

Sikadur® 328LT

Low Temperature, Vinylester Resin for Injection Grouting and Crack Sealing

Description Sikadur® 328LT, is a two-component, low viscosity and modified vinylester resin that can be placed at sub-zero temperatures and can be formulated to cure at even lower temperatures. It is designed to be used in dry conditions as an injection resin to fill cracks and as a gravity fed resin to seal horizontal cracks in concrete and masonry, restoring structural integrity and protecting against the ingress of water or harmful substances.

Where to Use

- Pressure injection of fine cracks (0.18 to 0.56 mm [0.007 to 0.022 in]) in structural concrete, masonry and other suitable substrates, at low temperatures.
- Gravity feeding of dry cracks in horizontal concrete and masonry to seal against penetration of water and detrimental solutions, at low temperatures.

Advantages

- Low viscosity, accommodates need to seal fine cracks.
- Deep penetration and tenacious crack bonding in structural concrete.
- High early-strength development, accelerating adhesion and sealing.
- Cures in place down to -5°C (23°F), tolerating less than favourable conditions.
- Can be formulated to cure down to -20°C (-4°F), allowing application in demanding situations.

Technical Data		
Packaging	3.75 L (1 US gal.) pail and 125 g (4.4 oz) jar = unit Unit consists of Component A + B	
Colour	Component A : Light Amber Component B: White powder Mixed (A + B): Light Straw	
Yield	1 L = 1 m ² of resin at 1 mm thick (1 US gal = 231 in ³)	
Shelf Life	9 months in original, unopened packaging. Store dry between 5 and 32°C (41 and 89°F). Condition product to 18 and 29°C (65 and 84°F) to suit injection.	
Mix Ratio	A:B = 100:3.5 by volume , 100:2 by weight	
Properties at 23°C (73°F) and 50% R.H.		
Specific Gravity	A: 1.04 kg/L B: 0.60 kg/L Mixed (A + B): 1.03 kg/L	
Viscosity	A: 400 cps +/- 100 B: Powder Mixed (A + B): 450 - 550 cps	
Pot Life (Mixed Resin)	12 min	
Tack Free Time (10/25°C [50/77°F])	40/30 mins	
Full Cure (10/25°C [50/77°F]) 10 mils	180/90 mins	
Compressive Strength ASTM C109 (23°C [73°F])*		
	Neat	Mortar (1:5)
1 day	100 MPa (14 500 psi)	80 MPa (11 600 psi)
* Product cured and tested at the temperatures indicated		
Tensile Properties ASTM D638		
14 days	Tensile strength	70 MPa (10 150 psi)
	Elongation at break	5.0%
<i>Product properties are typically averages, obtained under laboratory conditions. Reasonable variations can be expected on-site due to local factors, including environment, preparation, application, curing and test methods.</i>		



How to Use

Surface Preparation

General: Proper preparation and a suitable substrate condition are fundamental to achieving the best results and durable performance from injection grouting and crack sealing. Foreign material in a crack, an anchor hole or horizontal fracture may be a major factor in successful injection or grouting works. **Note:** Substrates must be clean, sound and dry. Optimum penetration and adhesion are obtained in the correct conditions.

Concrete: Where cracks are to be injected or gravity sealed clean the concrete surface along the length of the crack to approx 20 mm (3/4 in) on either side to remove existing coatings or surface treatments, dirt, dust, debris, loose friable material and other such contaminants which will impede penetration and impact upon adhesion. Sandblasting or other such mechanical methods are considered most suitable to remove all deleterious material and provide an open, roughened texture. Where a deeply contaminated concrete exists, ie., containing oils, grease or similar such substances, chip out the affected substrate and vacuum any preparation residue to achieve a suitable surface condition. If possible, clean the crack with a wire brush to clear the way for resin to penetrate. Blow out the crack or defect with clean, dry and filtered (oil-free) compressed air or vacuum to remove all contaminants.

Steel: Where cracks are to be injected and steel is present, clean the steel surface around the fracture to approx. 20 mm (3/4 in) to remove existing coatings or surface treatments, dirt, dust, debris, loose friable material and other such contaminants. Sandblasting or other such mechanical methods are considered most suitable to remove all deleterious material and provide a white-metal finish. Blow out the prepared crack, where possible, with clean, dry and filtered (oil-free) compressed air or vacuum to remove all contaminants.

Injection Set-up

When using automated or manual injection equipment, set appropriate injection ports, tees etc. as required by the system being used. The intervals at which injection ports, tees or drilled ports are set will be governed by the severity and extent of the crack together with the nature of the structure. Space the injection points in accordance with the thickness of the element being injected (100 to 200 mm [4 to 8 in]). The spacing can be increased or decreased as determined by the rate of injection of the specific resin.

Where substrates are relatively flat and can accommodate them, injection tees are installed over the crack, taking care not to block the passage way for the injected resin. Where substrates are not flat or cannot be cleaned to the required standard to allow adequate adhesion of the injection ports, install drilled ports. Create drill holes approximately 25 mm (1 in) deep and 10 mm (3/8 in) diameter or to suit the ports being used using a vacuum drill. Ensure the passage way is not blocked and insert the injection ports.

