

Sealing and bonding organic windows

APPLICATION DESCRIPTION

Most of the organic glazing materials used in boat building are clear acrylic sheet (PMMA).

Plastic glazing products have a high coefficient of thermal expansion. In general, incorrectly installed plastic glazing panels are prone to environmental stress cracking (ESC). This can be aggravated by the use of the wrong adhesives or wrong dimensioned adhesive / sealant.

Plastic glazing products have a higher coefficient of thermal expansion than conventional glass.

Therefore, when designing glazing installations, an expansion gap of at least 8 mm all round the periphery must be incorporated between the window rebate and the plastic glazing panel to accommodate thermal movement. In case of additional mechanical fixations any clearance holes for fixing screws must be drilled oversize; slightly larger than the diameter of the screw shank. See also plastic manufacturer recommendations.

To minimise the risk of environmental stress cracking, flat sheets of plastic glazing material should be installed completely flat; they should not be forced to take up a curvature by the use of mechanical fastenings.

When the design calls for curved glazing panels, these should be prefabricated to order and properly tempered by a specialist supplier to ensure installation with no remaining stresses.

As many varieties of organic window exist, it is recommended to ensure that the specific grade selected is suitable for use with Sikaflex®-295 UV. Please note that the extruded type of organic glazing (XT) exhibits a higher tendency to environmental stress cracking than the cast type (GS).

Please contact your local Sika company for technical advice.



PROCEDURE FOR BONDING AND SEALING WITH Sikaflex®-295 UV ORGANIC WINDOWS

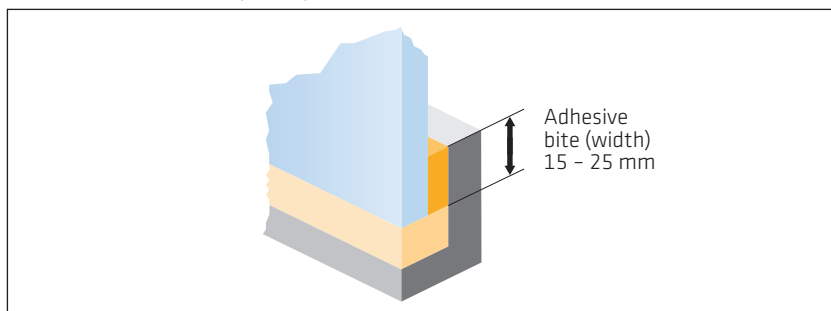
BONDLINE CONFIGURATION

Organic windows have a high thermal movement which creates stress in the bond line. Additionally dynamic stress due to the boat movement and the wind load have to be taken in consideration.

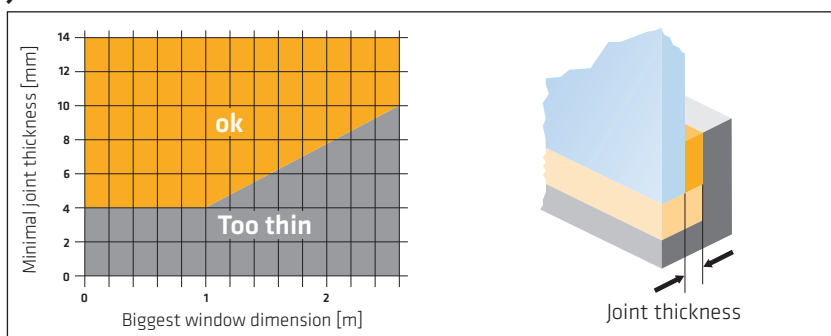
The following graphs are a result of theoretical and practical experience, considering all parameters of a boat under the conditions to which a window is subjected.

Basis of calculation are substrates MMA/GFK, wind load 2 kN/m², ΔT = 30° C

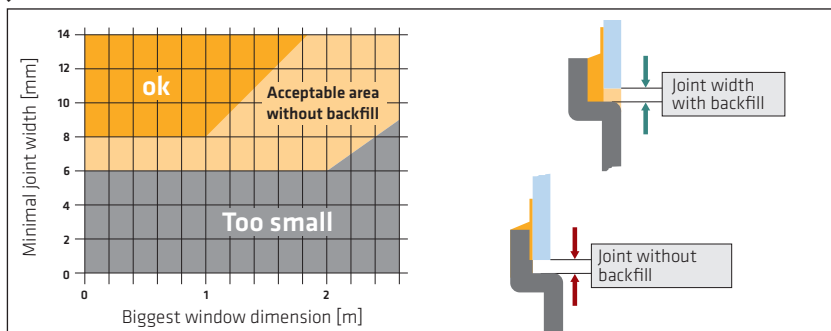
ADHESIVE WIDTH (BITE)



JOINT THICKNESS



JOINT WIDTH



Note: For important projects consult Corporate Technical Service Sika Industry

SUBSTRATE PREPARATION

GRP FRAME

	Lightly abrade the gel coat of the contact area with a very fine sanding pad
	Remove the dust with a vacuum cleaner
	Mask off any areas that need it
 SA 205	Pre-treat the substrate with Sika® Aktivator-205, using a clean, lint-free rag or paper towel. Change the rag frequently!
	Flash-off: 10 minutes (min) to 2 hours (max)
 SMM	Apply a thin, continuous coat of Sika® MultiPrimer Marine, using a clean brush or felt applicator
	Drying time: 30 minutes (min) to 24 hours (max)

