BUILDING TRUST

PRODUCT DATA SHEET

SikaInject®-1360

(formerly MInject 1360)

Low viscosity epoxy resin for injection and gravity feeding of cracks in concrete

DESCRIPTION

SikaInject®-1360 is a two component epoxy based low viscosity injection resin. It is used for low / high pressure injection and gravity feeding of concrete cracks to maintain the structural integrity of the cracked sections.

USES

- Cracks in concrete and masonry
- Interior and exterior
- Structural re-bonding of cracked concrete sections
- Re-bonding the delaminated concrete toppings
- Filling porous or honeycombed concrete or grout

FEATURES

- Low viscosity guarantees excellent penetration into fine fissures
- Long working time ensures excellent penetration into the substrate
- Excellent adhesion guarantees durable bond to substrates
- High strength material for good mechanical properties and durable repair
- CE-certified according to EN 1504-5 (System 2+)

CERTIFICATES AND TEST REPORTS

CE-certified according to EN 1504-5 (System 2+)

PRODUCT INFORMATION

Packaging	SikaInject®-1360 available in 15 kg units consisting of 11.63 kg Part A and 3.37 kg Part B.		
Colour	Clear		
Shelf life	18 months if stored at below mentioned storage conditions		
Storage conditions	Store at ambient temperatures, out of direct sunlight, in cool, dry warehouse conditions and clear of the ground on pallets protected from rainfall prior to application.		
Density	Part A	1.10 kg/l	
	Part B	0.90 kg/l	
	Part A+B mixed	1.10 kg/l	
	at +20 °C		
Viscosity	Temperature	Part A+B mixed	(ISO 3219)
	+21°C	190 mPa·s	

TECHNICAL INFORMATION

Shore D Hardness (EN ISO 868)

Temperature	Curing Time	Shore D
+10°C	2 days	30
+23°C	5 days	74

Compressive strength (EN 196-1)

Time	+23° C
7 days	52 N/mm²

Flexural-strength (EN 196-1)

Time	+23° C
7 days	23 N/mm²

Tensile strength

Time	+23° C
7 days	13 N/mm²

Modulus of elasticity in tension

Time	+23° C
7 days	417 N/mm²

Tensile adhesion strength

Time	Medium	Failure Mode
7 days	dry crack	Concrete Failure
7 days	moist crack	Concrete Failure

Concrete type is MC (0.40) according to EN 1766, tensile strength of the concrete ($f_c t$) is lower than 3.5 N/mm² and crack width is 0.5mm. Results were obtained after both normal curing conditions and thermal and wet/drying cycles.

Joint width

Injectability in dry media (D) @ 0.2mm crack width (Determination by injectability class and splitting strength) (EN 1771)

Temperature	Criteria
+15° C	passed
+35° C	passed

Injectability in dry and moist media @ 0.5mm crack width (Determination by tensile adhesion strength) (EN 12618-2)

Temperature	Criteria
+15° C	passed
+23° C	passed

Elongation at break

Time	+23° C
7 days	3.5 %

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.

IMPORTANT CONSIDERATIONS

Usual preventive measures for the handling of chemical products should be observed when using this product, for example do not eat, smoke or drink while working and wash hands when taking a break or when the job is completed.
Specific safety information referring the handling and transport of this product can be found in the Material Safety Data Sheet. For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted.
Disposal of product and its container should be carried out according to the local legislation in force. Responsibility for this lies with the final owner of the product.

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.

APPLICATION INSTRUCTIONS

NOTES ON INSTALLATION

Design and application should be carried out by appropriately qualified and competent person(s).
Do not apply at temperatures below +8 ºC nor above +35 ºC. Be sure about the mixing ratios while making

partial mixtures for low amount of use. Do not add any other substance that could affect the properties of the product. In case of hot weather, the product should be stored in fresh site and should be protected from sunlight.
Protection clothing and equipment are mandatory for the application of this product. See Safety Data Sheet for details.
Do not add any other substance that could affect the properties of the product.

