

PRODUCT BULLETIN

APPLICATION GUIDE WRAPPING BOATS



REQUIRED EQUIPMENT

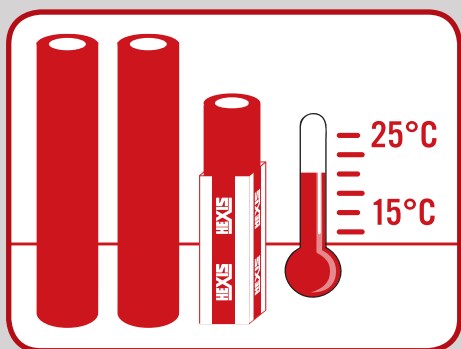
- › Adhesive tape Tesa® 7476
- › Masking tape
- › "System 1, 2, 3" cleaning liquids:
 - › 1-Remover
 - › 2-Pre Cleaner
 - › 3-Final Cleaner
- › Cleaning liquid LASERWASH
- › Squeegees upon your choice from the catalogue
- › Marine sealing varnish
- › PISTHERMIQ heat gun
- › WRAPKNIFE cutting filament
- › MALCOV HEXIS tool case

STORE YOUR FILMS UNDER APPROPRIATE CONDITIONS

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

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

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



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

FEATURES

This document is a guide for the application of HEXIS products to nautical equipment.

HEXIS offer a wide range of films that can be applied on nautical equipment. Contact the HEXIS sales department to define the specific products that you require for your application.

The compounds equipped with HEX'PRESS technology ensure high quality results while at the same time reducing the time required for application. This technology allows an easy repositioning of the vinyl, but does not exclude the necessary step of squeegeeing to ensure optimum adhesion of the film to the substrate.

PREPARING YOUR APPLICATION SURFACE

HEXIS films can be applied to a wide variety of substrates 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 3).

Carry out a preliminary trial on a small surface to check if the substrate is compatible.

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1. RECOMMENDATIONS:

- › For a full wrap of a hull, it is recommended to add an extra film width of 20 cm (8 in.) to the size of the surface to be wrapped because of the curvature of the hull near the bow.
- › Choose the type of film according to the curvature of the surfaces to be wrapped.
- › 2 people are required for the installation.
- › Optimal adherence of the films is obtained after 24 hours following application.
- › The colour of the films is monitored by HEXIS to ensure a faithful reproduction of their tints. Nevertheless, in the case where your project requires the use of several rolls of one same colour reference, HEXIS recommend using a single batch number of this reference.

2. PRELIMINARY TEST OF THE APPLICATION SURFACES:

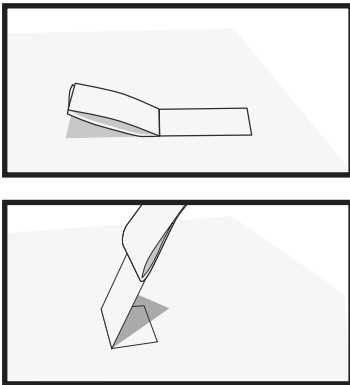
Before proceeding with any application, the installer must first inspect the substrate and the paint to which the film will be applied.

The installer and the customer are responsible for the suitability assessment of the target surface to be covered.

2.1. Preliminary inspection of the substrate:

- › Any fresh new paint must have dried for at least 7 days at 25 °C (77 °F) to outgas completely. An outgassing test must be carried out before applying the film.
- › Any old, powdery or flaky paint must be sanded and renewed before application and must be subject to a tear-off test.

2.2. Tear-off test:



Using a TESA® 7476 adhesive tape, or the like, apply to a surface of 2.5 cm x 5 cm (1 in. x 2 in.) plus some overhang material for easier removal. Fold and promptly tear off perpendicularly to the substrate surface. No traces should remain on the ripped off adhesive tape. Repeat this process in several places.

