

# PRODUCT BULLETIN

## APPLICATION AND REMOVAL METHOD

### Microperforated Films

#### MICRO1 / MICRO1L / MICRO2 / MICRO6 / MICRO140UV / MICROM0

### REQUIRED ACCESSORIES

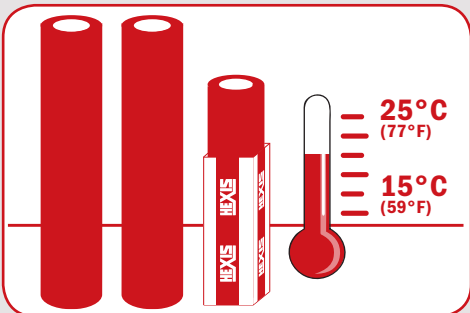
- › A squeegee (refer to our catalogue)
  - › Rigid for flat surfaces
  - › Soft for curved surfaces
- › A cutter
- › Masking tape
- › ND 45 degreaser
- › Final Cleaner (No.3) or HEXIS 'O
- › PG836 laminate (flat surfaces)
- › PC50MICP2 laminate (curved surfaces)
- › HEX901 transfer tape
- › A heat gun
- › A laser thermometer
- › A GRATVITRE window scraper
- › Sealing tape FPG836 (flat surfaces)
- › Sealing tape FPC50MICP2 (curved surfaces)
- › VR7077 edge sealing varnish
- › DECOLL'VIT cleaner
- › A sheet of felt

### ALWAYS STORE VINYL ROLLS AT THE RECOMMENDED CONDITIONS

Keep the film away from sources of heat (radiators, exposure to direct sunlight...): the ideal storage temperature is between 15 and 25°C (59 and 77°F). Store in an atmosphere with low humidity (50% relative humidity).

Keep your films in their original packing. Each opened roll must be stored vertically or suspended from the core in order to avoid pressure marks on the contact surface, in a dustfree environment.

Shelf life before application: 1 year stored under the above conditions.



### CHARACTERISTICS

	TYPE OF PVC		THICKNESS			PERFORATION			PRINTABLE WITH		
	Polymeric	Monomeric	140µm	160µm	165µm	30-32%	40%	50%	Solvent and Eco-solvent	UV	HP-Latex
MICRO1	✓			✓		✓			✓		
MICRO1L	✓			✓		✓					✓
MICRO2	✓				✓	✓			✓		
MICRO6		✓		✓		✓			✓		
MICRO140UV		✓	✓				✓			✓	
MICROM0	✓		✓					✓	✓		

### PREPARING THE APPLICATION SURFACE

The micro-perforated films can be applied to wide variety of substrates such as windows on vehicles or buildings, provided the target surface is clean, dry, smooth, non-porous and without any traces of oil, grease, wax, silicone or other contaminating agents.

Do not hesitate to refer to the date sheet of each film used available on our website [www.hexis-graphics.com](http://www.hexis-graphics.com).

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Application methods are based on the manufacturer's experience and are not restrictive. To ease application, comply with recommendations. HEXIS also offers training sessions to enable professionals to achieve optimum results.

## 1. RECOMMENDATIONS

- › Microperforated films are intended for glass surfaces and are not suitable for submerged applications.
- › Microperforated films are designed to adhere to any untreated mineral glass surface. Any treatment of the glass may alter the adhesion and lead to problems.
- › For a professional appearance juxtaposition is preferable to overlapping applications.
- › The microperforated film MICRO6 must only be applied onto flat surfaces.
- › Laminating microperforated film applied on vehicle rear windows is strongly recommended.
- › HEXIS recommends reinforcing the edges of the microperforated films with sealing tape. (Cf. chapter **5. EDGE SEALING FOR MICROPERFORATED FILMS** page 8)
- › Make sure window wipers are in good condition. The durability of the microperforated film will depend on it.

## 2. PRELIMINARY CLEANING OF THE SUBSTRATE

To avoid unpleasant surprises assume that all substrates are contaminated and must be cleaned.

Before applying the film on the surface to be wrapped we recommend you comply with the instructions that follow.

