

Sikaflex[®]-PRO

High Performance polyurethane joint sealant

Construction

Description Sikaflex-PRO is a one component, thixotropic, polyurethane based joint sealant. It cures under the influence of atmospheric moisture to form an elastomeric material with adhesive properties, in some cases without the need for priming of the substrate.

Specifications Satisfied Sikaflex-PRO is supplied throughout the world by Sika and conforms to the most stringent sealant standards, for example:

- US Federal Specification TT-S-00230C, Type II, Class A.
- BS4254: For one part polyurethane based sealants for the building industry.
- JIS A 5758: For one part polyurethane based sealants for the construction industry.

Uses As an elastic joint sealant for:

- Expansion joints in buildings and civil structures above and below ground.
- Construction joints.
- Joints in precast concrete elements.
- External walling and cladding joints.
- Infill panel joints.
- Curtain walling.
- Sanitary installations.
- Sealing around window and door frames.
- Flexible draught proofing.
- Sealing penetrations in walls or floors for ducts, piping etc.
- Retaining walls.
- Sealing joints in water retaining structures (water reservoirs)

Advantages

- New Sikaflex-PRO will bond well to well cleaned Sikaflex-PRO.
- Excellent adhesion on all cement based materials, brick ceramics, polyurethane, epoxy, most polyesters, most metals and most timbers.
- High durability.
- Good weathering resistance.
- Non-sag on vertical and soffit joints up to 30 mm width.
- Short skinning time.
- Short cut off string, even after storage.
- Ready for immediate use – no mixing, saves time.
- No potential mixing errors or wastage due to mixed quantities being greater than required.
- Non-corrosive.
- Can be painted over with many water, solvent and rubber based paints (preliminary tests recommended).
- Approved for use in potable water (AS4020:1999).
- Resistant to bacterial attack.

Instructions for Use

Surface Preparation Clean, sound, dry and free of oil, grease and surface contaminants such as form release agents, curing membranes and hydrophobic water repellents. Thoroughly remove all loose particles and dust.

Masonry/Brick/Concrete: Any loose particles or laitance should be removed with a rotary mechanical wire brush followed by blowing out with oil free compressed air. Use Sika cementitious or epoxy mortars for making good spalled or damaged joints.

Metals: Surfaces must be free of rust, scale or oxide films and should be degreased using Sika Colma Cleaner, Acetone or M.E.K.