> *On request, HEXIS can provide you with a Tesa® adhesive tape in 2.5 cm x 5 cm (1 in. x 2 in.) size.*

2.3. Outgassing test:

Use a square piece of around 15 cm x 15 cm (6 in. x 6 in.) of self-adhesive polyester or of the film to be applied. Wait for 24 hours or 2 hours at 65 °C (149 °F). The appearance of bubbles indicates that the substrate has insufficiently outgassed. Therefore, this process should be repeated after a couple of days; or else the procedure described below should be carried out.

2.4. Outgassing procedure with flame treatment:

(Polycarbonate, translucent or diffusing methacrylate, expanded PVC, etc.)

This method consists of changing the surface tension of a substrate by swiping it with the flame of a gas burner. Using the flame's blue tip, proceed evenly with fast sweeps horizontally and vertically along the whole substrate surface.


! *MOVE THE FLAME IN SWIPING MOTIONS ON THE SUBSTRATE (RISK OF DESTROYING THE SUBSTRATE IF A FIXED POINT IS HEATED MORE THAN A SECOND).*

The film must be applied right after that treatment as this light surface treatment disappears after a few minutes.

> *HEXIS are not liable for any bubbles caused by outgassing.*

3. CLEANING:

Cleaning of the substrate is required before performing the application. It should always be assumed that the substrate is contaminated with dirt. Some residues or contaminants may not be visible; however, they may impair the adherence of the film.

 Before using any cleaning liquids or chemicals, please refer to the technical data sheets and safety data sheets available for download on our website at www.hexis-graphics.com.

3.1. Soiled surface appearance:

- › Spray the PRE CLEANER (product no. 2) on the surface.
- › Let it work for a few minutes, then wipe it dry with a clean cloth.
- › Carry out a final cleaning using the FINAL CLEANER (product no. 3).

3.2. Heavily soiled surface appearance:

Applies in cases where the substrate is soiled by resistant contaminants such as diesel or rubber stains.

Work in a ventilated area. Wear protective goggles.

Prior to treatment, run a compatibility test on a small, inconspicuous area of the substrate to be treated. Indeed, certain plastic materials might be damaged by the ADHESIVE REMOVER (product no. 1).

- › Spray onto the dirty surface and spread out using a dry cloth.
- › Then wait for a few minutes. Spray the ADHESIVE REMOVER (product no. 1) again, then wipe it dry with a clean cloth or squeegee.
- › When the substrate is clean and dry, clean again with the PRE CLEANER (product no. 2), then finish with the FINAL CLEANER (product no. 3) (as explained below).

3.3. Special case:

In the case of bare metal surfaces, clean the substrate with the PRE CLEANER (product no. 2) and then FINAL CLEANER (product no. 3).

Refer to the product safety data sheet.

 Thoroughly wipe the surface after the cleaning process.

4. LAMINATING THE FILMS:

HEXIS recommend laminating printed films with a cold laminate. The type of film will depend on the extent of curvature degree of the substrate. Refer to the HEXIS sales department for advice on how to achieve best results.

Ensure the films are dry before installing.

Most printed films are touch-dry at the latest 10 minutes following application, but it is recommended to leave a drying time of between 24 and 48 hours depending on the type of film used before laminating, cutting and applying them.

To ensure that the solvents evaporate completely, leave the films stacked in sheet racks in a ventilated location to dry.

For more information about the optimal drying time for the inks, please refer to the technical data sheets of our films on the Professionals pages of our website www.hexis-graphics.com.

Pre Cleaner
Powerful universal
cleaning agent



Adhesive Remover
Powerful cleaning
agent



Final Cleaner
Cleaning and
degreasing finishing
agent



5. SUBSTRATE PREPARATION:

Remember to adapt the preparation methods upon the substrate type and its condition. Thus, painted surfaces must be dry and hard. Air-dried paints need to be dried for a minimum of one month before applying the film.

The required film cuttings should be prepared prior to installation. On the hull, place strips of WRAPKNIFE where the cuttings must be carried out.

Whenever possible, use the curvature areas of the surface as substrate for the WRAPKNIFE.