**⚠ Carry out a preliminary test on a small surface in order to check the compatibility of the products with the substrate.**

### 2.1 Scrape

Scrape the window surface intended for the microperforated film with the GRATVITRE to remove any surface contamination (traces of rubber, dust, dirt...)

### 2.2 Degrease

Clean the substrate with the ND45 degreaser insisting on the edges of the surface.

**⚠ As the liquid may damage seals, take all necessary care before cleaning.**

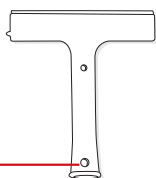
*The nature of the film to be applied also determines particular treatments (cf. technical data sheets available on [www.hexisgroup.com](http://www.hexisgroup.com)).*

### 2.3 Wash

For vehicle windows: Clean with FINAL CLEANER - Liquid No. 3.

For building windows: Clean with HEXIS'O.

**GRATVITRE**  
window scraper



**ND45**  
strong cleaner  
and degreaser



**FINAL CLEANER**  
cleaning agent and  
degreaser



**HEXIS'O**  
cleaning agent and  
degreaser



### 3. LAMINATING MICROPERFORATED FILMS

We recommend you laminate micro-perforated films not only to protect the film during its life cycle, but also to ease the application and the removal of the film. (see chart 1 below)

	MICRO1	MICRO1L	MICRO2	MICRO6	MICRO140UV	MICROM0
PG836	✓	✓	✓	✓		✓
PC50MICP2	✓	✓	✓		✓	✓

Chart 1: Recommended laminate

You may also use HEX901 application tape to avoid deformation of the microperforated film and scratches while working with the squeegee.

Make sure the film is completely dry before application: the printed film is touch dry after 15 minutes at the most, however it is essential to leave the print lying flat to dry for 24 hours before application, lamination or cutting.

**Tip:** To ensure the complete evaporation of the solvent, leave the cut sheets to dry in appropriate racks in a ventilated room.

#### 3.1 For flat surfaces

We recommend you laminate with the highly transparent cold laminate PG836 (except for the MICRO140UV).

 Use only cold laminates applied with the help of a laminator.

#### 3.2 For slightly curved surfaces

Only the cast cold laminate PC50MICP2 is recommended for curved surfaces such as vehicle rear windows.

### 4. APPLICATION OF THE FILMS

Microperforated films are perfectly suitable for applications on windows of vehicles (except microperforated MICRO6) and buildings.

A protective sealing for microperforated films (see chapter **5. EDGE SEALING FOR MICRO-PERFORATED FILMS** page 8) may be used along the edge of the films).


The dry application method must be used with all microperforated films.

WET APPLICATION IS STRICTLY FORBIDDEN  
MICROPERFORATED FILMS MUST ONLY BE APPLIED ON THE GLASS SURFACE, NEVER ON SEALS.

The minimum application temperature is 10°C (50°F) both for the environment and the glass substrate.

#### 4.1 For windows on buildings

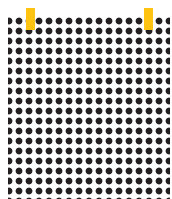
› When applying on windows on buildings, leave 5mm (0.2in) between the seal and the edge of the microperforated film if you are going to apply sealing tape or sealing varnish; if not leave 1mm (0.05in) from the edge.

 Leave a margin of 1mm (0.05in) between the seal and the microperforated film. An installation over a seal may lead to the film lifting off.



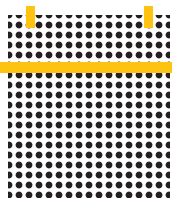
› Place the micro-perforated film with its liner still in place over the target surface.

