

# Sikaflex<sup>®</sup> Firerate PU

## Fire resistant Polyurethane joint sealant

Construction

<b>Description</b>	<p>Sikaflex Firerate PU is a one component, low modulus, gun grade, non sag, moisture cure polyurethane sealant with excellent UV resistance.</p> <p>Sikaflex Firerate PU is designed to cure into a fire-rated, elastic weatherproof seal.</p>
<b>Uses</b>	<p>Sikaflex Firerate PU is designed for sealing joints where a high performance fire rated seal is required:</p> <ul style="list-style-type: none"> <li>• Expansion and construction joints</li> <li>• Tilt-wall joints</li> <li>• Sealing in conjunction with fire collars or pillows</li> <li>• Perimeter joints around windows and doors</li> <li>• Masonry expansion joints</li> <li>• Between dissimilar metals</li> <li>• Between construction materials of dissimilar expansion co-efficients</li> <li>• Acoustical applications</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Superior UV resistance and durability</li> <li>• Excellent adhesion with no primer</li> <li>• Accommodates 50% total joint movement</li> <li>• Single component</li> <li>• Permanently flexible</li> <li>• Non-staining</li> <li>• Paintable</li> <li>• Meets AS 1530.4</li> <li>• VOC compliant</li> <li>• Acoustic ratings (up to 45STC)</li> </ul>
<b>Storage and Shelf Life</b>	<p>Stored in the original sealed packaging at temperatures of between 5°C and 27°C, this product will keep for at least twelve (12) months.</p>
<b>Instructions for Use</b>	
<b>Surface Preparation</b>	<p>Joint sides should be clean, sound, dry and free from oil, grease and surface contaminants such as form release agents, curing membranes etc. Thoroughly remove all loose particles and dust. Stone surfaces must be cohesively sound, and free of contaminants. Granite, limestone, marble and sandstone must be pre-tested for adhesion before sealant installation.</p> <p>Mill finish aluminium may contain an invisible oil film or oxide. Clean with a good degreasing solvent such as xylene or toluene. Many high-performance coatings or unusual surface treatments may require abrasion of the surface with steel wool or fine emery paper during preparation.</p> <p>Do not use alcohol to clean surfaces of the penetration. Residual alcohol will prevent the cure of Sikaflex Firerate PU.</p> <p><b>Masonry/Brick/Concrete:</b> 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.</p> <p><b>Metals:</b> Surfaces must be free of rust, scale or oxide films and should be degreased using Sika Colma Cleaner, Acetone or M.E.K.</p>
<b>Priming</b>	<p><i>(Refer to Primer Selection Guide for detailed information. This is a separate document).</i></p>

**Application / Limitations**

Minimum application temperature 5°C. For easier use we recommend the material is stored between 10°C and 30°C prior to use. Sikaflex Firerate PU is available in a 600 ml 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. Place backer rod to the depth required to achieve the necessary fire rating. Fill the joint with Sikaflex Firerate PU and tool off the surface taking care to have sufficient material in the joint to achieve the fire rating required. 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 Firerate PU 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 Firerate PU 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 Firerate PU) 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.

**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**

Permissible change in joint width at ambient temperatures:

- above 0°C is  $\pm 30\%$  of average joint width at the time of sealing
- below 0°C is a total of  $\pm 20\%$  of average joint width at the time of sealing
- admissible total shear movement is 20% of joint width at time of sealing

For the successful sealing of joints with Sikaflex Firerate PU it is essential that the following guidelines on joint configuration are observed:

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).

An approximate rule of thumb for joints in pre-cast concrete

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



## Criteria that have to be observed in designing expansion joints

Usually the joint has the following geometry:

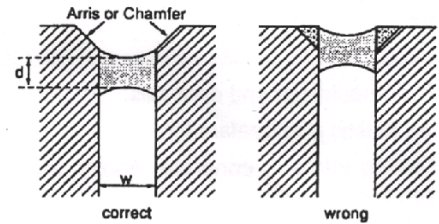
For joint widths up to 12mm

Width =  $\frac{1}{2}$  or  $w=d$   
Depth = 1

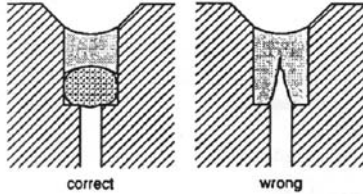
For joint widths 12mm to 40mm

Width =  $\frac{1}{2}$  or  $w=2d$   
Depth = 0.5

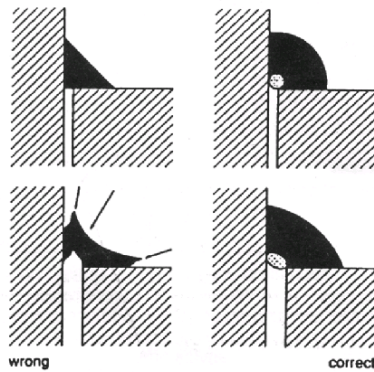
For concrete and masonry joints subject to movement the depth of the joint has to be at least 6mm.



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 fall during expansion of the joint.

### Technical Data (Typical)

Colour	Grey
Basis	Moisture curing Polyurethane
Skin Time	2-4 hours (24°C / 50% r.h)
Cure time	24-48 hours 6 mm diameter bead (24°C / 50% r.h)
Maximum joint	±20% of average joint width movement at time of sealing
Shore A Hardness	47
Elongation (ASTM D412)	500 – 600%
Tensile Strength (ASTM D412)	2.2 MPa
Application Temperature	+5°C - +40°C
Service Temperature	-40°C - +90°C

<b>Packaging</b>	600 ml sausage
<b>Fire Resistance</b>	Fire test certificate to ASTM1530.4
<b>Joint Design</b>	Joint width should not exceed 40 mm and joint depth should not exceed 20 mm. Minimum joint depth is 10 mm. For joints over 20 mm wide, depth should be one half the width.

## Sikaflex Firerate PU Consumption Chart

Joint Size (W x D in mm)	Metres/Litre	Metres/Sausage
10 x 10	10	5
20 x 10	5	2.5
30 x 15	2.2	1.1
40 x 20	1.25	0.63
50 x 25	0.8	0.4

**Important Notes**

- Sikaflex Firerate PU 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 sausage the same day otherwise the Sikaflex Firerate PU 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.
- In some bathroom and kitchen environments Sikaflex Firerate PU 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 Firerate PU 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 Firerate PU when exposed to the heat of the sun.
  - iii) that the adhesion of the paint/coating is satisfactory to the Sikaflex Firerate PU.

Conduct a simple test, overpaint a cured sample of Sikaflex Firerate PU, 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 Firerate PU with Sikagard-680S – it will not dry satisfactorily.
- Do not use Sikaflex Firerate PU to seal joints in chlorinated swimming pools or spa pools because occasional over dosing with chlorine etc. can eventually cause the Sikaflex Firerate PU 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 Firerate PU during conditions of rising temperature.
- Open cell backer rod allows moist air access to the bottom of the joint so that the Sikaflex Firerate PU can cure simultaneously from the front and back of the joint.
- Sikaflex Firerate PU 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 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 Australian version 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.

