

PRODUCT BULLETIN

APPLICATION AND REMOVAL METHOD

Protection film

BUILDING WINDOW FILMS

REQUIRED EQUIPMENT

- › PULVITRE (11-l sprayer)
- › pH-neutral detergent (such as washing-up liquid)
- › Window scraper:
 - › SCRUBFLOOR + SCRUBBLADE
 - › or GRATVITRE + LAME25
- › Window squeegee:
 - › POIGNEVITRE + LAMEVITRE
- › CUTVITRE cutter and CUTLAME refill blades
- › N2TIRO adhesive tape
- › Application squeegee:
 - › MARVITRE
 - › or YELSQUEEG
- › Ruler
- › DMTRUBFR 5-m measuring tape
- › Roll of absorbent paper
- › Sealing varnish (for ref.: BSORD60i2, BSOT35i2, BSOAT40i2)

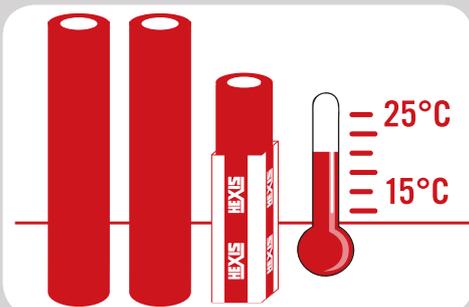
STORE YOUR FILMS UNDER APPROPRIATE CONDITIONS

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

Store them in an atmosphere with low humidity (with relative humidity between 30 % - 70 %).

Store your film in its 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.

- Store the rolls in horizontal position ONLY.



Application methods are based upon HEXIS' experience and are non-restrictive. Comply with instructions to ease application of HEXIS films. HEXIS also offer training sessions for professionals to achieve optimum results.

FEATURES

HEXIS features a very comprehensive range of products of building protection films. Their wide-ranging characteristics provide your windows with higher resistance and aesthetic appearance. They also considerably improve everyday living in your buildings and offices.

	Application		Tint	Compatibility upon glazing									
	Indoor	Outdoor		Single glazing			Double glazing						
				clear	tinted	tinted & reflecting	clear	tinted	tinted & reflecting	low emission (inert gas fill)	Clear laminated (laminated glass facing the outside)	Clear laminated (laminated glass facing the inside)	
BSOR20i2	✓		Reflecting silver	✓	✓	✓							
BSOR15x2		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BSOR35i2	✓			✓	✓	✓	✓		✓				
BSOR35x2		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BSOR50i2	✓			✓	✓	✓	✓	✓	✓			✓	
BSOR50x2		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BSOB20i2	✓		Bronze	✓		✓			✓				
BSOB20x2		✓		✓		✓		✓					
BSON20x2		✓	Grey, low reflecting	✓	✓	✓	✓	✓	✓			✓	
BSON50i2	✓			✓		✓			✓				
BSOT35i2	✓		Reflecting (heat reflection)	✓	✓	✓	✓		✓			✓	
BSOM15i2	✓		Mirrored	✓		✓			✓				
BSORD60i2	✓		Fading retarder	✓	✓	✓	✓	✓	✓			✓	
BSOI80x2		✓	Invisible	✓		✓	✓		✓			✓	
BSOAT40i2	✓		Anti-thermal choc	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Compatibility chart

SUMMARY

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PREPARING YOUR APPLICATION SURFACE

HEXIS building films can be applied to a wide variety of building windows (see compatibility chart on page 1) as long as their surface is clean, dry, smooth, non-porous and free of any traces of oil, grease, wax, silicone or other polluting agents. To avoid unexpected outcomes, always assume that every substrate is polluted and needs to be cleaned prior to any application.

Carry out a preliminary test with the cleaning products on a small surface to check if the substrate and the sealings remain undamaged.

> For further technical information, please refer to the technical data sheets available on our website at www.hexis-graphics.com.

1. RECOMMENDATIONS:

› Adapt the building window film according to the glazing to which it will be applied.