6. APPLICATION OF THE FILMS:

› Before any application of the compounds or solely the films, make sure that all surfaces be clean, paying particular attention to critical areas such as corners and edges.

› The application temperature depends on the type of film to be installed.

For more information about the installation temperatures, please refer to the technical data sheets of our films on the Professionals pages of our website at www.hexis-graphics.com.

› The application temperature must be complied for both the ambient and substrate temperature.

› Nautical equipment films must solely be applied according to the so-called “dry” application method.

⚠ *Hygrometry may also influence the adhesion of the film to the substrate.*

› However, the films must be firmly squeegeed to achieve optimum adhesion to the substrate.

› The application must only be carried out on the above-water hull of the boat: from bottom to top and from stern to bow.

7. FIRST STEPS AND APPLICATION OF THE FILMS (ON HULL):

7.1. Application of a single width:

7.1.1. Positioning

› Wear gloves (available in the MALCOV tool case).

› Unroll the film horizontally along the hull of the stern to the bow. (FIG. 01)

› Position the film on the upper part of the hull and tape it into place using strips of masking tape.

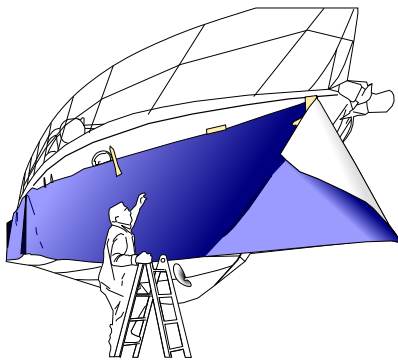


Figure 01

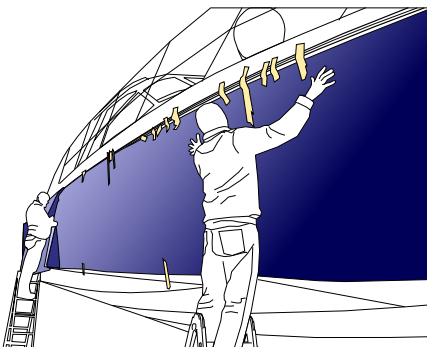


Figure 02

› Vertical straight surface: correctly adjust the film superposing 5 cm (2 in.) of the film on the gunwale. (FIG. 02)

- › Inclined surface: the film must remain under tension while following the incline of the hull so as not to distort the graphics.

The film will automatically shift by several centimetres towards the top during this operation due to the hull's heavy inclination. Such a deformation must be taken into account when pre-positioning the film.

- › Leave an overlap of 2 cm (1 in.) of film beyond the bow.

7.1.2. Application

- › The application must be carried out by the stretched installation method.
- › Starting from the stern, remove several tens of centimetres of the liner. (FIG. 03)
- › With a felt-covered squeegee start applying the film to the flat surfaces by working from the centre towards the edges to completely expel any air.

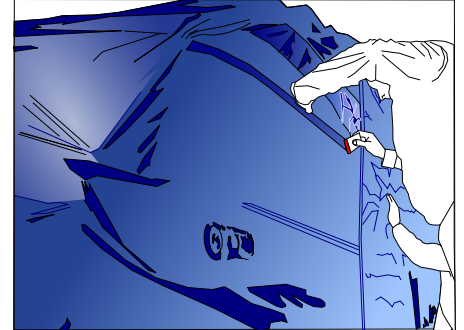


Figure 03

On the curvatures go roughly round the convex areas and keep the film stretched over the concave areas for the moment.

- › Proceed in the same way until completion of the film application. (FIG. 04)
- › Finish the first side of the hull by applying the 2 cm (1 in.) of overlapping film to the other side of the hull.

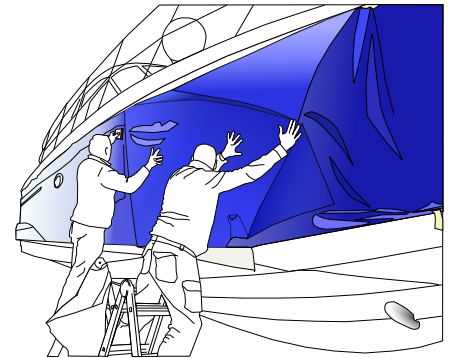


Figure 04

- › Proceed in the same way on the opposite side of the boat but performing the joint of the film by superposing at the level of the bow.