EQUIPMENT

Airless high-pressure machines:
J. Wagner GmbH
Otto-Lilienthal-Str. 18
88677 Markdorf.
Injection pumps:
Polyplan-Werkzeuge GmbH
Riekbornweg 20
22457 Hamburg
Krautzberger GmbH
Stockbornstraße 13
65343 Eltville
Hose pumps:
Braunschweiger Laborbedarf GmbH & Co. KG
Friedrich-Seele-Str. 3
38122 Braunschweig
Pressure vessel:
Desoi GmbH
Gewerbestraße 16
36148 Kalbach

SUBSTRATE QUALITY

Substrate surfaces along the line of the crack capping sealer i.e. Sikadur®-31+ Rapid, must be sound, clean, dry or matt damp. Free from standing water, ice, dirt, oil, grease, coatings, laitance, efflorescence, old surface treatments, all loose particles and any other surface contaminants that could affect adhesion.
Cracks must be clean.

SUBSTRATE PREPARATION

The sides of the cracks may be damp (except for gravity feed application) but it has to be clean and without mud. Before the injection application, plan the position of the entry ports/nipples.

MIXING

SikaInject®-1360 is designed for the application with 2 component injection machines, where the mixing happens within the nozzle or pistol. It is supplied in two separate components, in the correct quantities, ready for use in a volume mixture of approx. 3:1 (A : B) and 100:29 by weight.
For hand mixtures up to 1000 ml, make sure that the material can be fully applied before it starts to set. If the material mixed and stored in a steel can/drum, after a while, it starts to harden very fast and develop heat. Consider this property and avoid keeping mixed resin as a bulk in steel cans/drums.
Add all of Part B to Part A. Mix with a mixing spindle to a slow speed electric (max. 250 rpm) for at least 3 minutes. Over mixing must be avoided to minimise air entrainment. Mix full units only.

APPLICATION

Application of low viscosity injection resins is a skilled operation requiring trained operatives. As site conditions and application requirements differ markedly from site to site these should be agreed between the applicator and the supervising engineer/client.
Socket type entry ports / nipples
Depending on the crack width, the holes should be drilled in both two sides of the crack line with an angle of 45° to the surface. The holes should be 5-10 cm away from the crack line and deep enough for passing across the crack plane and reach opposite side. The distance between holes should not exceed half the thickness of the component and 60 cm respectively, fig.1.
Suck off dust developed during the drilling process and clean the holes. Insert entry ports/nipples into the prepared holes, screw and fix tightly. All the cracks and nipple sides should be sealed with the following Sika products by using a spatula or trowel to prevent the leakage of injection resin from the crack openings, fig.1

Socket type nipples placed around the crack and sealed with proper Sikadur® epoxy adhesive.
Sika AnchorFix®-2+ / -2020 for crack injections after 30 to 60 minutes or damp surfaces,
Proper Sikadur® epoxy-based mortar for crack injections under high pressure after approx. 24 hours. Con-

sult to your local Sika representative for selecting the cap seal material

Surface mounted entry ports / nipples:

Location of the entry ports/nipples should be identified before the installation. Depending on the crack size and the element size, the injection nipples should be placed 15 – 50 cm apart along the length of the crack. For fixing the port to the concrete, apply a small amount of proper Sikadur® type epoxy-based mortar/paste around the bottom of the port base.

