

MAPEPOXY BI

Two-component epoxy resin for injection



WHERE TO USE

- Monolithic repair of structures or fissures caused by heavy loads, accidental impacts, etc.
- Bonding and reinforcement of structures by injection.
- Sealing cracks.

TECHNICAL CHARACTERISTICS

Mapepoxy BI is a two-component, solvent free epoxy adhesive. The components A (Resin) and B (Hardener) must be mixed before using the product.

Mapepoxy BI has a very high capillary activity due to its unique formulation, and adheres perfectly to concrete and steel.

Mapepoxy BI does not contain any benzyl alcohol or other plasticizers than migrate from the product after curing when subjected to normal conditions. The product will therefore remain unchanged throughout the lifetime of the construction.

Mapepoxy BI has very high mechanical strength and has a very good ability to maintain adhesion to concrete also in damp condition.

Mapepoxy BI polymerizes without shrinkage and once hardened is waterproof.

Mapepoxy BI is rated by FHI (The Public Health Dept.) for use in contact with drinking water.

Mapepoxy BI complies with the principles defined in EN 1504-9 standards (*"Products and systems for protecting and repairing concrete structures. Definitions, requirements, quality control and conformity assessment. General principles for the use and application of systems"*), and the requirements of EN 1504-5 (*"Concrete injection"*).

CLASSIFICATION OF INJECTION PRODUCTS

Injection products are classified according to the products corresponding to the performance requirements using the UW classification system (U:intended use, W:workability):

- F: injection product for force transmitting filling of cracks.
 - F1: Adhesion by tensile bond strength $> 2.5 \text{ N/mm}^2$
 - F2: Adhesion by tensile bond strength $> 1.5 \text{ N/mm}^2$
- D: injection product for ductile filling of cracks.
 - D1: Watertight at $2 \times 10^5 \text{ Pa}$
- S: Injection product for swelling fitted filling of cracks.
 - S1: Watertight at $2 \times 10^5 \text{ Pa}$

- The letter W for workability is followed by 3 or 4 groups of numbers between brackets.
 - First group: allowed minimum thickness of crack measured in tenths of millimeter.
 - Second group: moisture state of the crack (1 - dry, 2 - damp, 3 - wet, 4 - water flowing).
 - Third group: minimum and maximum use temperature.
 - Forth group: applicable only to F.
 - 1: Usable for cracks subject to daily movement higher than 10 % or 0.03 mm during curing.
 - 0: Usable for cracks subject to daily movement lower than 10 % or 0.03 mm during curing.

Mapepoxy BI is classified as U(F1) W(1) (1/2/3/4) (5/30)(0), identifies that the product is:

- For force transmitting filling of cracks.
- Injectable in cracks of 0.1 mm dry, damp, wet and water flowing.
- Fit for use from +5°C to +30°C.
- Usable for cracks subject to daily movement lower than 10 % or 0.03 mm during curing.

APPLICATION PROCEDURE

Preparation and evaluation of the substrate

Before start injecting **Mapepoxy BI** the concrete must be sound and clean. A general picture should be formed of the crack depth and width, plus the concrete quality, if the cracks are contaminated or filled with water. The purpose of the repair should be clear: corrosion protection, sealing or recovery of strength.

Sealing

Injection packers, copper piping or plastic hose parts are drilled into or glued along the crack and oriented to intercept the crack. Dust and cavities from drilling is easily removed by blowing with oil-free compressed air. Seal the crack with **Adesilex PG1** or a product from the **Adesilex PG**-series in order to prevent the low viscous **Mapepoxy BI** to leak out. Injection can start as soon as the sealing has hardened.

Preparation of the product

Components A and B should have a temperature of +15°C or more when mixed together. Comp. B is poured into comp. A and mixed with a drill whisk at a slow speed for approximately 3 minutes until the product is completely homogenous. The product must not be thinned!

Application of the product: Injection

Start immediately with the lowest packer. **Mapepoxy BI** is pumped in under pressure until the resin overflow in the next packer, close the first and move on to the next etc. In this way the cracks are filled and air evacuated completely. Do not use higher pressure that necessary. Horizontal fissures can be filled from top by pouring.

CLEANING

Tools and equipment must be washed immediately after use with **Spesialtynner**, ethanol or other cleaning agent suited for epoxy. Once hardened the product can only be removed mechanically.

CONSUMPTION

Approx. 1.1 kg/liter mixed material.

PACKAGING

1 kg set (component A: 0.79 kg, component B = 0.21 kg).
4.2 kg sett (component A: 3.3 kg, component B = 0.9 kg).

STORAGE

Properties for use are not changed for a period of 24 months when stored between +5°C and +30°C in unopened original packaging.

Mapepoxy BI complies with the conditions of Annex XVII to Regulation (EC) N° 1907/2006 (REACH), item 47.

