMOVAL PROCEDURE:

Solar protection films for application to automobiles have a permanent adhesive but, by following the instructions below, it will be easier to remove the film.

- › Start from a corner.
- › Gently lift the film with the CUTVITRE without damaging the substrate, and gradually remove the film; the film should form a 70- to 80-degree angle with the substrate. A more or less wide angle will cause the film to break more easily.
- › Always proceed gradually by small areas while carefully removing the film.
- › If residues from the adhesive persist, generously soap the surface concerned with a sheet of absorbent paper moistened with a mixture of water and detergent.

- Rear window:
 - › Use the stainless-steel scouring pad and carefully scrape without pressure, so as to eliminate the adhesive (too strong pressure could result in scratches).

Caution: Take the appropriate measures during the operation to maintain the integrity of the ceramic de-icing system!

- Other windows:
 - › If adhesive residues persist, use the SHAGSPRAY sprayer (liquid (A)), the scraping sponge (GRATTOIR) or scraper (GRATLAM100 + LAME100), then moisten the surface and scrape it in order to remove these residues.

For further technical information, please refer to the Technical Data Sheets available for free download from our website www.hexis-graphics.com on the "Professionals" pages.

Due to the great variety of substrates and the growing number of new applications, the installer must check the suitability of the medium for each application. All the published information does not however constitute a binding guarantee. The seller cannot be held liable for indirectly related damages and assumes no liability for claims that are higher than the replacement value of the purchased product. All specifications are subject to potential changes without prior notice. Our specifications are automatically updated on our website www.hexis-graphics.com.