Priming	(Refer to Primer Selection Guide for detailed information. This is a separate document).												
Application	<p>Minimum application temperature 5°C. For easier use we recommend the material is stored between 10°C and 30°C prior to use. Sikaflex-PRO is available in 310 ml cartridges or 600 ml unipac. Cartridge: break the inner seal at nozzle end, affix nozzle and cut to accommodate the desired joint size. Unipac: slide unipac into the special applicator gun, then either “nick” the unipac wrapper at the extrusion end or cut off the very end of the sausage if it contains partially cured lumpy Sikaflex. Fit the gun with a suitable nozzle that has been cut to deliver the right bead size. All primer on joint sides, which is generally applied after backer rods or release tapes are in place (refer joint design section) must have not exceeded its open time and it must be thoroughly dry and not just skinned over; otherwise in conditions of rising temperature trapped solvent can blow bubbles in the uncured sealant. Porous substrates such as poorly compacted or cracked concrete must have their porous bond area surfaces thoroughly sealed to avoid the possibility of air bubbles being blown into the uncured sealant if the substrate temperature rises. Extrude the Sikaflex-PRO into the joint ensuring that no air is trapped in the joint. Wide joints will require more than one pass of the application gun to make sure that Sikaflex-PRO is in full contact with the sides and bottom of the joint. Tooling-off the sealant will assist by forcing the sealant into the joint against its sides and back up material; this will also break any air bubbles and expose any air pockets. Final tooling of the joint surface can be done effectively with a spatula dipped in a 20% solution of washing up detergent in water (test to ensure it does not discolour the cured Sikaflex-PRO) or a profiled piece of raw potato. When tooling off with detergent solution, ensure no solution is allowed to get onto adjacent joint sides/bonding areas before the sealant has reached the final tooling stage in those locations. When masking sides of joints for neatness, remove tape before the sealant cures. Always allow sufficient surface exposed to moisture. In conditions of low atmospheric humidity, say less than 45% R.H. at 20°C or <60% R.H. at 10°C when early joint movement is anticipated (eg. The joint has been sealed in the late afternoon sun and at sunset a rapid temperature drop is expected – Canberra or Alice Springs in winter), it is advisable to spray the surface of the tooled Sikaflex with a fine mist of water to promote early skinning. Seal joints in walls facing west in the morning.</p>												
Cleaning	Use Sika Colma Cleaner to remove uncured sealant from tools after first removing the bulk of the Sikaflex material with a scraper followed by a rag or paper tissue. Sikaflex Hand Cleaner will remove fresh and partially cured Sikaflex from the skin. Hardened material can only be removed mechanically.												
Joint Design	<p>Permissible change in joint width at ambient temperatures:</p> <ul style="list-style-type: none"> • above 0°C is ±30% of average joint width at the time of sealing • below 0°C is a total of ±20% of average joint width at the time of sealing • admissible total shear movement is 20% of joint width at time of sealing <p>For the successful sealing of joints with Sikaflex-PRO it is essential that the following guidelines on joint configuration are observed:</p> <p>General use: for joints up to 12 mm wide, width to depth ratio = 1:1 for joints over 12 mm wide, width to depth ratio = 2:1 (minimum joint depth 8mm: maximum joint width 35mm).</p> <p>An approximate rule of thumb for joints in pre-cast concrete</p> <table> <tr> <td>Joint interval (metres)</td> <td>up to 2.0</td> <td>2.0-3.5</td> <td>3.5-5.0</td> <td>5.0-6.5</td> <td>6.5-8.0</td> </tr> <tr> <td>Joint width (mm)</td> <td>10</td> <td>15</td> <td>20</td> <td>25</td> <td>30</td> </tr> </table>	Joint interval (metres)	up to 2.0	2.0-3.5	3.5-5.0	5.0-6.5	6.5-8.0	Joint width (mm)	10	15	20	25	30
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To ensure that the correct width to depth ratio is achieved and to provide a firm backing against which the sealant can be tooled off and also to prevent the sealant from adhering to the bottom of the joint, the space under the Sikaflex-PRO must be filled with a tight fitting, non-rotting, non-absorbent backing material eg. fibreboard combined with a bond breaking tape (eg. polypropylene or PVC) or, alternatively, an open cell polyurethane or closed cell polyethylene backer rod supplied by Sika. Open cell PU backer rod has the advantages of allowing moisture access to the front and back of the joint simultaneously facilitating faster curing. Also open cell PU backer rod is much more compressible than closed cell PE foam thus one diameter rod can be used in a much wider range of joint widths. Closed cell PE backer rod can cause bubbling in uncured sealant in rising temperature conditions if it's outer skin is punctured. It is essential that oil or tar impregnated backing materials are not used.

EXPANSION JOINT DESIGN CRITERIA

Usually the joint has the following geometry:

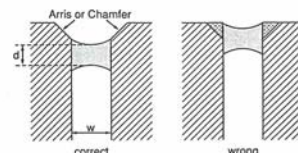
For joint widths up to 12 mm

$$\frac{\text{width}}{\text{depth}} = \frac{1}{1} \text{ or } w = d$$

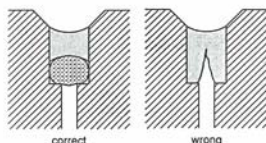
For joint widths 12 mm to 50 mm

$$\frac{\text{width}}{\text{depth}} = \frac{1}{0.5} \text{ or } w = 2d$$

For concrete and masonry joints subject to movement the depth of the Sikaflex-PRO in the joint has to be at least 8 mm.



