

Product Range Overview





2.1 Sika Marine Adhesives and Sealants

	Sikaflex®-290i DC	Sikaflex®-291i	Sikaflex®-292i	Sikaflex®-295 UV	Sikaflex®-296	Sikaflex®-298	Sika Fiesil® Marine N	Sikasil® N-Plus	Sikasil® WS-605 S
Product characteristics	Deck caulking compound	Marine sealing compound	Elastic structural adhesive for marine applications	Direct glazing adhesive for organic windows and as weathering resistant sealant	Direct glazing adhesive for mineral glass	Low viscous bedding compound for wood and tile bonding	Fire retardant, fast curing silicone sealant based on a noncorrosive curing mechanism	Fungicide, rapid curing, silicone based sealant with outstanding adhesion	Backfill sealant for bonding insulating glass
Chemical base	1part polyurethane	1part polyurethane	1part polyurethane	1part polyurethane	1part polyurethane	1part polyurethane	1part silicone, neutral curing	1part silicone, neutral curing	1part silicone, neutral curing
Stability (non-sag rating)	Thixotropic slightly sagging	Good	Very good	Good	Very good, with no tendency to sag	Low viscous Slightly sagging	Good	Good	Good
Tack free time 23 °C, 50 % r.h.	70 minutes approx.	60 minutes approx.	40 minutes approx.	60 minutes approx.	45 minutes approx.	100 minutes approx.	120 minutes approx.	15 minutes approx.	120 minutes approx.
Rate of cure ¹⁾	3 mm per 24 hours approx.	3 mm per 24 hours approx.	4 mm per 24 hours approx.	3 mm per 24 hours approx.	3.5 mm per 24 hours approx.	3 mm per 24 hours approx.	2.5 mm per 24 hours approx.	3 mm per 24 hours approx.	3 mm per 24 hours approx.
Shore A hardness at 23 °C (ISO 868)	40 approx.	40 approx.	50 approx.	35 approx.	45 approx.	30 approx.	25 approx.	18 approx.	20 approx.
Tensile strength (ISO 37)	3 N/mm ² approx.	1.8 N/mm ² approx.	3 N/mm ² approx.	3 N/mm ² approx.	6.5 N/mm ² approx.	1.2 N/mm ² approx.	1,2 N/mm ² approx.	0.6 N/mm ² approx.	1 N/mm ² approx.
Tensile lap-shear strength (ISO 4587)	not applicable	not applicable	2 MPa approx.	1.5 MPa approx.	4.5 MPa approx.	not applicable	not applicable	not applicable	not applicable
Elongation at break (ISO 37)	600 % approx.	500 % approx.	300 % approx.	500 % approx.	450 % approx.	600 % approx.	700 % approx.	300 % approx.	800 % approx.
Application temperature	10 °C to 35 °C	10 °C to 40 °C	10 °C to 40 °C	10 °C to 35 °C	10 °C to 35 °C	10 °C to 35 °C	5 °C to 40 °C	5 °C to 35 °C	5 °C to 40 °C
Service temperature CQP 513-1	-40 °C to 90 °C	-40 °C to 90 °C	-40 °C to 90 °C	-40 °C to 90 °C	-40 °C to 90 °C	-40 °C to 90 °C	-40 °C to 150 °C	-40 °C to 150 °C	-40 °C to 150 °C
Applications	Sealing joints in timber deck planking	General purpose sealing	Structural bonding	Bonding/sealing of plastic materials	Bonding of mineral windows	Bedding and bonding compound typically for teak and other types of wood, tiles, marble, etc.	Sealing of connection and expansion joints requiring fire resistance	Sealant for connection or expansion joints in sanitary applications	Durable sealant for backfilling of insulating glass units

¹⁾ Note: The rate of cure value is measured after 1 day under normal conditions (23 °C/50 % r.h.). More detailed information's are obtainable in the Product Datasheet

Important: This information chart gives an overview of the material properties. For detailed material characteristics refer to the current national Sika Product- and Material Safety Datasheet obtainable through your local Sika company. www.sika.com

2.2 Tipp's and Tricks, General Advices



2.2.1 Surface preparation

General remarks

The surface preparation is beside the material choice and the joint dimensioning the key for a long lasting bond. Therefore it is essential to execute the surface preparation very accurately.