› Position the film from the top with the help of strips of masking tape. (FIG 01)



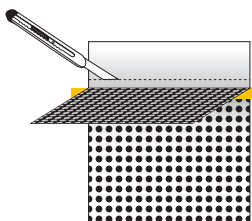
(FIG 01)

› Stick a strip of masking tape over the whole width of the graphic at approx. 10cm (4in) from the top. (FIG 02)



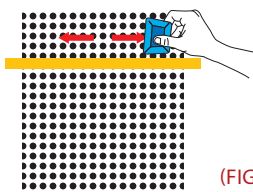
(FIG 02)

› Remove the liner from the top down to the tape acting as a hinge, cut the liner without touching the microperforated film (FIG 03)



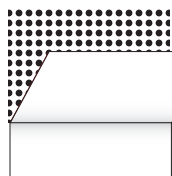
(FIG 03)

› Apply the film with a squeegee preferably covered with a felt sheet working from centre to the sides. (FIG 04)



(FIG 04)

› Once the graphic is correctly positioned and applied at the top, remove the masking tape and the liner. (FIG 05)



(FIG 05)

› Proceed then with the squeegeeing of the microperforated film. Use the squeegee and firmly apply from the centre to the sides. Continue until the full surface of the film is applied.

› Pay particular attention to corners and the contour.

Tip: To avoid damage to the graphic while working with the squeegee you may use a light application tape such as the HEX901.

- › Cut the microperforated at 1mm (0.05in) from the edge of the window or cut at 5mm (0.2in) and apply a sealing tape or sealing varnish (chapter 5) if necessary.

⚠ Leave a space of 1mm (0.05in) between the seal and the microperforated film. Installing the film over seals may lead to the film lifting off.

⚠ Be careful not to damage the seal by avoiding any contact with the blades.

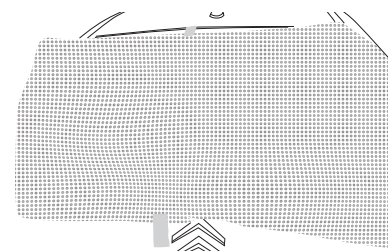
- › Finally seal the edges of the film if necessary (Cf. chapter **5. EDGE SEALING FOR MICROPERFORATED FILMS** page 8)

#### 4.2 For windows on vehicles:

Once the microperforated film is laminated with the PC50MICP2, you may start applying the film onto the vehicle windows.

##### 4.2.1 For rear windows

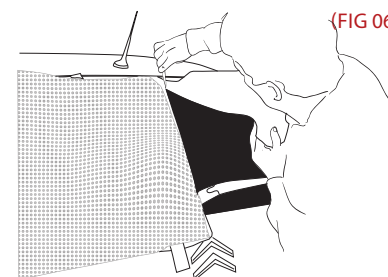
› If the microperforated film is used as part of a full vehicle wrap, pre-position and align the microperforated film with the marking on the vehicle body already applied with the help of small strips of tape. The tape should be positioned at the top centre and bottom centre of the microperforated film (FIG 06). Thus a perfect visual alignment will be achieved.



(FIG 06)

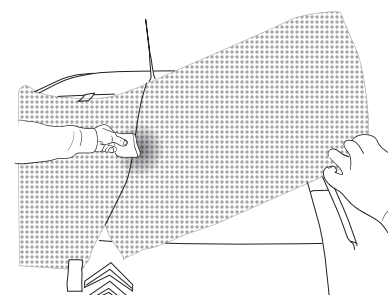
- › In order to correctly remove the liner proceed as follows:

- › Fold the right side of the microperforated film over the left, remove the liner from the PVC and cut as shown (FIG07).



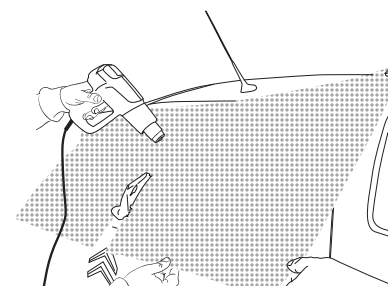
(FIG 07)

- › Tension the microperforated film without stretching it.
- › Apply the right centre with a squeegee covered with a felt sheet. (FIG08)
- › Fold the left side over the hinge on top of the right and remove the remaining liner.



(FIG 08)

- › Tension the microperforated film without stretching it.
- › Apply the left centre with the squeegee covered with a felt sheet.

