

PRODUCT DATA SHEET

Sika® Firerate PU

FIRE RESISTANT POLYURETHANE JOINT SEALANT

DESCRIPTION

Firerate PU is a one component, low modulus, gun grade, non-sag, moisturecure polyurethane sealant with outstanding UV resistance. Firerate PU is Designed to cure into a fire rated, elastic Weatherproof seal.

USES

Sika® Firerate PU is designed for sealing exterior and interior movement joints where a fire rating of up to 4 hours is required in:

- Expansion and construction joints
- Tilt-up construction
- Precast and in-situ concrete
- Brick and blockwork
- Areas requiring intumescent sealing
- Plasterboard (Fire rated &/or Acoustic rated)
- Fibre cement sheet (Fire rated &/or Acoustic rated)
- Sika® Firerate PU also fulfils the basic function of a gap filler and joint sealant against water and dust penetration

CHARACTERISTICS / ADVANTAGES

Fire rated up to 4 hours (AS1530 Part 4, AS4072 Part 1)

- Superior UV resistance and durability
- Permanently flexible
- Accommodates 50% total joint movement
- Non-staining
- Single component - no mixing required
- Excellent adhesion with no primer
- Fast skinning time

APPROVALS / STANDARDS

- AS1530 Part 4-1997 (Fire Resistance Test of Elements of Building Construction) and AS4072 Part 1-1992 (Service penetrations and control joints). Tested by BRANZ
- BS476 Part 20-1987 – Fire testing for Building Materials

PRODUCT INFORMATION

Chemical Base	Moisture curing Polyurethane
Packaging	Sika Firerate PU is supplied in 600 ml sausages
Appearance / Colour	PU Based intumescent sealant / Grey
Shelf Life	This product will keep for at least twelve (12) months
Storage Conditions	Stored in the original sealed packaging at temperatures of between 5 °C and 27 °C
Density	1.61 kg/litre

TECHNICAL INFORMATION

Shore A Hardness	47
Tensile Strength	2.2 MPa (ASTM D412)
Elongation at Break	500 – 600%
Skin Time	2-4 hours (24 °C / 50% r.h)
Curing Time	24-48 hours 6 mm diameter bead (24 °C / 50% r.h)
Maximum Joint	±25% of average joint width movement at time of sealing

BRANZ Fire Tests

AS1530 Part 4 (1997) and AS4072 Part 1 (1992)

Joint type (Seal orientation)	Diagram Number	Fire Test Specimen Number	Seal Size (width x depth)	Integrity Rating (minutes)	Insulation Rating (minutes) in concrete wall thickness at least:		
					120 mm	150 mm	180 mm
Single side seal only on side remote from fire	1	5	20 x 10	240	60	60	60
		2	40 x 20	240	60	60	60
Single side seal only on side exposed to fire	2	1	20 x 10	240	90	120	180
		3	40 x 20	240	120	180	240
Both sides sealed	3	4	20 x 10	240	120	180	240
		6	40 x 20	240	120	180	240

Note: All tests performed using Sika PEF Rod as backing material.

APPLICATION INFORMATION

Consumption	Joint Size (W x D in mm)	Metres / Litre	Metres / Sausage
	20 x 10	5	2.5
	40 x 20	1.25	0.63

Application Temperature +5 °C — +40 °C

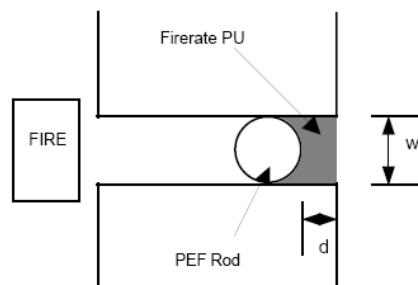
Service Temperature +40 °C — +90 °C

Design Criteria

- Sika Firerate PU may be used in joints from 5mm to 40 mm wide.
- Joint depth should not be less than 10 mm. For joints over 20 mm wide, Depth should be half of the width.
- Refer to fire test data (Table 1) for correct joint size and orientation to achieve required fire rating.

