EPOXONIC® EX 1013

Socket putty for sewer renovation

EPOXONIC® EX 1013 is a solvent-free 2-part epoxy resin-amine based levelling compound. It was specially developed for underwater application.

Wichtige Merkmale:

- Free of solvents and nonylphenol
- Good workability
- Processable overhead
- Adhesion even on wet concrete
- Curing possible from +8 °C
- Curing under water
- Can be used within limits in the presence of groundwater
- Low shrinkage
- Specially optimised for robot applications
- Suitable for water protection zone II (tested by the Hygiene-Institute Gelsenkirchen)
- No toxic effects on microorganisms (Expertise of IWS (TU Berlin, November 1993))
- Resistant to e.g. household waste water, oil and petrol
- Hot water resistant

Recommended applications:

EPOXONIC® EX 1013 is particularly suitable for the rehabilitation / repair of wastewater, combined and rainwater sewers in nominal widths DN 150 to DN 800 using robot technology. The sewers can be made of vitrified clay, sewer clinker, concrete, fibre cement, reinforced concrete or PVC.
The preferred area of application is the repair of cracks, holes, joints and damaged connections. The product can be used for vertical, horizontal and overhead work.
Bonding of various materials, e.g. concrete, stoneware and metal is possible. A pressure-tight result is achieved with proper processing (milling down to a grease-free substrate).

Monitoring:

External monitoring of **EPOXONIC® EX 1013** is carried out by **cbm Centrum Baustoffe und Materialprüfung - Technische Universi¬tät München**.

EPOXONIC GmbH | Reaktionsharzsysteme
Gewerbestraße 16 | 85652 Landsham/Pliening
Tel. +49 (0)89 904994 - 0

Recommended additional equipment:

- Climate cabinet
- Mixer with integrated timer and slowly rotating spiral helix according to manufacturer's specifications.
- Temperature measuring device (IR technology, non-contact measurement).

Table 1: Properties of uncured EPOXONIC® EX 1013

Technical data	Part A	Part B	Mixture
Form	paste-like	paste-like	paste-like
Colour	green	yellow-brown	green (minor differences in colour are due to technical reasons and do not impair quality).
Mixing ratio (parts by weight)	100	23	

Processing:

In general, the device-specific specifications (manuals) of the respective sewer robot manufacturer must be observed during processing.

Preliminary work: Wastewater control

Depending on the damage arrangement, the user may have to carry out waste water control. It must be ensured that the milled and cleaned bonding surfaces are not contaminated by contaminated waste water before the application of the resin compounds has been completed.
If groundwater is present, formwork must generally be used for the repair work.
The renovation area must be kept free of waste water during the repair or renovation work.

Preparation of the surface

The substrate must be clean and free of loose particles, dirt, grease, oil, rust and dust. In the case of cementitious materials, the cement skin must be removed. Mix thoroughly according to the type of
Mix thoroughly using a suitable mixing device until the compound appears uniformly green in colour. We recommend the use of a mixer with a coiled, surface can be cleaned by sand-blasting, brushing, sanding, etc.

Preliminary work

In preparation for repair work in the old sewer, the damaged areas must be milled over a large area using a suitable milling tool in accordance with the specifications of the respective equipment manufacturer. If necessary, an existing liner in the old sewer must be milled open around the opening of the connecting sewer and the liner edge must be back-milled for optimised anchoring of the resin (e.g. in the presence of groundwater). The inlet area must then be cleaned with a suitable water jet technique to remove the grinding dust.

Mixing process

Part B is completely emptied from the bag into the can with part A and mixed with a

screw-shaped kneading tool at a low speed of approx. 100 - 200 rpm. When mixing, particular care should be taken to ensure that no unmixed material remains on the base and walls of the can and that no air is stirred in. The mixing process should take at least 4 minutes and be completed within 10 minutes. The energy input during mixing increases the resin temperature. This temperature must be measured and documented after the mixing process.
Using Table 2, the expected pot life and stripping time can be determined.

Working time resp. pot life

The processing time and pot life can be found in Table 2. Processing is generally possible between +8 °C and +25 °C. If possible, the temperature of the substrate should not be below 8 °C. A substrate temperature of 5 °C leads to significantly longer curing times. Caution! At mixing temperatures above 25 °C, the processing time is significantly reduced! When applying (levelling) on a wet surface, the material must be pressed on for ≥ 10 seconds to achieve initial adhesion.

Injection

EPOXONIC® EX 1013 can be processed using suitable shuttering technology (e.g. shuttering sleeve and bubble). The grouting pressure should be adapted to the robot and material. After the resin has cured, the bubble and the formwork collar must be removed and the repaired area reworked if necessary.

Cleaning the devices

Uncured EPOXONIC® EX 1013 can be removed with paper and then warm water, possibly with the addition of detergent. Hardened product residues can only be removed mechanically.

Table 2: Processing data for EPOXONIC® EX 1013

Sewer temperature [°C]	Resin temperature after mixing [°C]	Pot life [min]	Demoulding times [hours]
10 – 12	10	120	14 – 18
10 – 12	20	40 – 60	6 – 8
10 – 12	25	35 – 50	4 – 6
10 – 12	30 (maximum permitted)	20 – 30	3 – 5

Please note: Both the processing time and the time until stripping depend on the ambient temperature. Longer stripping times may be necessary in the case of groundwater flushing. Damaged areas may generally only be exposed to the HD flushing carriage after at least 10 days.

Table 3: Properties of cured EPOXONIC® EX 1013

Technical data	Value	Norm
Density Raw density[1]	1.6 g/cm³ 1.56 g/cm³	DIN EN ISO 1183-1
E-modulus (compressive)[1]	5000 MPas	DIN EN 196-1
Compressive strength[1] Deformation at compressive strength[1]	52 MPa 1.83 %	DIN EN 196-1
Shear strength[1]	23.8 MPa	
Adhesive tensile strength on concrete dry surface[1] wet surface[1]	 2.6 MPa 2.0 MPa	DIN EN 1542

[1] TU München, Baustoffinstitut, Dr. Letsch, Research report 2527a-98 from 11-02-1998.

Delivery form:

EPOXONIC® EX 1013 is supplied in part A and B as a set in the correct mixing ratio.

Part A Part B	3-litre cans welded aluminium/plastic bags
- big - small	3.64 kg part A + 0.84 kg part B 2.21 kg part A + 0.51 kg part B

Storage

EPOXONIC® EX 1013 part A and part B can be stored for 12 months at 0 - 35 °C, ideally at ⩽ 25 °C in closed original containers in a dry place. Avoid direct sunlight.

Safety instructions

The safety precautions and personal protection measures to be observed when processing epoxy resins and hardeners apply; in particular, protective gloves must be used and skin and eye contact must be avoided. Do not eat, drink or smoke while working.
Further information can be found in our safety data sheets and the hazardous substance information system of the BAU trade association (Gisbau). Please pay particular attention to the technical data sheet and the "Practical guide for handling epoxy resins", available at
(https://www.bgbau.de/fileadmin/Gisbau/676_Praxisleitfaden-Epoxidharze_2-2018.pdf) (German)

Important user information

The information in this data sheet is provided to the best of our knowledge, but to the exclusion of any liability. It is not intended as an authorisation for licence-free use, but merely as a working aid for the user, who should carry out his own tests to determine the suitability of the product for his specific requirements.