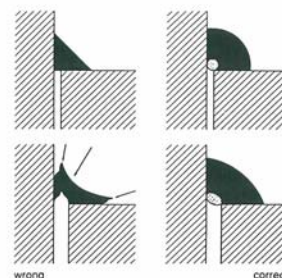
The edges or corners of concrete joints are often weak because of poorly compacted concrete, thus it is desirable to use chamfers and recess the joint.



The "bottom" of the joint must not restrict the deformation of the sealant since this could result in failure during the opening of the joint. The depth of the joint should be adjusted by inserting a suitable joint backing material.



In corner joints too, the insertion of a release tape or backer rod is required, otherwise the sealant will fail during expansion of the joint.



Technical Data (Typical)

Colours	White, Sandstone, Beige, Pale Brown, Brick Red, Redwood, Grey, Dark Amber, Black, Dark Grey (special colours on request in batch quantities)
Density	1.25 to 1.3 kg/litre depending on colour
Basis	Moisture curing polyurethane prepolymer
Priming	Refer separate Primer Selection Guide for more details
Application temperature	5°C to 40°C
Service temperature	-30°C to 70°C (maximum +40°C in water and temporarily +50°C)
Shelf life	Minimum 12 months stored dry below 30°C unopened in original containers
Shore A hardness	23 to 27 after 28 days (at 23°C, 50% R.H.)
Elastic Recovery (JIS A 5758 1992)	>80%
Tensile strength (JIS A 5758 1992)	>0.2 MPa @ 50% elongation @ +23°C

Tensile strength at break (JIS A 5758 1992)	>0.7 MPa		
Elongation at break	>500%		
Maximum working expansion and contraction	Refer Joint Design section		
Skinning Time (at 23°C, 50% R.H.)	2 to 4 hours		
Cure rate (at 23°C, 50% R.H.)	2 mm in first 24 hours		
Chemical Resistance (rough guide only)	Long Term	Medium Term	Low to Very Low
	Water	Mineral oils	Organic solvents
	Sea water	Vegetable oils	Paint dilutents
	Dilute mineral acids	Fats	Strong acids
	Dilute mineral alkalis	Swimming/spa	Strong alkalis
	Domestic sewage	Pool water	
		Fuel oils	
Consumption	Sika Primer 1, 15) About 4-5m ² per litre of primer. Sika Primer 3) 250 ml can of primer will normally be sufficient Sika Primer 215) for about 35-40 running metres of Sika Primer 35) 12.5 mm (deep joint).		
	Sika Adhesive Cleaner 1: approx. 5-8 m ² /litre		

Sikaflex Estimating Chart

Quantities: a guide to Sikaflex-PRO quantities (for fillet work multiply metre runs per cartridge or 'unipac' by two).

Joint size in mm	Litre Sikaflex-PRO per metre run	Metre run per cartridge (310ml)	Metre run per 'unipac' (600 ml)
5 x 5	0.025	12.4	24
5 x 10	0.050	6.2	12
5 x 15	0.075	4.2	8.0
10 x 10	0.100	3.1	6.0
10 x 15	0.150	2.0	4.0
10 x 20	0.200	1.55	3.0
10 x 25	0.250	1.24	2.4
15 x 10	0.150	2.06	3.9
15 x 15	0.225	1.35	2.7
15 x 20	0.300	1.04	2.0
15 x 25	0.375	0.82	1.6
15 x 30	0.450	0.69	1.3
15 x 40	0.600	0.51	1.0
20 x 10	0.200	1.55	3.0
20 x 15	0.050	1.04	2.0
20 x 20	0.400	0.78	1.5
25 x 12.5	0.310	1.00	2.0
25 x 15	0.380	0.81	1.6
25 x 20	0.500	0.62	1.2
25 x 25	0.630	0.50	0.9
30 x 15	0.450	0.69	1.3
30 x 20	0.600	0.51	1.0
30 x 25	0.750	0.42	0.8
40 x 20	0.800	0.39	0.8
40 x 25	1.000	0.31	0.6
40 x 30	1.200	0.26	0.5

Packaging

310 ml cartridge per carton of 12

600 ml unipac per carton of 20

Sika Primers are supplied in 250 ml cans (Flammable)