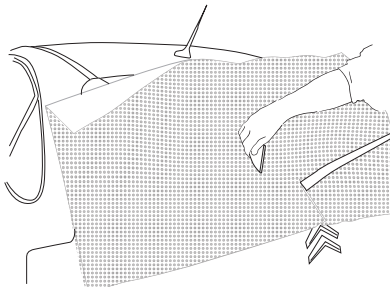


(FIG 09)

- › If necessary (depending on the curve of the window), very slightly heat the film to soften the microperforated film. (FIG09)

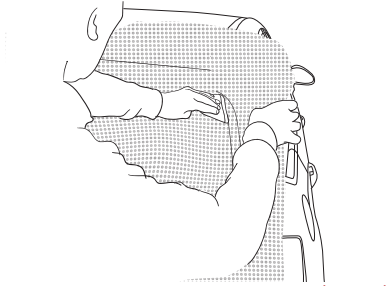
⚠ Heat with very low heat as the microperforated film with its perforated structure is rather delicate.

**Tip:** if possible work with the help of a second person.



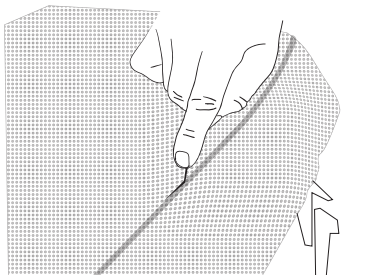
(FIG 10)

- › Tension the microperforated film without stretching it.
- › Then apply the entire film over the rear window, starting from the centre towards the sides, always using the squeegee covered with a felt sheet. (FIG10)



(FIG 11)

- › Pay particular attention to corners and the contour with the squeegee or use your fingers preferably wearing cotton gloves. (FIG11)



(FIG 12)

- › Cut the microperforated film at 1mm (0.05in) from the window seal (FIG12) or at 5mm (0.2in) if you wish to reinforce the edge (chapter **5. EDGE SEALING FOR MICROPERFORATED FILMS** page 8).

⚠ Leave a space of 1mm (0.05mm) between the seal and the microperforated film. Installing the film over seals may lead to the film lifting off. Be careful not to damage the seal by avoiding any contact with the blades.

Tip: To avoid seesaw cuts the blade should be held at an angle of 45° to the glass and should face the edge of the window.

- › Heat the contour of the graphic to about 80°C (176°F) to finally fix the adhesive directing the air flow of the towards the centre of the graphic.

⚠ Use the heat gun within reason so as to preserve the film and the seals.

Tip: Limit the use of the wipers as much as possible.

#### 4.2.2 For fixed side windows

- › If the microperforated film is used for full vehicle wrap, pre-position and align the film with the marking on the vehicle body already applied with the help of small pieces of tape. To achieve a perfect visual alignment stick masking tape on the top and bottom centre of the microperforated film.

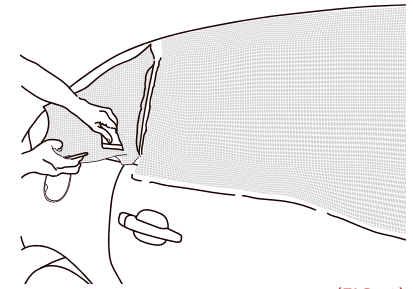
- › As above, fold the right side of the microperforated film over, separate the liner from the PVC, cut the liner, remove it and apply the right centre. Then fold over the left side, remove the remaining liner and apply the left centre.

› Tension and apply the microperforated film over the entire window right to the edge and in the corners. (FIG13)

› With the cutter blade cut at 1mm (0.05in) from the seals.

⚠ Leave some space between the seal and the microperforated film. Installing the film over seals may lead to the film lifting off. Be careful not to damage the seal by avoiding any contact with the blades.

Tip: To avoid seesaw cuts the blade should be inclined and face the edge of the window.



(FIG 13)

#### 4.2.3 For moving side windows

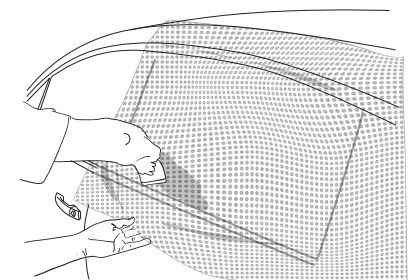
Note: microperforated films may be used on moving side windows. Nevertheless we recommend avoiding frequent opening-closing cycles.