Diagram 1

Vertical and horizontal wall joints - single side seal remote from fire

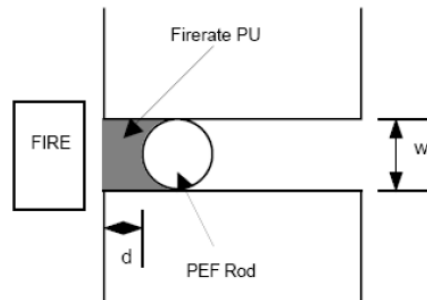


W = either 20 mm (test specimen 5) or 40 mm (test specimen 2)

D = 10 mm or $w/2$, whichever is greatest

Diagram 2

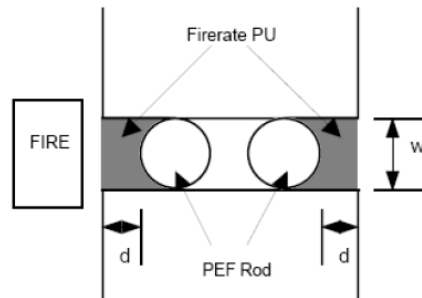
Vertical and horizontal wall joints - single side seal exposed to fire



W = either 20 mm (test specimen 1) or 40 mm (test specimen 3)
D = 10 mm or $w/2$, whichever is greater

Diagram 3

Vertical and horizontal wall joints - both sides sealed.



W = either 20 mm (test specimen 4) or 40 mm (test specimen 6)
D = 10 mm or $w/2$, whichever is the greater

APPLICATION INSTRUCTIONS

SUBSTRATE PREPARATION

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.

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.

Do not use alcohol to clean surfaces of the penetration. Residual alcohol will prevent the cure of Sika Firerate PU.

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

Sika Firerate PU will adhere to most common construction substrates and perform in un-contaminated joints without the need of a primer.

Substrates include but are not limited to concrete, marble, granite, anodized aluminium, mill finished aluminium, galvanised surfaces, glass fibre reinforced plastic (GRP), and wood.

APPLICATION METHOD / TOOLS

For easier use we recommend the material is stored between 10°C and 30°C prior to use. Sika 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 Sika 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 Sika 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 Sika 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 backup 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 Sika 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 Sika Firerate PU with a fine mist of water to promote early skinning. Seal joints in walls facing west in the morning.

CLEANING OF TOOLS

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.

LIMITATIONS

- Sika Firerate PU is not recommended for:
 - a. Use in continuous immersion conditions.
 - b. Use in contact with bitumens.
 - c. Horizontal joints in floors or decks where direct physical wear is encountered.
- The fire rating of Sika Firerate PU is specific to the tests quoted in this datasheet.
- Users should satisfy themselves that the test results are applicable to their own installations.
- The chemical resistance of Sika Firerate PU is limited and exposure to solvents, oils and other chemicals should be restricted to infrequent contact.
- This product is suitable for professional experienced users only. Test with actual substrates and conditions have to be performed to ensure adhesion and material compatibility.
- Sika 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 Sika Firerate PU in the nozzle will cure and have to be removed.
- When applying sealant, avoid air entrapment.
- In some bathroom and kitchen environments Sika 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 Sika Firerate PU for a period of 6 months or more an overpaintability test should be made to determine:
 - a. that the paint dries properly within the expected time frame.
 - b. that if the paint film dries satisfactorily it is not subsequently softening and/or stained where it comes into contact with the Sika Firerate PU when exposed to the heat of the sun.
 - c. that the adhesion of the paint/coating is satisfactory to the Sika Firerate PU.

Conduct a simple test, overpaint a cured sample of Sika 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 Sika Firerate PU with Sikagard-680S – it will not dry satisfactorily.
- Do not use Sika Firerate PU to seal joints in chlorinated swimming pools or spa pools because occasional overdosing with chlorine etc. can eventually cause the Sika Firerate PU surface to become sticky.
- 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 Sika Firerate PU during conditions of rising temperature.
- Open cell backer rod allows moist air access to the bottom of the joint so that the Sika Firerate PU can cure simultaneously from the front and back of the joint.
- Sika 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 Sika flex to glass bond is exposed to direct or indirect sunlight or UV radiation

BASIS OF PRODUCT DATA

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the declared data for this product may vary from country to country. Please consult the Local Product Data Sheet for the exact product data.

ECOLOGY, HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safety-related data.

LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika 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 accordance with Sika's recommendations. 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 user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the Local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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