Surface cleaning

Dirty surfaces have to be pre cleaned. For oily or fatty surfaces, steam cleaning with detergents and consecutive rinsing with clean water are recommended for large areas. Smaller areas may be pre cleaned with solvents such as Sika® Remover-208.

Dust on surfaces is best removed with a vacuum cleaner. Compressed air as alternative can be used if it is deoiled.



Fig. 1 Steam cleaner



Fig. 2 Deoiler for compressed air

Rust, other oxides or loose paints have to be eliminated mechanically.

Methods are sandblasting, and grinding. In case of sandblasting the type of blasting material has to be chosen according to substrate to clean. If necessary contact a abrasive producer.

Grinding with sand paper may be done with belt grinder, excentric grinder, rotation grinder or manually. The grit to choose depends on the material to eliminate. Usually grit 40-80 is used.

After grinding the dust has to be eliminated with a vacuum cleaner.



Fig. 3 Sandblasting



Fig. 4 Excenter grinder



Fig. 5 Rotative grinder



Fig. 6 Belt grinder

Surface treatment

The additional surface treatment may be the use of an aktivator or/and a primer. Detailed informations are given on the Marine Pre-Treatment Chart.

2.2.2 Storage of the products

Storage unopened cartridge or unipack

Sikaflex® and Sikasil® products should be stored at a temperature under 25°C

The best of use data is indicated on each packaging units.

If the product is stored at higher temperature, viscosity of Sikaflex® rises up to a moment where it is hard to extrude and show a slight elastic behavior. In this case do not use it anymore as the wetting of the substrate is not ensured anymore.

Sikasil® reacts different. After the expiry date the reactivity slows down and the physical strength is lower than indicated in the Product Datasheet. The viscosity (extrusion behavior) of the product is not changing.

Storage of an opened cartridge

If a cartridge is opened and not used for some days, the nozzle has to remain on the cartridge and just changed with a new one before reuse of the cartridge.

If the product will not be used for a longer period, we recommend removing the nozzle and covering the cartridge opening with an aluminium foil. Screw a new nozzle over this foil. When reused after elimination of the foil, the beginning of the extrusion needs a high force. Once the plunger starts to move, the extrusion force drops down to a normal level.

Storage of Aktivators and Primers

These products should be stored at lower temperatures than 25°C.

Once opened bottles should be closed immediately after use. Maximum storage life after opening is 3 months.

2.2.3 Product application

General advice

Respect the recommendation in the actual Product Safety Sheet concerning collective and personal protection.

Use only products within the best before date

Never use thinners or solvents to dilute Aktivators or Primers



Fig. 7 Best before date cartridge



Fig. 8 Best before date unipac

Application of activators and Primers

Activators should be applied like a solvent. It is applied on non-porous substrates only! Wet a paper tissue sparingly with the corresponding Aktivator and wipe the surface in one direction. Turn the tissue to a proper side and continue cleaning. Dry the area with a dry tissue (wipe on /wipe off method) Discard the tissues when dirty according to legal legislation.

Close Activator bottles immediately after use.



Fig. 9 Outer and inner cap



Fig. 10 Close inner cap immediately after use

If you transfer the Activator in a separate can, discard the rest at the end of the day according to legal legislation to prevent inactivation of it.

Do not use an Activator which is cloudy or which show an unusual aspect.

Respect the minimum and maximum waiting time until the adhesive or sealant is applied. Consult the Pre-Treatment Chart Marine.

Primers are applied like paint. Use a clean dry brush, a felt or dauber to apply a Primer.

Sika® Multiprimer Marine may also be applied with a paper tissue.

Pigmented primer like Sika® Primer-206 G+P or Sika® Primer-209 D have to be shaken until the metal ball in the can be heard. Shake for another minute until the primer is completely homogen.



Fig. 11 Shake



Fig. 12 Outer and inner cap



Fig. 13 Close inner cap immediately after use

If you transfer the primer for use in a separate can, discard the rest of it at the end of the day according to national legislation. With this action inactivation or jellification will be prevented.

Respect the minimum and maximum waiting time until the adhesive or sealant is applied.

Application of adhesives and sealants

The application is done with a good quality type of gun. Cheap guns may fail especially with higher viscous adhesives such as Sikaflex®-292i or -296.

Apply the product with a triangle shaped nozzle of the appropriate dimension, holding the gun in a vertical position.