› Start with the windows closed and properly cleaned on the outside.

› If the microperforated film is used as part of a full vehicle wrap, position and align the film with the marking on the vehicle body already applied, so as to achieve a perfect visual alignment, and stick masking tape on the top and bottom centre.

› As above, fold the right side of the microperforated film over, separate the liner from the PVC, cut the liner, remove it and apply the right centre. Then fold over the left side, remove the remaining liner and apply the left centre.

› Tension and apply the microperforated film over the entire window right to the edge and in the corners. (FIG14)

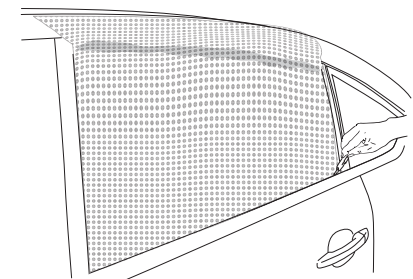


(FIG 14)

› With the cutter blade cut the bottom of the window and the 2 sides at 1mm (0.05in) from the seal. (FIG15)

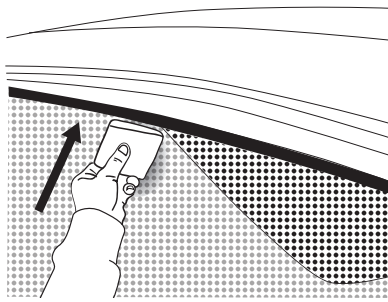
⚠ Leave some space between the seal and the microperforated film. Installing the film over seals may lead to the film lifting off. Be careful not to damage the seal by avoiding any contact with the blades.

Tip: To avoid seesaw cuts the blade should be held at an angle of 45° to the glass and should facing the edge of the window.



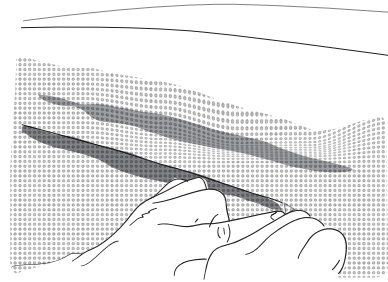
(FIG 15)

- > At the bottom of the window you may cut the film with a 2mm (0.1in) overlap to be able to push the film under the outside rubber lip if this is compatible with the type of vehicle.
- > Open the window a little (2-3cm/1in).



(FIG 16)

- > Apply the microperforated film with the squeegee right to the top of the window. (FIG16)



(FIG 17)

- > Cut the microperforated film right along the top edge of the window. (FIG17)
- > Wind the window up again.

## 5. SEALING FOR MICROPERFORATED FILMS

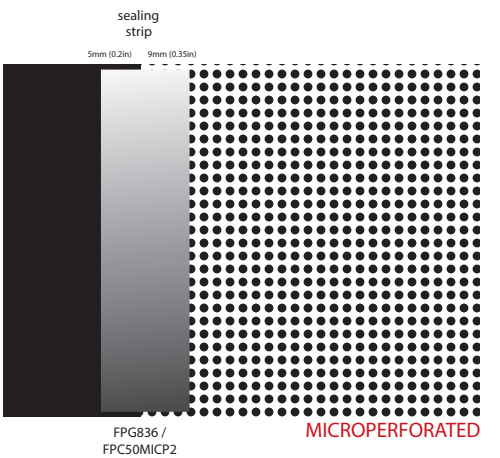
### 5.1 Sealing tape (FIG 18)

HEXIS recommends to increase the adhesion of the film, you can use stripes of FPG836 laminate for flat surfaces or FPC50MCP2 for slightly curved surfaces. We recommend this particularly in cases where the surface requires frequent cleaning or high pressure cleaning.

- > Apply the stripes on top overlapping 5mm (0.2in) on the glass and 9mm (0.35in) over the microperforated film. (FIG 18)

⚠ The protective stripes must only be applied onto the glass and never on any seals.