ALUMINUM FRAME

	Mask off any areas that need it
	Lightly abrade the contact area with a fine sand pad
	Remove the dust with a vacuum cleaner
 SA 205	Pre-treat with Sika® Aktivator-205, using a clean, lint-free rag or paper towel. Change the rag frequently!
	Flash-off: 10 minutes (min) to 2 hours (max)
 SMM	Apply a thin, continuous coat of Sika® MultiPrimer Marine, using a clean brush or felt applicator
	Drying time: 30 minutes (min) to 24 hours (max)

ALUMINUM OR TIMBER FRAME COATED WITH TWO-PART LACQUER

	Mask off any areas that need it
 SA 100	Pre-treat the substrate with Sika® Aktivator-100, using a clean, lint-free rag or paper towel. Change the rag frequently!
	Flash-off: 10 minutes (min) to 2 hours (max)



IMPORTANT:
For the preparation of other substrates, please refer to the Pre-Treatment Chart for Sika Marine Applications or contact the local Technical Service Sika Industry

PMMA / PC GLAZING PANELS

	If required, apply an acryl paint or a profile opaque to cover the bond line in accordance with the Sika recommendations.
	Abrade the bond area with abrasive paper or very fine abrasive pad. Abrade the bonding periphery with 80 grit sand-paper if the organic glazing panel has a scratch proof coating (example Margard)
	Remove the dust with a vacuum cleaner
	Mask off any areas that need it
	Apply a continuous coat of Sika® Primer-209 D, using a clean brush or felt applicator
	Drying time: 30 minutes (min) to 24 hours (max)

BOND LINE PROTECTION

As with conventional glass, plastic glazing panels generally do not protect the adhesive face from damage by UV radiation. Therefore, the bond line must be protected from direct sunlight using one of the methods recommended.

- External cover strip of appropriate dimensions
- Internal sieve printing acrylic paint (contact Technical Service Sika Industry for appropriated types)

The use of black Primer Sika® Primer-209 D as a sole UV-protection is only permitted in case of a low UV-transmission of the organic glass (UV-transmission < 0,5%)

APPLICATION OF Sikaflex®-295 UV ADHESIVE

	Place spacers in position. Depending on the size of the glazing panel, the thickness of the spacer should be chosen accordingly (see page 16). Shore A hardness of the spacer approximately 30 or less
	Avoid interruption of the bead by the spacers
	Apply Sikaflex®-295 UV to the frame rebate or glazing panel using a triangular nozzle with a bead width of at least 10 mm
	Assemble all components within 20 minutes of applying the adhesive
	To prevent slip down of vertical glazing panels, distance blocks (wood or plastic) must be placed in the lower rebate during installation. After curing, these must be removed. The backfill gap must be at least 8 mm
	Fastening aids can be removed after 24 hours. After this time, the expansion gap between glazing panel and the backfill gap should be filled and completely sealed with Sikaflex®-295 UV. This sealant joint can be tooled to a smooth finish using Sika® Tooling Agent N. This must be carried out before skinning of the sealant
	After tooling remove any masking tape before the adhesive skins over
	Uncured Sika adhesives or sealants may be removed with Sika® Remover-208

WINDOW EDGE SEALING/ BACKFILLING

Commonly, the edge of the window will be cosmetically finished with Sikaflex®-295 UV. The preparation of the surfaces must be identical to that used for bonding. Edge sealing ensures both the prevention of standing water on or near the bond and helps cosmetically finish the window. Fill up the joint completely, ensuring there is no space between the adhesive bead and the joint.



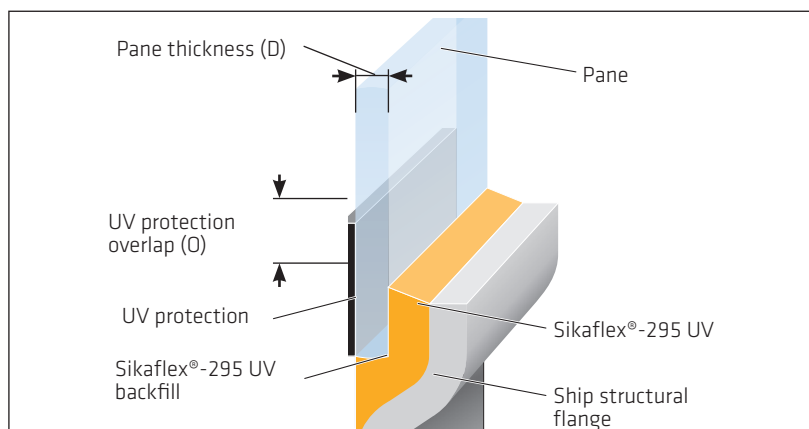
IMPORTANT:
Always refer to the current Sika Product Datasheet and Safety Datasheet obtainable through your local Sika company

SIKA RULE

$$O = 2 \times D$$

Example:

If D = 8 mm, the overlap should be at least 16 mm



Bonding a decorative panel vertically