7.1.3. Application of the finish

- › Cut the film in the centre of the hull openings (portholes, hawse pipes, freeing ports, etc.).
- › With the heat gun, heat the film stretched over the curvatures to a temperature ranging from 40 °C to 50 °C (104 °F to 122 °F).
- › While continuing to heat the film, run (your thumb or the squeegee) around the convex shapes or press it with your thumb into the hollow of the undulation from both sides so as to properly stick the adhesive against the substrate. (FIG. 05)
- › Then, without heating, strongly squeegee the area between the two undulations from the centre to the edges to completely expel any air.

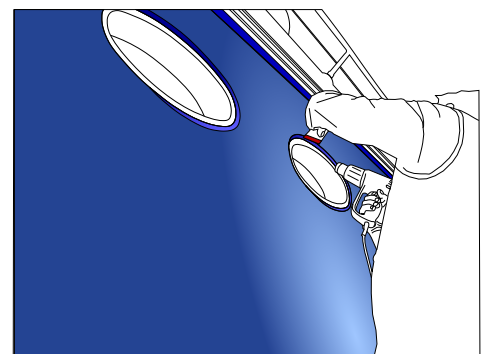


Figure 05

⚠ *In the hollow parts, the HEX'PRESS adhesive technology requires sufficient pressure in order to completely expel any air that could remain in the micro-channels. This is because the air that has not been evacuated and that is not visible to the human eye may later result in the film peeling off from its substrate.*

7.1.4. Finishing cuts

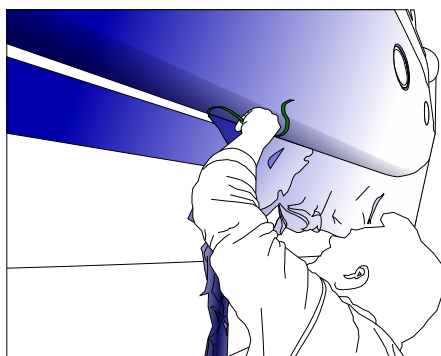


Figure 06

- › Proceed with the finishing cuts of any excess film (along the gunwale, hull, any openings,...) either with a CUTTER or by pulling the pieces of WRAPKNIFE applied previously. (FIG. 06)
- › Proceed with sealing the edges of the film. (See chapter 8. MARINE SEALING VARNISH; page 7)

7.1.5. Thermoforming the reliefs

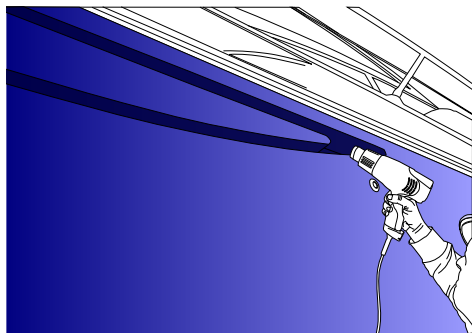


Figure 07

- › When the installation is finished, reheat all areas that underwent heavy deformation to between 80 °C and 90 °C (176 °F and 194 °F) to definitely thermoform the product. (FIG. 07)

7.2. Installation of several widths over the height:

- › Start installing the film on the emerged upper works near the waterline complying with the direction of installation: from the stern to the bow.
- › To ensure the joints between widths are as good as invisible, HEXIS recommends to do them over the reliefs of the hull, in particular in the recesses.

Proceed with positioning the film:

- › Wear gloves (available in the MALCOV tool case).
- › Unroll the film horizontally along the hull, from the stern to the waterline.
- › Keep the film in place from the top with the help of pieces of masking tape.
- › Straight vertical surface: correctly adjust the film.

! Watch the incline of the hull near the waterline.