 *If any doubt remains, please refer to the technical data sheets or contact your HEXIS representative. In most cases of high-risk applications, use films suitable for outdoor use.*

› **For an application to triple glazing it is mandatory to carry out a preliminary compatibility trial (glazing/film).**

› Prepare in advance your project:

- cut the film slightly larger than the dimension of the glass (5 cm width and 10 cm length),
- if possible, keep an edge which had been cut in the manufacturing plant,
- wind up the film with the liner on the inner side of the roll,
- fasten each roll using adhesive tape (Tiro).

 *Building films are fragile products, any fold may irrevocably deteriorate the product.*

› Use only the cleaning products listed in this guide. All other products should be avoided.

› For outdoor applications, carry out the installation at a temperature exceeding 15 °C (59 °F) and preferably on a windless day. However, if the day temperature during the week of application, in particular at night, is negative, an application solution with an HEXIS'O complement (ranging from 5 % to 10 %) should be used to activate the film adhesive more quickly allowing a faster application and more effective squeegeeing.

› For indoor applications, air conditioning must be switched off.

› It is mandatory to apply a marine-type sealing varnish to the films' edges: BSORD60i2, BSOT35i2, BSOAT40i2.

2. GLAZING AND THERMAL BREAKAGE:

The application of a building film must be carried out on a glazing in good condition and free of defects.



The glazing edges damaged or chipped during manufacturing, cutting, transport or installation are most commonly the starting point for breakage by thermal shock. Building films accentuating the energy absorption factor of the glazing, can amplify/accelerate the risk of breakage through thermal shocks.

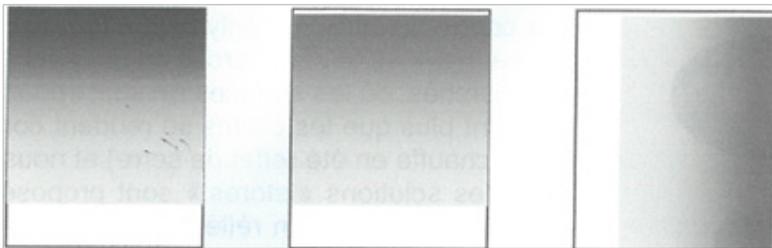
It is the responsibility of the installer to make sure of the suitability and compatibility of the glazing with the application of building film. HEXIS are not liable for glass breakage caused by window film application to a defective glazing. Please refer to the technical data sheets for building window films available on our website at www.hexis-graphics.com.

The installation of a building window film on glazing requires to consider certain factors. Indeed, film application on glazing can sometimes lead to high temperature differences (> 25 °C (> 77 °F)) between two points of the pane which can cause the thermal breakage of this one.

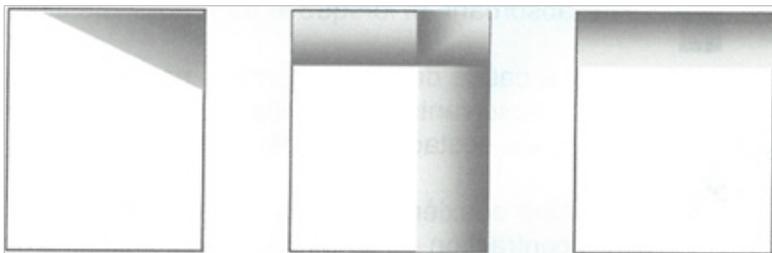
The following factors must be considered:

- › the type of film (*for further technical information, please refer to technical data sheets available on our website at www.hexis-graphics.com*),
- › the type of glazing (*single, double, triple, tinted, tempered, laminated, etc.*),
- › the glazing exposure (*the northern exposure ranging from -60° to +45° poses only a low thermal breakage risk due to its non-exposure to sunlight*),
- › the inclination of the glazing,
- › the climatic conditions (*season, quality of the sky, temperatures, etc.*),
- › the thermal inertia of the window frame (*the higher the thermal inertia is, the less the temperature of the frame will adapt to external conditions*),
- › the indoor environment of the glazing (*furniture, stickers or posters affixed to the glazing, radiators, convectors, etc.*),
- › the outdoor environment of the glazing (*projected shades of: trees, close buildings, overhanging terraces, canopies, external blinds, etc.*).

