

Construction



Sikaflex® One Part Polyurethane Sealants for Construction Professionals in both Civils and Buildings.

A guide for their selection and use

- ▲ Single Component High Performance Technology
- ▲ Environmentally Friendly
- ▲ Ease of Installation
- ▲ 35 Year + Track Record
- ▲ Non Staining
- ▲ Overpaintable

Sikaflex® One Part Polyurethane

Importance of Joint Sealing

With fastrack construction and the increasing use of modular building systems, the demands upon elastomeric joint sealing to ensure long term, permanent, water and airtightness are substantial.

Air tightness stipulated in Part 'L' of the revised Building Regulations 2002 has also increased demand for both thermal and airtight structures. (Note: All buildings exceeding 1000m² floor area are required to satisfy test for air tightness - in accordance with CIBSE TM23). The consequence of premature joint failure on buildings can be costly and embarrassing. There is clearly a need to select the most technically appropriate elastic sealants and cavity break membranes to meet these demands.

The cost of joint sealing in comparison to the total construction value is very low (<0.5%). The consequential cost of damage and disruption can be both disproportional and substantial

All too often decisions are made by people who have only commercial considerations in the selection of sealants. An example of this policy would be the incorrect choice of joint sealing between architectural stone or marble façade panels leading to polymer migration and staining of the units.



Sikaflex® sealants installed for long term re-sealing of all joints on the Empire State Building U.S.A



Typical polymer migration staining of marble panels - problem overcome using Sikaflex® polyurethane sealants

Sealants for Professionals

Selection Guidance

With a wide choice of sealant types and related characteristics, and forming such a critical part of any structure, time invested in correct sealant selection will be rewarded with long term performance.

BS.6213 is designed to assist the specifier to select the most appropriate type of sealant for any given application.

BS.(EN) ISO 11600 is used to define the physical properties of a sealant including anticipated movement.

The British Adhesives and Sealants Association (BASA) publish guides on both these standards.

Sealant Types

Joint Sealants should be designed to last many years and consideration given to Environmental Exposures. The selection criteria include: -

- ▲ Climate Exposure
- ▲ UV Radiation
- ▲ Submersion
- ▲ Chemical Resistance
- ▲ Tear Resistance
- ▲ Traffickability
- ▲ Compatability
- ▲ Curing Times
- ▲ Ease of use
- ▲ Colour Choice

BS 6213 has a flow chart to assist (see page 4)

Physical Performance

Once the correct selection of sealant type has been made, the next step is to determine the physical performance characteristics required, and to define the most appropriate class according to BS.(EN) ISO 11600 to meet anticipated movement in service. (i.e. Class F25LM - Façade sealant, 25% total movement accomodation, low modulus.)

The main characteristics referred to are:-

▲ Elastic or Plastic

The extent to which a sealant extends, compresses and can fully recover. Class E (Elastic) P (Plastic).

▲ Modulus

The resistance of a sealant to rate of a movement, ie a low modulus sealant has lower resistance to movement and is needed where rapid expansion and contraction is anticipated. A high modulus sealant has more resistance to any movement, but better abrasion resistance in installations subject to traffic.

▲ Movement Capability

The highest amplitude of the total extension and compression that a sealant is designed for is the movement capability of that sealant. Under BS(EN)ISO 11600, the highest classification for movement is 25% of the joint width and is based upon a cautious approach to allow for tolerances in construction. In reality, some sealants are capable of much greater movement as tested to BS.(EN) ISO 9047. Some **Sikaflex**® one part polyurethane joint sealants have been tested succesfully up to $\pm 70\%$ movement capability. However it should be recognised that movement in service in excess of the BS(EN) ISO 11600. classification may adversley influence the life expectancy of the sealant.



Sikaflex® sealant undergoing extension and compression testing to B.S.9047 courtesy of Oxford Brookes University

Sikaflex® One Part Polyurethane

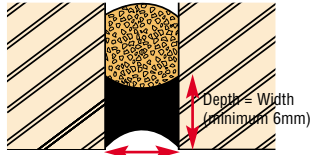
Joint Dimension

Width to Depth Ratio

- Façade joint widths are frequently in the range 15-30mm and optimum width to depth ratio for Façade sealing is 2:1

For joint widths up to 12mm

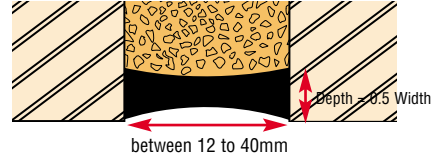
$$\frac{\text{width}}{\text{depth}} = \frac{1}{1}$$



Up to 12mm

For joint widths 12 - 40mm

$$\frac{\text{width}}{\text{depth}} = \frac{1}{0.5}$$



between 12 to 40mm

Building Façade and Floor Joint Sealant Selection Flow Chart. (derived from BS.6213).

Specific requirements: New and Refurbishment Overall analysis of structure and jointing consideration. Sealant in service issues i.e. Trafficable joint, chemical resistance etc; "Refer to BS.6093 Code of Practice for design of joints and jointing in Buildings"

Identify Sealant performance requirements and Properties
Calculate anticipated movements

Classify sealant in accordance with B.S. ISO 11600

If anticipated movement exceeds 25%
specify sealant with higher MAF to
B.S.E.N. ISO 9047 or redesign joints

Approach Sealant Manufacturer for recommendations
and Specification including any site trials

Once the above process has been completed the Specifier can then approach the manufacturer to confirm that there is a perfect match available. Sometimes it may be necessary for the manufacturers to carry out site trials for the substrate compatibility i.e. staining tests on stone or marble.