- › Inclined surface: the film must remain stretched (so as not to distort the graphic) while following the incline of the hull.

The film will on its own shift by several centimetres towards the top during this operation in particular if the hull has heavy inclines. Such a deformation must be taken into account when positioning the film.

- › Leave an overlap of 2 cm (1 in) of film once over the waterline.
- › Apply the film as described in chapter 7.1.2. Application, page 5.
- › Once the first width is applied, proceed with the installation and the application of the following widths in the same fashion until the entire hull is wrapped.

! Ensure that the upper widths overlap the lower widths by 5 mm (0.12 in).

- › Finish with the cuts, application of the finishing cuts, sealing of the film and thermoforming of the reliefs.

8. MARINE SEALING VARNISH:

To increase the adhesive strength at the film edges on surfaces frequently exposed to water, HEXIS recommend the use of a marine varnish for PVC.

- › Ensure that all surfaces are completely dry.
- › Apply 2 strips of masking tape:
 - 1 to the substrate or lower film at 5 mm (0.2 in.) from the upper film.
 - 1 to the upper film at 5 mm (0.2 in.) from its edge. (FIG. 08)
- › Wear gloves and protective goggles and apply the varnish with a brush in one single coat.

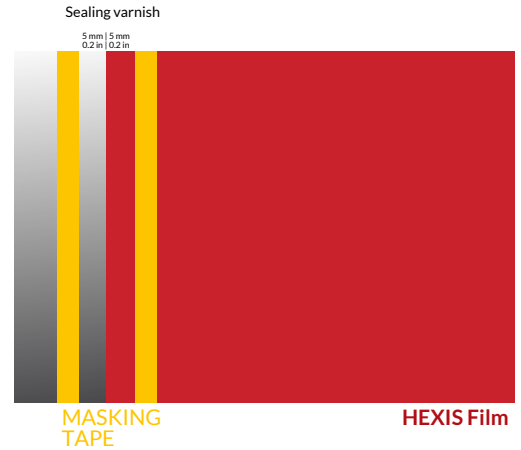


Figure 08

- › Remove the masking tape 15 minutes after application.
- › The drying time is variable depending on the thickness of the varnish coat and the surrounding temperature: for a film with an average coat, the optimum drying time is 24 hours. Any physical aggression (cleaning, abrasion, etc.) must be avoided by all means during that period of time.

9. BOAT LAUNCHING:

The side of the lifting belts in contact with the hull must be covered with silicone sheets to prevent any risk of marking the film during the launch operation.

10. CLEANING AND MAINTENANCE OF THE FILM:

HEXIS films may be cleaned with our LASERWASH cleaning liquid.

In certain cases when salt water has dried on the surface, it may be necessary to rub the film stronger.

⚠ However, the film should not be cleaned within the first 48 hours following its application as this can affect the adhesive strength that may result in the film peeling off.

11. REMOVAL PROCEDURE:


The HEXIS films feature a permanent adhesive and therefore their removal needs some attention. Nevertheless, by following the instructions below, the removal will be relatively easy.

- › Using a heat gun, start from a corner and heat the film to a temperature of around 60 °C (140 °F) (use the laser thermometer).
- › Lift the corner gently with the cutter – available in the tool case – without damaging the substrate, and 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 peel off the film gently until it is completely removed, while keeping a watchful eye on the heat applied, on the pulling angle of the film, and the pulling speed.

› If any adhesive remains on the substrate, take a cloth soaked with our ADHESIVE REMOVER (product no. 1) and rub the surface until all traces disappear.

 *Prior to treatment, run a compatibility test on a small, inconspicuous area of the substrate to be treated. Indeed, certain plastic materials might be damaged by the ADHESIVE REMOVER (product no. 1).*

› To ease the removal of the edge sealing varnish, acetone may be used.

 *Always check the non-aggression and compatibility of the liquids with the substrate by carrying out a test on a small, inconspicuous area of the substrate. HEXIS are not liable for damages and degradations caused to the substrate by using incompatible products.*

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

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 media 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.



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