SAFETY INSTRUCTIONS FOR PREPARATION AND INSTALLATION

Instructions for the safe use of our products can be found on the latest version of the SDS available from our website www.mapei.no

PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values)

Mapepoxy BI: Two-component epoxy resin for injection. The product complies with specification in EN 1504-5 "Concrete injection"

PRODUKTIDENTITET	Component A	Component B
Color:	red transparent	blue transparent
Appearance:	liquid	liquid
Density:	1.160 g/cm ³	0.87 g/cm ³

APPLICATION DATA (AT +23°C - 50 % R.H)

Mixing ratio:	component A : component B = 11 : 3
Color of mixture:	greenish
Consistency of the mixture:	liquid /fluid
Density of the mixture:	approx. 1100 kg/m ³
Brookfield viscosity of the mixture:	approx. 127 mPa·s
Application temperature range:	+5°C to +30°C
Final hardening time:	7 days
Workability (EN ISO 9514-1000 ml): - at +5°C: - at +20°C: - at +30°C:	240 min. 42 min. 19 min.

FINAL PROPERTIES (7 days at + 23 °C and 50 % R.H)

	+20°C		+5°C	
	8 hours	7 days	72 hours	7 days
Compressive strength (EN 12190):	approx. 77 N/mm ²	approx. 87 N/mm ²	approx. 79 N/mm ²	approx. 83 N/mm ²
Modulus of elasticity (EN 13412):	approx. 3100 N/mm ²			

Performance characteristics for product	Test methods	Requirements according to EN 1504-5	Product performance
Classification according to EN 1504-5:2013	U(F1) W(1)(1/2/3/4) (5/30)(0)		

Adhesion by tensile bond strength:	EN 12618-2	FI: $\geq 3.0 \text{ N/mm}^2$ (2.5 N/mm ²) F2: $\geq 2.0 \text{ N/mm}^2$ (1.5 N/mm ²)	FI: $> 3.0 \text{ N/mm}^2$ (cohesive failure in the substrate)
Non volatile matter:	EN ISO 3215	$> 95 \%$	99.63 %
Injectability into dry medium - crack widths 0.1 mm – 0.2 mm – 0.3 mm:	EN 1771	Class 1: $< 4 \text{ min}$, for crack width 0.1 mm Class 2: $< 8 \text{ min}$, for crack width 0.2 mm Class 3: $< 12 \text{ min}$, for crack width 0.3 mm Splitting test: $> 7 \text{ N/mm}^2$	Crack width 0.1 mm Class 1: $< 2 \text{ min}$. Splitting 9.7 N/mm^2
Injectability into non dry medium - crack widths 0,1 mm - 0,2 mm - 0,3 mm:	EN 1771	Class 1: $< 4 \text{ min}$, for crack width 0.1 mm Class 2: $< 8 \text{ min}$, for crack width 0.2 mm Class 3: $< 12 \text{ min}$, for crack width 0.3 mm Splitting test: $> 7 \text{ N/mm}^2$	Crack width 0.1 mm Class 1: $< 3 \text{ min}$. Splitting 9.1 N/mm^2
Tensile strength development for polymers:	EN 1543	Tensile strength $> 3 \text{ N/mm}^2$ within 72 hours at the min. use temperature, or within 10 h. at the min. use temperature by daily crack movements higher than 10 % or 0.03 mm (the lowest value has to be taken account)	9.3 N/mm^2 after 72 h at $+5^\circ\text{C}$ Tensile strength $> 3 \text{ N/mm}^2$ at 72 hours at $+5^\circ\text{C}$. Tensile strength $> 3 \text{ N/mm}^2$ at 10 hours at $+21^\circ\text{C}$.
Adhesion by tensile bond strength after thermal and wet-drying cycles:	EN12618-2	FI: $\geq 3.0 \text{ N/mm}^2$ (2.5 N/mm ²) F2: $\geq 2.0 \text{ N/mm}^2$ (1.5 N/mm ²)	Meets requirements FI: $> 3.0 \text{ N/mm}^2$ (cohesive failure in concrete)
Compatibility with concrete:	EN12618-2	FI: $\geq 3.0 \text{ N/mm}^2$ (2.5 N/mm ²) F2: $\geq 2.0 \text{ N/mm}^2$ (1.5 N/mm ²)	Meets requirements FI: $> 3.0 \text{ N/mm}^2$ (cohesive failure in concrete)

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above - information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application: for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application: in every case, the user alone is fully responsible for any consequences deriving from the use of the product.

Please refer to the current version of the technical data sheet, available from our web site www.mapei.no

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ANY ALTERATIONS TO THE WORDING OR REQUIREMENTS CONTAINED IN OR DERIVED FROM THIS TDS SHALL VOID ALL RELATED MAPEI WARRANTIES.

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