Why Sikaflex® One Part Polyurethanes?

- ▲ No risk of poor mixing.
- ▲ Range of one component polyurethanes designed to meet all the requirements for construction sealing.
- ▲ 35 year + track record.
- ▲ Environmentally friendly.
- ▲ Simple cost effective packaging.
- ▲ Sealants manufactured in compliance with ISO 9001.
- ▲ Produced by **Sika Limited**, world leaders in Polyurethane technologies.



One Part polyurethane sealants eliminate the need for site mixing



One Part polyurethane sealants are packed in standard cartridges or environmentally friendly aluminium foil sausages

Sealants for Professionals

Sikaflex® Range of Façade Sealants

Sikaflex® PRO-2HP

Sikaflex® PRO-3WF

Sikaflex® Construction

Sikaflex® Windowseal

Sikaflex® 1A+

Sikaflex® 11FC+

Sikaflex® PUR Band

Priming

Reduce waiting time after rainfall using

Sika® Primer-3

- ▲ With the **Sika® Primer-3**, secure joint seals are now possible on moist substrates (no water film)
- ▲ Unlike conventional primer systems, with the **Sika® Primer-3** excellent adhesion is obtainable on moist surfaces as well as on dry substrates
- ▲ **Sika® Primer-3** can be used with all **Sikaflex® Polyurethane** sealants



Sikaflex® PRO-2HP

- ▲ Single part high performance polyurethane façade sealant with unique latent cross link curing.
- ▲ Ideal for use in general high performance façade movement joints, buildings and civil engineering structures.
- ▲ Overpaintable.
- ▲ Repairable.
- ▲ ISO 11600 Class F25 LM.
- ▲ Available in 310 cc cartridges or 600cc foil sausages.
- ▲ Supplied in 7 standard colours.
- ▲ Tested to BS.EN 9047 movement capability of $\pm 70\%$.



Sikaflex® PRO-2HP was used for resealing glass on this hotel

Sikaflex® One Part Polyurethane

Sikaflex® PRO-3WF

- ▲ High chemical and abrasion resistant one part polyurethane sealant for all construction work.
- ▲ Ideal in demanding industrial wall floor environments.
- ▲ Outperforms most two part materials.
- ▲ ISO 11600 Class F20 HM.
- ▲ Available in 600cc foil sausages.
- ▲ Supplied in Grey
 - other colours available on request.
- ▲ Tested to BS.EN 9047 movement capability of $\pm 70\%$



Chemical resistant sealing of sewage treatment works with Sikaflex® PRO-3WF

Sikaflex® Construction

- ▲ Classic One Part polyurethane sealant.
- ▲ All types of building façades.
- ▲ 35 year + track record.
- ▲ Cost effective.
- ▲ Supplied in 4 standard colours in 600cc foil sausages.
- ▲ ISO 11600 Class F25HM/F20LM



Specialist application of Sikaflex® Construction to sandstone paviour avoiding any future polymer staining

Sikaflex® 1A+

- ▲ One Part polyurethane sealant,
- ▲ Specifically formulated for use in the water industry. (DWI Compliance Clause 25(i)b)
- ▲ 30 year track record.
- ▲ ISO 11600 Class F20 LM.
- ▲ Supplied Grey only in 600cc foil sausages.



Sikaflex® 1A+ used for construction joint sealing in drinking water culvert

Sealants for Professionals

Sikaflex® Windowseal

- ▲ One Part polyurethane sealant.
- ▲ Specially formulated for sealing around doors and windows.
- ▲ Easily overpaintable or stained.
- ▲ Can be used for permanent elastic bonding of PVCu trims.
- ▲ Suitable for all types of PVCu door and window frames, timber and anodised aluminium.
- ▲ Ideal for sealing around conservatories
- ▲ ISO 11600 Class F25LM
- ▲ Supplied in 600cc foil sausages or 310cc cartridges
- ▲ 30 year + track record



Perimeter sealing on conservatories with **Sikaflex® Windowseal** (photograph courtesy of N&P windows Hitchin)

Sikaflex® 11FC+

- ▲ One Part, dual purpose elastic bonding/sealing polyurethane.
- ▲ Suitable for bonding most types of material - wood, aluminium, ceramics, glass, metal.
- ▲ Ideal for gluing fittings to basement walls tanked with **Sika® -1 Waterproofing System**
- ▲ ISO 11600 Class E12.5 E
- ▲ Supplied in 600cc sausages or 310cc cartridges
- ▲ 25 year + track record



Weather joint sealing and elastic bonding to lighthouse building in the solent using **Sikaflex® 11FC+**

Sikaflex® PUR Band

- ▲ Pre-formed polyurethane strip.
- ▲ Ideal for refurbishing or narrow/irregular joints.
- ▲ Highlights panel configuration.
- ▲ Ideal for overbandaging contaminated joints.
- ▲ Available in various widths and colours.



Sikaflex® PUR Band used on this residential structure to overband failed joints

For more information on Sika visit www.barbourproductsearch.info

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A guide for their selection and use

Other Joint Sealing materials

SikaDur® Combiflex®



SikaTack® Panel System



Sika® Membran System



SikaBond®



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