**HEXIS Tip:** For most applications it is preferable to use sealing stripes rather than the VR7077 sealing varnish



(FIG 18)

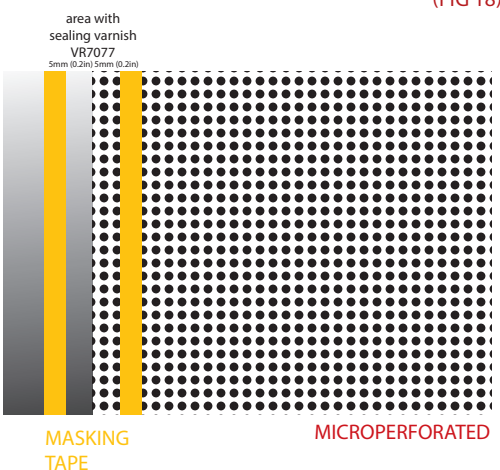
### 5.2 Sealing varnish

To increase the adhesion of the microperforated film along the edge, in particular in the corners, we recommend you use the sealing varnish VR7077 in particular on flat glass.

**HEXIS Tip:** For most applications it is preferable to use sealing stripes rather than the VR7077 sealing varnish

The use of the VR7077 varnish is left to the installer's discretion.

- > Ensure that the surfaces are dry.
- > Apply 2 strips of making tape : (FIG 19)
  - > 1 on the substrate at 5mm (0.2in) away from the edge of the microperforated film
  - > 1 on top of the microperforated film at 5mm (0.2in) from the edge



(FIG 19)



- › Apply the varnish with a brush in one coat; always wear gloves and protective goggles.
- › Remove the masking tape 15 minutes after application.
- › Drying time is variable depending on the thickness of the varnish coat and the ambient temperature: for a film applied without overload, the optimum drying time is 24 hours. By all means avoid any physical aggression (cleaning, abrasion...) during that time.

⚠ By all means avoid contact between varnish, seals and heated glass areas.

Before handling any liquids, refer to the technical data sheets available for download from our web site: [www.hexisgroup.com](http://www.hexisgroup.com)

## 6. CLEANING AND MAINTENANCE OF MICROPERFORATED FILMS

Exercise care when cleaning the microperforated film: medium pressure with a distance of at least 50cm (20in) and a water temperature of max. 35°C (95°F).

- › Do not clean the microperforated film within 24 hours following application as this might interfere with adhesion and result in the film peeling off.
- › HEXIS is not liable for films cleaned with undetermined cleaning agents that might be used in car washes.

## 7. REMOVAL OF MICROPERFORATED FILMS

To remove micro-perforated film, we recommend the following method:

- › Use a heat gun and heat the film starting in a corner to about 50°C (122°F); check the temperature with a laser thermometer.

⚠ Use the heat gun with reason to preserve the properties of the film.

- › Carefully lift the corner with a cutter blade without damaging the glass surface and gradually as the heating progresses lift off the film; lift the film at an angle of 70° to 80° to the substrate.

⚠ A higher or sharper angle will allow the film to tear.

- › Proceed by small areas heating and removing the film carefully to avoid leaving adhesive residues.

- › Continue heating and removing the film with care until the entire surface is removed paying particular attention to the temperature, the right angle of the film and the steady speed.

- › If any adhesive residues remain, use a cloth soaked in DECOLL'VIT and rub the concerned areas until the adhesive is removed.

**HEXIS Tip:** Always test the product before proceeding with the complete cleaning process of the substrate.

- › To make the removal of the sealing varnish VR7077 easier, it is possible to use acetone.

⚠ The liquid may damage seals; take all necessary precautions before commencing the cleaning process.

Before use of any liquids refer to technical data sheets available for download from our website [www.hexisgroup.com](http://www.hexisgroup.com)

For further information of a technical nature, refer to to Technical Data Sheets available for download from our website [www.hexisgroup.com](http://www.hexisgroup.com) under professionals/data sheets.'

*The great diversity of media and the ever growing number of possible applications commit the user to ensure that the product is suitable for each particular usage.*

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