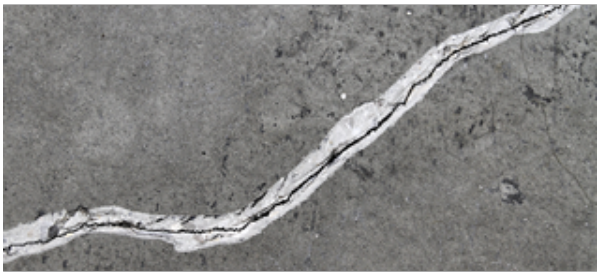
Place the nipple at one end of the crack and repeat until the entire crack is ported. Take care to mound the epoxy around the base of ports and to work out any holes in the material. Seal all the nipples and crack opening by using a proper Sikadur® type epoxy-based mortar/paste or use Sika AnchorFix®-2+ / -2020 for quick injections (in a couple of hours crack after cap sealing). It is recommended that the cap seal should be a minimum of 1 mm thick and 6-8 cm wide in case of epoxy-based materials.

Insufficient paste-over will result in leaks under the pressure of injection. Consult to your local Sika representative for selecting the cap seal material.

Gravity feed with resin - without entry ports / nipples

In case of horizontal cracks (e.g. on floors) gravity feed can be used as a practical repair solution. It should be considered that this method does not provide a durable structural repair in case of deteriorated concrete due to carbonation, corrosion and chemical attacks.

In case of low strength concrete / very weak substrate, saw cut the cracks to create V shaped groove in the crack opening, fig. 2.



V-shaped groove opened on the crack.

All potential barriers to penetration must be removed. Remove all dirt, grease, oil, paints, curing compounds on the crack. Use a wire brush, handheld grinders or sand blasting method to remove the loose particles on the crack and use oil-free compressed air to remove the dust.

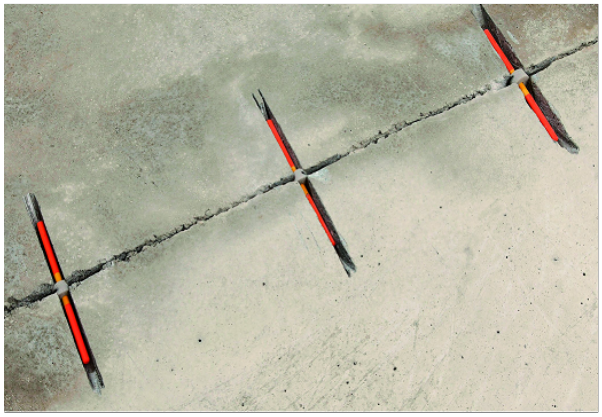
Allow the crack and surrounding area to dry for at least 24 hours before applying the resin. Moisture within the cracks and the concrete pores can prevent penetration because SikaInject®-1360 is very low viscous and cannot displace the water by gravity feeding.

Gravity feed with resin – with screed ties

In case of wide (> 5 mm) cracks on concrete floors metal anchors/ties can be used to maintain the structural integrity of the concrete floor.

Saw cut the floor perpendicular to the crack line with 1 – 3 cm deep and 0.5 – 1 mm longer than the screed ties.

Vacuum clean cracks and the canals opened for screed ties to remove all potential barriers to penetration. Use a wire brush, handheld grinders or sand blasting method to remove the loose particles on the crack and use oil-free compressed air to remove the dust. Then, place the screed ties into the canals carefully, fig.3.



Placing the screed ties into the canals opened on the cracks

Socket type – surface mounted entry ports / nipples:
The tightness of the fit and seal and the permeability of the nipples must be checked (with compressed air) prior to the injection. The equipment and containers must be dry. Inject the mixed SikaInject®-1360 by means of suitable injection equipment under low pressure in case of using surface mounted entry ports / nipples. For socket type of entry ports / nipples, both low- and high-pressure injection techniques can be used. In case of vertical cracks or cracks running diagonally upward, inject from bottom to top. Starting at the lowest nipple inject SikaInject®-1360 as long until the filling emerges at the next nipple. Continue this procedure in sections from nipple to nipple up to the nipple positioned at the top.
In case of horizontal cracks or cracks in horizontal floor surfaces inject in one direction from one end of the crack to the other. Inject SikaInject®-1360 until the material emerges at the next nipple. Continue this procedure from nipple to nipple up to the other end of the crack.
In order to assure the desired structural integrity / monolithic structure of the cracked element, be sure to fill the crack completely without any voids/gaps.
After the injection application finishes, the nipples can be removed, and the holes can be filled with proper Sika MonoTop® repair mortar or Sikadur® type epoxy-based mortars.