Sika Adhesive Cleaner 1 is supplied in 250 ml and 1 litre cans (Flammable)

Sika Colma Cleaner is supplied in 1 litre and 20 litre cans (Flammable)

Important Notes

- Sikaflex-PRO is best stored at temperatures between 10°C and 25°C in dry areas. The storage temperature should not exceed 30°C for extended periods.
- For best results use opened cartridge or sausage the same day otherwise the Sikaflex-PRO in the nozzle will cure and have to be removed.
- When applying sealant, avoid air entrapment.
- Joint movement must not exceed $\pm 30\%$ (above 0°C) of the width of the joint at the time it is sealed.
- Minimum joint width for caulking around window frames is 10mm.
- White colour material yellows with age.
- In some bathroom and kitchen environments Sikaflex-PRO can be stained by interaction with other components used in the structure and finishes. Ceramic tile adhesives containing rubber from old car tyres could be the cause.
- Joints in low humidity environments should be sprayed with a mist of water as soon as tooling off is complete to accelerate the curing process and minimise the risk of early movement cracks.
- For specific chemical resistance please contact our Technical Service Department.
- If there is no history of a particular coating/paint being applied over cured Sikaflex-PRO for a period of 6 months or more an overpaintability test should be made to determine:
 - i) that the paint dries properly within the expected time frame.
 - ii) that if the paint film dries satisfactorily it is not subsequently softened and/or stained where it comes into contact with the Sikaflex-PRO when exposed to the heat of the sun.
 - iii) That the adhesion of the paint/coating is satisfactory to the Sikaflex-PRO.

Conduct a simple test, overpaint a cured sample of Sikaflex-PRO, allow the normal drying time for the coating to elapse and then expose it to a temperature of 80°C continuously for seven days. Sika's technical department can conduct this testing.

- Do not paint Sikaflex-PRO with Sikagard-680S – it will not dry satisfactorily.
- Do not use Sikaflex-PRO to seal joints in chlorinated swimming pools or spa pools because occasional over dosing with chlorine etc. can eventually cause the Sikaflex-PRO surface to become sticky.
- For potable water tank joint sealing, refer to Sikaflex-11FC Technical Data Sheet.
- Where possible backer rod should be placed in a joint before it is primed.
- Do not twist or puncture closed cell polyethylene backer rod during installation, this can lead to "out gassing". The gas from the backer rod blows bubbles into freshly applied Sikaflex-PRO during conditions of rising temperature.
- Open cell backer rod allows moist air access to the bottom of the joint so that the Sikaflex-PRO can cure simultaneously from the front and back of the joint.
- Sikaflex-PRO should be used with care in resealing joints that were previously filled with silicone sealant. Consult our Technical Department.
- Not to be used in glazing applications where the Sikaflex to glass bond is exposed to direct or indirect sunlight or UV radiation.

Handling Precautions

Sika sealants are generally harmless provided that certain precautions normally taken when handling chemicals are observed. The uncured materials must not, for instance, be allowed to come into contact with foodstuffs or food utensils, and measures should also be taken to prevent the uncured materials from coming into contact with the skin, since people with particularly sensitive skin may be affected. The use of protective clothing, goggles, barrier creams and rubber gloves is recommended. The skin should be thoroughly cleansed at the end of each working period either by washing with soap and warm water or by using a resin removing cream – the use of powerful solvents is to be avoided. Disposable paper towels, not cloth towels should be used to dry the skin. Adequate ventilation of the working area is recommended. In case of accidental eye or mouth contact, flush with water. Consult a doctor immediately.

Important Notification

The information, and, in particular, the recommendations relating to the application and end-use of Sika's products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The proprietary rights of third parties must be observed. All orders are accepted subject of our terms and conditions of sale. Users should always refer to the most recent issue of the Technical Data Sheet for the product concerned, copies of which will be supplied on request.

PLEASE CONSULT OUR TECHNICAL DEPARTMENT FOR FURTHER INFORMATION.



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Sikaflex® -PRO
Page 6 of 6