MAPEI

IN COMPLIANCE WITH EUROPEAN STANDARD
EN 1504-4
MAPEI
STRUCTURAL BONDING

Eporip

CE
EN 1504-4

Two component solvent-free epoxy adhesive for construction joints and for monolithic sealing of cracks in screeds

WHERE TO USE

- Monolithic construction joints between fresh and hardened concrete.
- Bonding precast concrete elements.
- Bonding steel to concrete.
- Filling cracks in concrete.

Some application examples

- Construction joints for the structural reinforcement of beams and pillars.
- Construction joints on decayed industrial flooring.
- Rigid, waterproof construction joints (e.g. concrete bed to tank walls).
- Reinforcement of beams by means of the *béton plaqué* technique.
- Sealing cracks in cement screeds.

TECHNICAL CHARACTERISTICS

Eporip is a solvent-free epoxy adhesive consisting of two pre-measured components (component A = resin, component B = hardener) that have to be mixed before use.

Eporip has the consistency of a slightly thixotropic paste that can be applied by brush on both horizontal and vertical surfaces.

Eporip polymerises without shrinkage and, after curing, is waterproof, possesses excellent dielectric properties and high mechanical characteristics in addition to its ability to bond concrete and steel.

Eporip meets the requirements defined by EN 1504-9 ("*Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity – General principles for the use of products*") and the minimum requirements claimed by EN 1504-4 ("*Structural bonding*").

RECOMMENDATIONS

- Do not apply **Eporip** at temperatures lower than +5°C.
- Do not use **Eporip** on wet surfaces (even though they can be slightly damp).
- Do not cast fresh concrete onto hardened **Eporip**.
- Do not use **Eporip** on dusty, crumbling or loose surfaces.

APPLICATION PROCEDURE

Preparation of the substrate

Before the application of **Eporip**, the substrate must be perfectly clean, solid and strong.
All loose and crumbling parts, dust, cement laitance and traces of form-release oils and paint must be eliminated by careful sandblasting or brushing.
When applying the product to metal, remove any rust and grease residues beforehand, preferably by means of sand-blasting to white metal.

Eporip

Applying Eporip by brush on construction joint

Repairing a crack in cement screed with Eporip

TECHNICAL DATA (typical values)

PRODUCT IDENTITY		
	Component A	**Component B**
Consistency:	fluid paste	fluid paste
Colour:	grey	white
Density (kg/l):	1.55	1.02
Brookfield viscosity (Pa·s):	20 (rotor 6 - 10 revs)	1.5 (rotor 2 - 10 revs)

APPLICATION DATA OF PRODUCT (at +23°C - 50% R.H.)	
Mixing ratio:	component A : component B = 3 : 1
Consistency of mix:	fluid paste
Colour of mix:	grey
Density of mix (kg/l):	1.35
Brookfield viscosity (Pa·s):	4.5 (rotor 5 - 20 revs)
Workability time (EN ISO 9514): **– at +10°C:** **– at +23°C:** **– at +30°C:**	 90 minutes 60 minutes 40 minutes
Open time: **– at +10°C:** **– at +23°C:** **– at +30°C:**	 5-6 hours 3-4 hours 1 hour 30 minutes-2 hours 30 minutes
Application temperature range:	from +5°C to +30°C
Complete hardening time:	7 days