These types of shades are very common and the following diagrams summarize the situations usually met.



Shades in straight lines where the shaded area covers most of the pane.



Angular shadows, L-shape or shades of moderate width.



Multiple and / or narrow shades around the pane perimeter.

These types of shades are generally acceptable for indoor application of building window application to single and clear annealing glazings. However, in most cases, choose a building window film for outdoor application.

Before any application, it is required to check the compatibility of the building window film with the glazing (see compatibility chart on page 1). HEXIS cannot be held responsible in any way for glass breakage caused by building window film application to an incompatible glazing. Please refer to the technical data sheets for building window films available on our website at www.hexis-graphics.com.

3. SUBSTRATE CLEANING:

Surface cleaning is required before performing any application. On principle, it should be considered that the substrate is not clean. Some residues or soiling may be invisible; but may impact the film adhesion.

For an indoor building window film application, it is recommended to protect floors, walls and furniture from soapy water projections.

› Prepare the 11-l PULVITRE sprayer with approximately 2 capfuls of soft detergent (such as washing-up liquid) and water.



Figure 01

› Carefully clean the pane. Spray the soapy liquid on the entire window pane as well as on the sealings and in the corners. (FIG. 01)

› Squeegee the entire glass surface (using the SCRUBFLOOR or GRATVITRE scraper) starting from the top, the blade being in flat position to remove residues of adhesive, dust and grease.



Figure 02

› To finish, clean the lower part of the sealings by passing the angle of the blade between the pane and sealing. (FIG. 02)

HEXIS advice: often replace the blade of the glass scraper.

⚠ Ensure the integrity of the window sealings during the cleaning operation: the blade of the glass scraper is very sharp. HEXIS are not liable for any damages caused to the sealings and glazing during the cleaning procedure.



Figure 03

› Spray the liquid one more time on the entire glazing surface and run the glass scraper (POIGNEVITRE + LAMEVITRE) **top down**. Finish by drying the edges with absorbent paper. (FIG. 03)

⚠ Perfectly wipe off the surface and the sealings to remove the remaining polluting agents.

4. FILM APPLICATION:

Before any application of the building window film, make sure that all surfaces be cleaned (cf. paragraph 3. SUBSTRATE CLEANING: on page 4), paying particular attention to critical areas such as corners and edges.

Our HEXIS building window films can be applied indoors and outdoors, according to the film type.

HEXIS advice: please refer to the technical data sheets of the films before any application.

⚠ Building films are fragile products, any fold may irrevocably deteriorate the product.

4.1. Removing the liner from the film:

- › Take one of the prepared rolls (by following the recommendations in §1).
- › Unwind approximately 20 cm of the film.
- › Generously spray the liner (inner surface of the film) with the PULVITRE solution. (FIG. 04)
- › Again wind up the film on approximately 10 cm.
- › Remove the first winding section of the liner from the building window film while generously wetting the adhesive of the building window film and the liner.
- › Fold this delaminated liner part on the outer side of the building window film (non adhesive-coated face).
- › Again roll up the complex building window film + liner while keeping the non-protected part of the building window film in the open air. (FIG. 05)



Figure 04

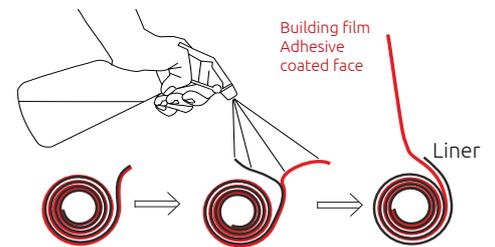


Figure 05

4.2. Film installation:

- › Again spray on the whole glass surface. (FIG. 06)
- › Place the adhesive-coated face of the building window film on the glass, the part cutted in the manufacturing plant against the sealings of the pane (hold the roll and the liner with the other hand).
- › Adjust the position of the building window film on the pane.
- › Unwind the film and hold, without pressure, the upper part of the film and liner with one hand. (FIG. 07)

⚠ *Too strong pressure on the film would make it adhere to the substrate.*

- › Unroll completely and at the same time the film roll + liner, along the pane, while taking care that the liner remains adhered to the outer side of the building window film. (FIG. 08)

⚠ *Any contact between the liner and the adhesive-coated face of the film may irrevocably deteriorate the film.*

- › Apply superficially the whole film with a moderated pressure of the hand.



