



**PRODUCT DATA SHEET**

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GROUTING

# Sikadur® VPC

## UNIVERSAL RAPID POLYMER CONCRETE

<b>Description</b>	Sikadur® VPC is a design mix of modified vinyl ester resin with catalyst and preblended aggregate. This unique combination produces a high performance polymer concrete with outstanding physical and chemical properties. By varying the aggregate to resin ratio, suitable mortars can be obtained for pouring or trowelling down to -20 °C (-4 °F) at thicknesses ranging from 25 - 500 mm (1 - 20 in).
<b>Where to Use</b>	<ul style="list-style-type: none"> <li>For fast turnaround of heavy industrial floor and containment areas in aggressive environments i.e. metal refining, pulp and paper, chemical plants, waste incinerators.</li> <li>Ideal as expansion joint nosing material and bridge repair system (Sikadur® VPC provides excellent abrasion resistance and thermal compatibility with concrete).</li> <li>For rail base pads, tower bases and structural repair work (Sikadur® VPC can be placed down to -20 °C (-4 °F) and provides a fast cure at sub-zero temperatures).</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>Sikadur® VPC is fast to cure, reaching high strength within a few hours.</li> <li>May be poured or troweled into place.</li> <li>Sikadur® VPC may be placed at temperatures as low as -40 °C (-40 °F). It cures as the temperature reaches -20 °C (-4 °F). It may be placed on frozen dry surfaces.</li> <li>Will adhere to damp rocks or concrete at above freezing temperatures. Best results are obtained by drying the substrate.</li> <li>Tests conducted by Ontario Hydro confirm that Sikadur® VPC has better resistance to creep than well-cured 30 MPa (4350 psi) concrete when tested at 23 °C (73 °F). At 38 °C (100 °F), the creep resistance of both materials is similar.</li> <li>High chemical resistance to a wide variety of acids, alkalies and salts as it is based on vinyl ester resin technology.</li> <li>Ministry of Transport Québec acceptance.</li> </ul>

**Technical Data**

**Packaging**

Ratio (aggregate:resin by wt)	13:1	15:1	17:1
Resin	9 L (2.4 US gal.)	9 L (2.4 US gal.)	9 L (2.4 US gal.)
Benzoyl Peroxide	280 g (9.9 oz)	280 g (9.9 oz)	280 g (9.9 oz)
Sikadur® Aggregate-8	6 x 20 kg (44 lb)	7 x 20 kg (44 lb)	8 x 20 kg (44 lb)
<b>Yield</b>	54 L (1.9 ft³)	64 L (2.2 ft³)	74 L (2.5 ft³)

**Note:** For thin and long pours, use Sikadur® Aggregate-8.  
5 x 20 kg (44 lb) (10:1 ratio) for pours 25 - 50 mm (1 - 2 in) deep.  
Yield: 49 L (1.73 ft³)

**Shelf Life**

9 months in original, unopened packaging (each component). The components of Sikadur® VPC can be stored on a pallet kept outside provided a plastic cover is used. The resin will not freeze. Sikadur® Aggregate-8 must be stored in a dry environment.

**Recommended Mixes vs Temperature & Thickness**

Thickness mm (in)	Ambient temp. °C (F°)	Aggregate:resin ratio
25 - 75 (1 - 3)	-20 - 0 (-4 - 32)	13:1
25 - 75 (1 - 3)	0 - 10 (32 - 50)	13:1
25 - 75 (1 - 3)	10 - 30 (50 - 86)	15:1
75 - 250 (3 - 10)	-20 - 0 (-4 - 32)	13:1
75 - 250 (3 - 10)	0 - 10 (32 - 50)	15:1
75 - 250 (3 - 10)	10 - 30 (50 - 86)	17:1
250 - 500 (10 - 20)	-20 - 0 (-4 - 32)	13:1
250 - 500 (10 - 20)	0 - 10 (32 - 50)	15:1
250 - 500 (10 - 20)	10 - 30 (50 - 86)	17:1

**Curing Schedule (13:1 mix)**

This varies with substrate temperature, material temperature, size of pad and aggregate to resin loading.

50 % of ultimate strength is achieved after:	25 °C (77 °F)	10 °C (50 °F)	5 °C (41 °F)	-5 °C (23 °F)	-15 °C (5 °F)
	1 hr	2 hrs 30 min	3 hrs 30 min	8 hrs	24 hrs

*Note: At 50 % of ultimate strength Sikadur® VPC surface will take normal traffic. 85 % of ultimate strength is obtained at above times plus 10 %*