Gravity feed with resin
Start the application as soon as the material is ready after a proper mixing. This is must for having a long working time to achieve a better penetration. Pour the mixed SikaInject®-1360 over the top of the cracks, which opened in shape of V grooves. Allow the resin to penetrate into the crack and keep filling the cracks until they will no longer accept resin, fig.4.
After 24 hours, visually check the cracks for any possible deficiencies on the crack surface. In case of uneven crack surface occurred due to the different level of resin penetration, use proper epoxy adhesive from Sikadur® series to level the grooves and finish the surface.

Pouring SikaInject®-1360 directly into the V-shaped groove opened on the crack
In case of not having ready to use cap seal material on site, prepare mixture by using SikaInject®-1360 and dry, clean quartz sand and fill the groove with this site mix mortar, fig.5.

Levelling the crack surface by using proper Sikadur® / Sika MonoTop® mortar.

Gravity feed with resin – with screed ties
Prepare a mixture by using SikaInject®-1360 and dry clean quartz sand and obtain a fluid mortar, which can fill the screed tie canals. Then pour the mortar into the canal and fill it completely. After filling the canals start to pour the SikaInject®-1360 itself over the top of the cracks. Allow the resin to penetrate into the crack and keep filling the cracks and the canals until they will no longer accept resin, fig.6.

Filling the screed tie canals and crack with SikaInject®-1360 mixture.

CLEANING OF EQUIPMENT

Tools and mixer must be cleaned immediately after use with suitable solvents. Cured material can only be removed mechanically.

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.

LEGAL NOTES

Any information or suggestions for use concerning Sika's products, which we either in writing or orally have given buyers or end-users of the product, have been given in good faith based on our own experiences and based on approved praxis and the technological and scientific knowledge on the time of giving such suggestions and information, which are given without any type of guarantees, and which do not lead to any further responsibility from Sika Danmark A/S, besides what is stated in the sales agreement in question. The buyer or end-user should themselves investigate or otherwise make sure, that our products are suitable for the use in question and further make sure that the products are kept and used correct and in agreement with the published rules and considering the actual conditions in order to avoid damages or less satisfactory results. Any order is accepted and any deliverance is affected according to the general terms of sales and delivery from Sika Danmark A/S, which are considered known and accepted, and which could be handed out when asked for. Our catalogues are not up-dated automatically. The present product data sheet is only for use in Denmark. Values stated in the present product data sheet should be seen as recommended, unless stated otherwise.

APPLICATION INFORMATION

Mixing ratio

Part A : Part B = 3.45 : 1 parts by weight (100:29)
Part A : Part B = 3.0 : 1 parts by volume

Ambient air temperature

+8 °C min. / +35 °C max.

Substrate temperature

+8 °C min. / +35 °C max.

Pot Life

Quantity: 100 ml

Temperature	Potlife
+15 °C	120 minutes
+21 °C	70 minutes
+35 °C	47 minutes

(ISO 9514)

The potlife begins when Parts A+B are mixed. It is shorter at high temperatures and longer at low temperatures. The greater the quantity mixed, the shorter the potlife. To obtain longer workability at high temperatures, the mixed adhesive may be divided into smaller quantities. Another method is to chill Parts A+B before mixing (not below +8 °C).

Curing time	Temperature	Tensile strength development	(EN 1543)
	+15 °C	68 hours	
	+21 °C	41 hours	
	+35 °C	18 hours	
	Time to reach > 3 N/mm² (minimum requirement < 72 h at lowest application temperature).		
Applied product ready for use	Full cure is reached in 7 days after the application at a constant temperature of 23 ºC. At constant 8 ºC, SikaInject®-1360 cures in 28 days.		

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