FINAL PERFORMANCE			
Performance characteristic	**Test method**	**Requirements according to EN 1504-4**	**Performance of product**
Linear shrinkage (%):	EN 12617-1	≤ 0.1	0.02 (at +23°C) 0.10 (at +70°C)
Compressive modulus of elasticity (N/mm²):	EN 13412	≥ 2,000	3,000
Coefficient of thermal expansion:	EN 1770	≤ 100 x 10^{-6} K^{-1} (measured between -25°C and +60°C)	97 x 10^{-6} K^{-1}
Glass transition temperature:	EN 12614	≥ +40°C	> +40°C
Durability (freeze/thaw and hot, damp cycles):	EN 13733	compressive shear load > tensile strength of concrete no failure of steel test sample	meets specifications
Reaction to fire:	EN 13501-1	Euroclass	C-s1, d0
Concrete-steel bond strength (N/mm²):	EN 1542	not required	> 3 (failure of concrete)
BONDED MORTAR OR CONCRETE			
Bond strength to concrete:	EN 12636	failure of concrete	meets specifications
Sensitivity to water:	EN 12636	failure of concrete	meets specifications
Shear strength (N/mm²):	EN 12615	≥ 6	> 9
Compressive strength (N/mm²):	EN 12190	≥ 30	> 70
STRENGTHENING USING BONDED PLATE			
Shear strength (N/mm²):	EN 12188	≥12	50° > 35 60° > 37 70° > 34
Bond strength: **– pull out (N/mm²):**	EN 12188	≥ 14	> 24
Bond strength: **– inclined shear strength (N/mm²):**	EN 12188	50° ≥ 50 60° ≥ 60 70° ≥ 70	50° > 73 60° > 87 70° > 107

Preparing the mix
The two **Eporip** components have to be mixed.
Pour component B (white) into component A (grey) and mix with a trowel for small quantities or with a drill fitted with a low speed stirrer for large batches until the mix is perfectly smooth and even (the same grey all through).
Do not use partial amounts to avoid the risk of accidental ratio errors that could prevent **Eporip** from curing.

Applying the mix
Eporip can be applied with a flat trowel or a brush on dry or slightly damp concrete.
It is advisable to let the product penetrate well into particularly uneven and porous areas so as to ensure perfect adhesion to the whole surface being treated.
The subsequent layer of fresh concrete must be placed within the open times according to the temperature indicated in the technical data table.
When **Eporip** is used to seal cracks wider than 0.5 mm, simply placing is sufficient. In this case it is recommended to spread sand over the **Eporip** surface in order to favor bonding of product that may be applied subsequently.
If the cracks are narrower than 0.5 mm, they have to be widened and then dusted well before repair work with **Eporip**. Do not use **Eporip** when the outside temperature of the substrate is lower than +5°C.

Cleaning
Tools used to prepare and apply **Eporip** must be cleaned with solvents (ethyl alcohol, xylol, toluene, etc.) immediately after use.

CONSUMPTION
Consumption varies, depending on irregularities in the substrate and the method used in application.

Generally speaking:

– construction joints with a rough substrate:	0.5-0.7 kg/m^2
– construction joints with a very uneven substrate:	1.0-2.0 kg/m^2
– sealing cracks:	1.35 kg/l per litre of cavity
– bonding precast elements in concrete, or steel-and-concrete:	1.35 kg/m^2 per mm thickness.

PACKAGING
10 kg kits (7.5 kg of component A, 2.5 kg of component B).
2 kg kits (1.5 kg of component A, 0.5 kg of component B).

STORAGE
24 months in original packaging.
Eporip should be stored indoors in a cool, dry place where the temperature is between +5°C and +30°C.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION
Eporip components A and B may irritate the skin and eyes and may cause sensitisation in those subjects sensitive to such substances. When applying the product, we recommend the use of protective gloves and goggles and to take the usual precautions for handling chemical products. If the product comes into contact with the eyes or skin, wash immediately with plenty of clean water and seek medical attention.
Eporip components A and B are also hazardous for aquatic life. Do not dispose of the product in the environment.
When the product reacts it generates considerable heat. After mixing components A and B, we recommend applying the product as soon as possible and to never leave the container unguarded until it is completely empty.
For further and complete information about the safe use of our product please refer to the latest version of our Material Safety Data Sheet.

PRODUCT FOR PROFESSIONAL USE.

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 website www.mapei.com

All relevant references for the product are available upon request and from www.mapei.com

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