**Properties at 23 °C (73 °F) and 50 % R.H.**

**Component A (resin)**

Specific gravity	1.03 kg/L (8.6 lb/US gal.)
Viscosity	50 cps
Colour	Grey

**Component B (hardener)**

50 % active Benzoyl Peroxide powder

**Component C**

Sikadur® Aggregate-8

<b>Components A+B (Primer)</b>		
Specific gravity	1.03 kg/L (8.6 lb/US gal.)	
Viscosity	50 cps	
Colour	Grey	
Solids by weight	100 %	
Pot life, 200 g (7 oz)	25 minutes	
Pot life, 200 g at -20 °C (7 oz at -4 °F)	4 hours	
<b>Physical Testing (13:1 Design Mix)</b>		
<b>Density</b>	2380 kg/m <sup>3</sup> (148 lb/ft <sup>3</sup> )	
<b>Compressive Strength CSA-A23.2-9C</b>	116 MPa (16 830 psi)	
<b>Splitting Tensile Strength CSA-A23.2-13C</b>	17.7 MPa (2568 psi)	
<b>Modulus of Elasticity</b>	28.4 GPa (41.2 x 10 <sup>12</sup> psi)	
<b>Bond Strength ASTM C882</b>		
28 days to concrete	Dry	21.9 MPa (3177 psi)
	Wet	7.2 MPa (1045 psi)
<b>Abrasion Resistance Underwater Method ASTM C1138</b>	no weight loss in 72 hours	
<b>Water Absorption</b>	0.2 %	
<b>Coefficient of Thermal Expansion</b>	9.7 x 10 <sup>-6</sup> /°C (5.4 x 10 <sup>-6</sup> /°F)	
<b>Freeze/Thaw Resistance ASTM C666</b>	91 % durability factor	
Procedure A, 318 cycles (8.5:1 Mix)		
<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

Following ICRI Guideline 310.2, the concrete surface must be clean, sound and mechanically prepared to obtain a surface profile of CSP 6 – 10 (ex : hydrodemolition, scarification, scabbling + sandblasting, etc.). Follow ICRI Guideline 310.1 for the preparation of the repair perimeter, the repair area geometry and for the cleaning of the concrete and reinforcing steel surfaces. Verify the absence of micro cracking following ICRI Guideline 310.2.

New concrete should cure a minimum of 28 days. Dry surfaces provide best results. However, product will adhere to clean, damp surfaces. Remove all debris from working surfaces. Remove all contaminants, heavy laitance, or curing compounds, which will interfere with proper adhesion. Special consideration must be given to oil or other foreign material, which may have penetrated into the concrete. Pull Tests must always be used to verify adequacy of preparation. Frozen substrates should be heated to remove frost.

**Priming:** The 13:1 Sikadur® VPC design mix is sufficiently “resin rich” to be self-priming when placing. Priming of the concrete will generally be required when placing 15:1 and 17:1 Sikadur® VPC design mixes. Priming is undertaken using Sikadur® VPC resin/BPO mix and applying to the prepared surface. Sikadur® VPC mortar mix should be applied to the primer while the primer is still wet/tacky.

### Mixing

First, mix Sikadur® VPC resin component ensuring all pigment is full dispersed. Check the bottom of the can to ensure all pigment is incorporated. The BPO catalyst should then be added slowly to the resin while mixing with a slow speed mixer (approx. 300 rpm). Sikadur® Aggregate should be added slowly while mixing. The product should be mixed for two (2) minutes after all Sikadur® Aggregate has been wet with the resin. A mortar mixer is ideal for mixing Sikadur® VPC. For the first mix in the dry mixer, it is recommended that Sikadur® Aggregate quantity is reduced to allow for resin loss in the dry mixer. For example, if a 15:1 [i.e. 7 bags: 9 L (2.4 US gal.) resin] mix is selected, then reduce the aggregate quantity by 1 x 20 kg (44 lb) bag.

### Application

Place the mixed Sikadur® VPC immediately after the mixing operation. It is important to compact Sikadur® VPC to eliminate air. Rodding or vibrating the material is helpful to achieve ultimate strength.

For overlayment of 50 - 75 mm (2 - 3 in) then 12 mm (1/2 in) control joints should be placed every 3.3 m (10 ft). Compressed fibreboard is suitable to form the control joints (12 mm). It should be removed shortly after Sikadur® VPC has been placed, otherwise it will become bonded to Sikadur® VPC. The control joints can be filled once Sikadur® VPC has reached 85 % ultimate strength (see Curing Schedule in the Technical Data).

A pourable mix of Sikadur® LT Grout is recommended to complete the chemical resistant seamless overlay. For deeper pours, control joints should be placed every 1.6 m (5 ft). The control joints allow the rapid set Sikadur® VPC to exotherm and contract without cracking. Because complete cure is so fast, the initial set material is dimensionally stable and no curing shrinkage should be seen.

### Clean Up

Do not use Xylene. Clean up of the mortar mixer must be done immediately after each working session. An effective clean up procedure is to, first, put dry 6 mm (1/4 in) stone into the mortar mixer to pick up excess Sikadur® VPC mortar from the working surfaces of the mixer. Dump the stone for re-use. Take more clean 6 mm (1/4 in) stone and repeat the procedure, but this time include acetone or the Methyl Iso-Butyl Ketone (MI-BK). Dump and allow mixer to dry before re-using it.

### Limitations

In confined areas provide excellent ventilation during placement and cure of Sikadur® VPC, to ensure removal of styrene from the surface of the material. Failure to do this will result in surface tack.

### 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 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 shelflife. 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 information contained herein does not relieve the user of the products from testing them for the intended application and purpose. 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 or may be downloaded from our website at: [www.sika.ca](http://www.sika.ca)

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