Figure 06



Figure 07



Figure 08

4.3. Liner removal:



Figure 09

Remove the liner (FIG. 09):

- Thumbs downward;
- The other fingers push the liner towards the thumbs;
- Go down to approximately 20 cm from the bottom of the building window film.

! *Caution:* On the last winding section of the roll, take care of that the liner does not enter in contact with the adhesive-coated surface of the building window film.



Figure 10

› Remove the remaining liner by pulling it down and away from the building window film. (FIG. 10)

4.4. Fixing the film position:



Figure 11

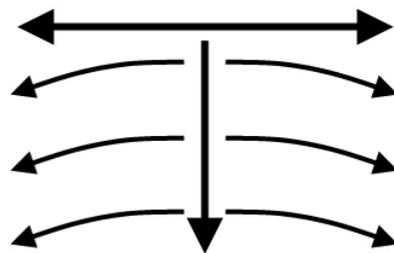
› Spray on the building window film surface with the sprayer. (FIG. 11)



Figure 12

› Apply the film with the MARVITRE or YELSQUEEG squeegee (FIG. 12) by following the instructions below:

- mark a T with the squeegee;
- squeegee from the top to the bottom and from the center outwards by carrying out circular arcs, as shown in the diagram below, so as to expel water.



4.5. Dimensioning:

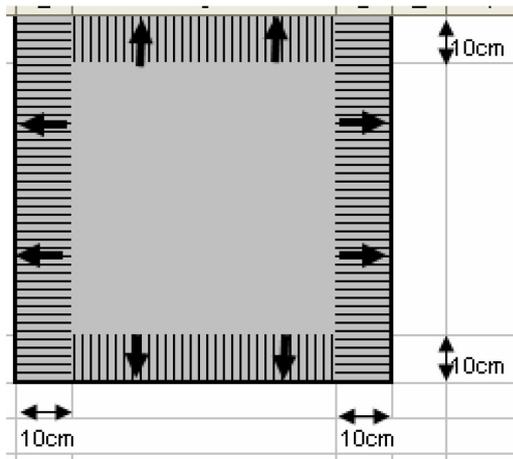
› Cut the extra film with a cutter, while taking care to spare window sealings. (FIG. 13) Proceed as follows in order to protect window sealings and avoid zigzag cutting:

- The MARVITRE squeegee must be leant on the outer edge of the sealing.
- The cutter blade must be leant on the squeegee by forming a 45° angle to the window.
- Then move the squeegee-cutter assembly.

⚠ Leave a free margin of 1 mm between the window sealings and the edge of the building window film. The application over window sealings can lead to the peeling off of the film.

Caution: too strong cutting pressure may result in pane scratching. HEXIS cannot be held responsible for any damages and degradations caused to the substrate during film cutting. It is the responsibility of the installer to take all the necessary precautions during this operation.

› To finish, dry the film perimeter with the MARVITRE squeegee wrapped with absorbing paper. (FIG. 14) Wipe off all the edges on approximately 10 cm as shown in the diagram below:



Remarks: Small water bubbles or milky traces may appear right after film application. This phenomenon is completely normal. These traces fade naturally after one week.

› With the window scraper, remove the remaining water from the film surface. (FIG. 15)



Figure 13



Figure 14



Figure 15

4.6. Solving application problems:

4.6.1. In case of bad film unwinding:



Figure 16

- › It can happen that the film roll and the liner unwind independently one from the other. (FIG. 16)

⚠ In such a case, the film unwinding operation must be stopped immediately. By complying with the following instructions, the liner can then be removed without damaging the building window film.



Figure 17

- › Remove the liner from the surface of the applied film (cf. paragraph 4.3. Liner removal: on page 6) until the roll to eliminate the tension difference between the liner and the building window film. Then pull the liner downwards and towards yourself while unrolling the building window film until total withdrawal of the liner. (FIG. 17)

⚠ Caution: prevent the liner getting in contact with the adhesive-coated film surface.