Seal or 'cap' the face of the crack, defect or void using Sikadur® 31 Hi-Mod Gel^{CA} or Sika AnchorFix®-3001 (refer to specific Product Data Sheet) depending upon prevailing conditions. The capping can be applied by a manual dispenser, trowel or with a palette knife, ensuring a consistent thickness (6 mm [1/4 in]) and complete seal over the crack (25 mm [1 in] wide) or opening in order to prevent leakage when injection begins. Ensure that the injection tees or ports are securely fixed to prevent leakage or displacement, but that the adhesive does not obstruct the path through which the injection resin is to pass. Extra care should be paid to this step as this is the most likely place for problems and/or delays due to "break outs" in the capping. When a break out happens, injection often has to be stopped until the crack can be re-capped to prevent leakage.

Where a crack is accessible on both faces of a structural element or the substrate is greater than 500 mm (20 in) in its cross-section, the crack should be capped and injection points may need to be located on both faces.

It is sometimes possible to flush cracks or voids to remove contaminants or foreign particles prior to injection, introducing water or compressed air through the injection tees or ports in succession and subsequently inserting a plastic plug or cap into the injection port to close them off and prevent further contamination. A thorough study in this regard is always necessary. **Note:** If flushing the crack with water, always allow the crack to thoroughly dry before injecting. Be aware that injecting into a damp or wet crack will not produce a structural repair.



Mixing	<p>To prepare the resin: Prior to mixing, pre-stir Components A separately to achieve an even consistency.</p> <p>Proportion 3.5 parts Component B (catalyst) to 100 parts Component A (resin) by volume and empty into a clean, suitably sized container in which the material can be mixed thoroughly without loss. Mix the combined components thoroughly for at least 2 minutes, using a slow-speed drill (300 - 450 rpm) to minimise entrapping air. Use an Exomixer type mixing paddle (recommended model) or Sika paddle, suited to the volume of the mixing vessel. During the mixing operation, scrape down the sides and the bottom of the container with a flat or straight edge trowel at least once to ensure complete mixing. When completely blended Sikadur® 328LT should be uniform in appearance and consistency.</p> <p>Mix only that quantity that can be used within its pot life, approximately 12 minutes, depending on dosage rate of Component B and prevailing temperatures. Transfer the mixed resin into a suitable injection device or gravity feed container.</p>
Application	<p>To pressure inject cracks: Once the sealing (capping) paste has cured, inject Sikadur® 328LT with slow, steady pressure. The low viscosity of the product allows it to be injected at high pressure (approx. 1380 kPa [200 psi]) or lower pressure (approx. 275 kPa [40 psi]). Injection pressure is based upon the resin, the structure, location, width, depth and extent of the crack to be filled.</p> <p>Start the injection process at the widest section of the crack if working horizontally or where the injection is to a vertical surface, begin at the lowest port and work upwards. Keep all ports opened and close or plug the ports once there is free flowing resin from that port. Continue injecting into the open and clear port until the pressure builds up and resin flows freely and uniformly from the next port in the sequence. Maintain the injection pressure for 1 to 5 minutes to maximise penetration and then close the port being injected and release pressure. Continue until the crack or void is completely filled with resin.</p> <p>Test samples of the resin being injected should be taken before, during and after injection is completed to ensure that the resin is properly mixed and will cure satisfactorily. Following a waiting time of 24 hours after injection work has been completed, remove all injection ports, fill any resulting cavities and, where necessary, grind down the sealing (capping) paste. Unless the site of the injection works is being overlaid or overcoated, there will be a limit to the degree to which an aesthetic appearance can be achieved. Where this is an issue, a sample installation should be undertaken and assessed.</p> <p>To gravity feed cracks: Seal the underside of a slab prior to filling if cracks in the upper surface reflect through. Pour neat Sikadur® 328LT into a V-notched crack. Continue placement until completely filled.</p>
Clean Up	<p>Uncured material can be removed with Sika® Equipment Cleaner. Cured product can only be removed mechanically. Wash soiled hands and skin thoroughly in hot soapy water or use Sika® Hand Cleaner towels.</p>
Limitations	<ul style="list-style-type: none"> ■ Sikadur® 328LT must not be thinned; solvents will prevent proper cure. ■ Minimum age of concrete must be 21 to 28 days depending on curing and drying conditions. ■ Minimum in place curing temperature: -5°C (23°F) unless using formulation for -20°C (-4°F). ■ Maximum neat resin thickness: 3 mm (1/8 in). ■ Not for injection of cracks under damp, wet or hydrostatic pressure/flowing water conditions. ■ Sikadur® 328LT contains a flammable monomer, so there must be no smoking, open flames or pilot lights or use of tools or equipment which may cause sparking.



Construction

Health and Safety Information

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

KEEP OUT OF REACH OF CHILDREN
FOR INDUSTRIAL USE ONLY

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, within their shelf life. 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 recommendations, or from any other advice offered. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users should always refer to the most recent issue of the Product Data Sheet for the product concerned, copies of which will be supplied on request or can be accessed in the Internet under www.sika.ca.



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