Fig. 14 Adhesive application

Insert spacers (see page 4) beside the adhesive bead

Join the parts together, applying a uniform pressure until the final position of the parts is reached. Use a flat rod to press flexible parts uniformly to the desired thickness.

In case of vertical application use distance blocks¹⁾ or adhesive tapes to hold the part in position until the adhesive get sufficient strength.

For additional sealing operation, protect the sides with adhesive tapes. Apply the sealant watching a complete filling of the space to prevent air inclusions between adhesive and sealant. Tool the sealant with a flexible spatula. Remove the adhesive tapes as soon as the tooling has been done before skinning of the sealant occurs.

2.2.4 Removal of adhesives and sealants

Fresh uncured Products

On non-porous substrate, remove the sealant or adhesive with a spatula. Clean the left over with a tissue or rag and Sika® Remover-208.

Do not use other solvents as they can react with Sikaflex® forming a permanently sticky surface

On porous substrate it is best to let the product cure and remove it after hardening with mechanical means.

Cured product

Cured Sikaflex® can only be eliminated with mechanical means. Solvents do not dissolve the hardened Sikaflex® but may soften it for easier removal (use acetone or isopropyl alcohol)

Note: Never use Sika® Aktivator for cleaning

Cleaning of hands and skin

Contact with Sikaflex® should be avoided. Use personal and collective protection means, such as gloves etc.

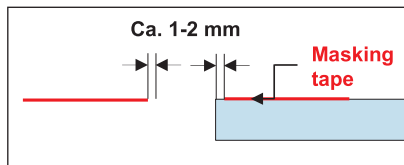
Never use solvents to clean the skin. Best is Sika® Handclean towel or other water based cleaning pastes.

Detailed information's about the physiology of the products are available in the national Material Safety Datasheet, available on the Internet. www.sika.com

2.2.5 Auxiliary materials

Masking tape

Masking tapes are to be used to protect the substrate against soiling. Apply the masking tape about 1 mm away from the joint area (see illustration). After application and tooling of the adhesives, the masking tape should be eliminated as soon as possible before skinning of the adhesive or sealant occurs.



Spacers

Spacers are used to assure a defined thickness of the bond line. They should be softer (shore hardness) than the cured adhesive.

Suitable materials are self-adhesive bumpers. Other possibility is to produce a small bead or sheet of the Sikaflex® adhesive in the desired thickness. After curing cut it in small parts of approx. 5x10 mm.

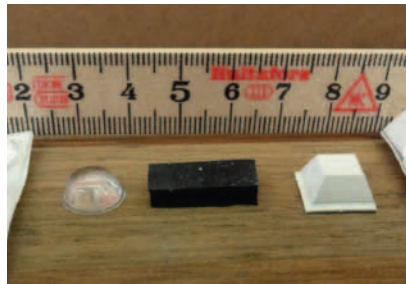


Fig. 15 Example of spacers

Fix the spacer on the substrate. If an adhesive is needed we recommend to use a small dot of Sikaflex®. Never use superglue as they exhale vapors which impair a good adhesion of the Sikaflex® adhesive on the substrate.

Distance blocks

Distance blocks are used to fix temporarily a vertical bonded part against sliding down.

They are best made on plastics or wood. Never use metals. After sufficient curing of the adhesive (about 2 times the skinning time in the corresponding Product Datasheet) They can be eliminated to permit the consecutive sealing (backfill) of the remaining joint.

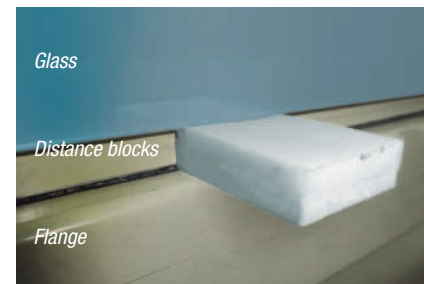


Fig. 16 Distance block

2.2.6 How to avoid corrosion

The best corrosion resistance is achieved with suitable paint systems which are designed for the marine conditions.

- Aluminium and ordinary steel have to be protected with such systems. (ISO 12499-3)
- In addition enclosed air pockets or other closed areas (example between adhesive and backfill sealant) have to be avoided. In case of cold application temperature, the viscosity can be decreased warming up the adhesive or sealant in a water bath. (Up to about 40°C)
- Interrupt the bead to allow occasionally entered water.

Note: Sika® Primers give a very limited corrosion resistance and should be used only for adhesion purposes.