4.6.2. Removing an artifact between the window and the film:

If there is an artifact (piece of liner, fabric fibre, coarse dust, etc.) between the film and the window, it must be removed.



Figure 18

- › Moisten the film and gently peel it off from the glass. (FIG. 18)

Advice: it is possible to carefully use the tip of a cutter blade in order to peel off the film angle.



Figure 19

- › Spray the surface of the adhesive-coated film with the sprayer. (FIG. 19)

- › Remove the artifact with the finger while taking care of not polluting the film.

- › Position the film again and apply it with the squeegee. (FIG. 20)



Figure 20

5. POSSIBLE JUNCTION BY JUXTAPOSITION:

For a project requiring horizontal or vertical juxtaposition of several film lengths, proceed as follows:

- › Position the second film with an overlap (approximately 15 mm) on the first one already applied.
- › Place the ruler in the centre of the superposition and along the entire length.
- › With the CUTVITRE, cut in a continuous movement and with equal pressure both film thicknesses. (FIG. 21)

Caution: Too strong cutting pressure may result in pane scratching. HEXIS cannot be held responsible for any damages and degradations caused to the substrate during film cutting. It is the responsibility of the installer to take all the necessary precautions during this operation.

- › Remove any extra film.



Figure 21

6. SEALING VARNISH:

Sealing with a marine-type varnish is mandatory on the films' edges: BSORD60i2, BSOT35i2, BSOAT40i2.

Sealing is very important as it strengthens the lifespan of the films and prevents oxidation of the film's inner metal layers. Thus air, natural or industrial pollution, stagnant water from rain and others will no longer be able to attack the metallisation of the films starting from their edges.

- › Make sure that surfaces are dry.
- › Apply the silicone gasket all around the outer glazing.

7. FILM CLEANING AND MAINTENANCE:

- › Let the film dry for 1 week without touching it.

⚠ After application, wait for 30 days before cleaning the "film coated" window.

- › Clean the "film coated" glass with a standard cleaning agent and soft cloth.

⚠ Using abrasive tools (scrapers, scouring pads, etc.), solvents and corrosive detergents is absolutely forbidden.

HEXISadvice: Always test cleaning on a small area before cleaning the entire surface to be covered.

 *HEXIS cannot be held responsible for any building window films cleaned with undetermined additives.*

8. REMOVAL PROCEDURE:

Building window films have a permanent adhesive, therefore, their removal could be difficult. Nevertheless, by following the instructions below, the removal will be relatively easy.

› Use a heat gun, and starting from a corner, heat the film to a temperature of around 50 °C (122 °F) (laser thermometer).

 *Do not overheat. Respect the indicated temperature.*

› Lift gently the corner with the cutter - available in the tool box - without damaging the substrate, and as you go along heating the film, gradually remove the film previously heated; the film should form an angle of 70° to 80° relative to the substrate.

 *An angle more or less wide or acute will cause the film to break more easily.*

› Always proceed gradually by heating small areas while carefully removing the film, so as to limit the risk of leaving any adhesive on the substrate or tearing off the film.

› Continue to carefully heat and gently peel off the film until it is completely removed while keeping a watchful eye on the applied heat, on the pulling angle of the film, and the pulling speed.

› If any adhesive remains on the substrate, use the SCRUBFLOOR or GRATVITRE squeegee and the PULVITRE sprayer, wet the surface and scrape by making circular arcs until all traces disappear.

 *Caution: Liquids can damage the sealing gaskets, therefore, please take the adequate measures before carrying out the cleaning.*

 *Before using any of our liquids, please refer to the technical data sheets available on our website at www.hexis-graphics.com.*

For further information of a technical nature, refer to Technical Data Sheets available for download from our website www.hexis-graphics.com under professionals / data sheets.

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www.hexis-graphics.com

HEXIS S.A.

Z.I. Horizons Sud - CS 970003
F - 34118 FRONTIGNAN CEDEX
FRANCE
Tél. +33 4 67 18 66 80
Fax +33 4 67 48 38 79
E-mail: assistance@hexis.fr