



CONSTRUCTION CHEMICALS TECHNOLOGIES

## VIMEPOX INJECT

*Injectable epoxy resin*

### *Properties*

**VIMEPOX INJECT** is a two-component, solvent-free, low-viscosity injectable epoxy system (resin and hardener).

**VIMEPOX INJECT** gives high mechanical and chemical strengths. The main property of this material is the optimal bonding to concrete and steel.

### *Applications*

- Bonding – repair of monolithic broken concrete elements, e.g. supports, beams, plates, walls etc., using the method of resin injections (under pressure).
- Installation – bonding of steel anchorage to concrete for stabilising loads or reinforcement bars
- Stabilisation of cracks in stones and rocks
- Void filling under concrete plates, bearings, floor plates (marbles, tiles), doorsills etc., by simple infusion.
- Impregnation and stabilisation of rotten wooden structures
- Filling and bonding of joints and cavities in wooden floors and creaking stairs.

### *Technical Data*

**Component A:** resin, transparent, low-viscosity liquid

**Component B:** hardener, transparent, low viscosity liquid

**Mixing Ratio:** A:B = 4:1

**Specific gravity of mixture (A+B):** 1.05 kg/lit

**Mixture viscosity (A+B):** 170 – 250 mPa·s at 23° C

#### **Pot life**

at 20° C: 90 min

at 30° C: 25 min



**Final strengths after 7 days at 23° C<sup>1</sup>:**

**Compressive strength:** > 53 N / mm<sup>2</sup>  
**Modulus of elasticity in compression:** 1450 N / mm<sup>2</sup>  
(DIN EN ISO 604)

**Flexural strength:** > 41 N / mm<sup>2</sup>  
**Modulus of elasticity in flexure:** 1165 N / mm<sup>2</sup>  
(DIN EN ISO 178)

**Tensile strength:** > 39 N / mm<sup>2</sup>  
**Modulus of elasticity intension:** 1210 N / mm<sup>2</sup>  
(DIN EN ISO 527)

**Bonding Strength to concrete:**  
(DIN EN ISO 12636)

**Tensile strength in flexure:** > 8 N / mm<sup>2</sup> – rupture of concrete  
**Adhesion strength (bonding):** 4 N / mm<sup>2</sup> – rupture of concrete

**How to use**

A precondition for achieving the final properties of **VIMEPOX INJECT** is to mix component A (resin) and component B (hardener) well and in the correct proportions. The two components are packed in different vessels in the right proportions. If you need a smaller quantity than the one contained in the packs, mix components A and B in a clean vessel using the ratio of A:B = 4:1 by weight. When using **VIMEPOX INJECT** you should take into account the temperature that affects pot life and hardening time significantly. At temperatures below 10° C the hardening of mixture A + B is inhibited without altering the system, and is completed later, when the temperature rises. Bonding of epoxy materials is adversely affected by substrate moisture: this means that before application, you must allow the wet substrate to dry.

**Resin Injections**

Resin injection is a simple method for penetrating the low-viscosity resin-hardener (A+B) mixture into the concrete cracks. The target is to completely fill any internal voids. After the resin has hardened (and due to the resin's bonding and other mechanical

<sup>1</sup> Test Report 00 02 79 0867/1 dated 30/10/2000, issued by the Institute of Compact Constructions and Technology of Structural Materials, University of Karlsruhe.



strengths, which are higher than those of the concrete) if a new high strain is applied, concrete rupture will appear at other points and not the bonded surfaces.

For a simple resin injection method, use a metal vessel where the resin A+B mixture is placed. Apply an overpressure of 1-3 at to the vessel by supplying air through a small air compressor. Using a flexible hose (e.g. a leveltube) pressure-inject the resin into the nipples at the concrete cracks.

In particular:

1. Reveal the whole crack by removing the plaster and clean the concrete surface well, using a wire brush.
2. Seal the crack with the epoxy paste **VIMEPOX MORTAR**, using a putty knife and insert special nipples (plastic, with sealing wedge) in the crack, at a distance of around 20 cm from each other.
3. Inject the resin the following day, after the sealing paste has obtained the proper strength. Before pressure-injecting **VIMEPOX INJECT**, you should check if the cracks are sealed correctly by supplying only pressured air.
  - 3.1 Always begin resin injection from the lower nipples (leaving all the others open) in order to rule out the entrance of air into the concrete voids.
  - 3.2 As soon as resin appears in the next nipple, stop pressure using a valve, seal the first nipple and connect the supplying hose with the next nipple, continuing with the resin injection, etc.
  - 3.3 After finishing the resin injection, clean the vessel and the pressure hoses with **VIMEPOX SOLVENT**.
4. On the next day you can remove the projecting plastic nipples in order to restore the plaster along the sealed cracks.

### ***Installations / Bonding of anchorage and reinforcement bars***

**VIMEPOX INJECT** is suitable for installing / bonding

- Steel anchor bolts (chemical anchor bolts)
- Concrete reinforcement bars

according to the experiment test of the Institute of Compact Constructions and Construction Materials, University of Karlsruhe (Test Report 01 25 79 075/1 dated 12/04/2001).

The liquid **VIMEPOX INJECT** is applied to holes on vertical or slightly inclined surfaces. The epoxy paste **VIMEPOX MORTAR** is imperative in horizontal holes or overhead anchorage applications.

Concrete holes are drilled according to the following rules:

- Hole diameter:  $D = \text{Bar diameter } d + 4 \text{ mm}$
- Depth of hole  $h \geq 10 \cdot d$



In order to avoid the reduction of strength in each anchor bolt, the following values have been determined:

- Radial distance between anchor bolts  $s \geq 2 \cdot h = 20 \cdot d$
- Distance from concrete edge  $c \geq h = 10 \cdot d$

For correct bonding of the anchor bolts, clean the holes from the powder that remains after hole-drilling, using pressured air. Make sure that concrete is dry. Fill the holes with **VIMEPOX INJECT** (A+B) up to about half their depth so that resin overflows after bar installation. If there are voids in the concrete, the low-viscosity resin might be absorbed and as a result its level will drop after a while. In this case add more material up to the upper edge of the hole.

### **Consumption**

The required amount of **VIMEPOX INJECT** can only be determined approximately on the basis of the geometrical parameters of the cracks (length, width and depth of the structural member). In order to fill a void of 1 lit you will need around 1 kg of **VIMEPOX INJECT**.

### **Cleaning of tools**

Tools used for the application of **VIMEPOX INJECT** should be cleaned before the hardening of the resin, using **VIMEPOX SOLVENT**.

### **Storage**

Store the material in closed vessels and shady places at a temperature of 10-25° C. Storage duration is for at least 1 year.

### **Hygiene Measures - Precautions**

During injections pressure with low-viscosity mixtures of resin/hardener there is a great risk for the skin and the eyes.

You should use gloves, protective goggles and preferably a helmet with a protective mask.

If contact of the resin, the hardener or their mixture with the skin occurs, wipe the material away using a napkin and then wash with soap and water or cleaning lotion. The use of solvents causes additional irritation to the skin.

In case of contact with the eyes, wash with plenty of water within the first 10-15 minutes and then visit an ophthalmologist.