

## Mining

# GEOTHIX

## Technical Data Sheet

Approval of the German Mining Authority 84.12.22.67-7-4  
for GEOTHIX 2



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### Uses

**Instantly thickening, fast curing two-component silicate resin for sealing bolts, CFC- and halogenfree.**

**Suitable for:**

- o Sealing of injection bolts, e.g. Wiborex (steel) or FRP-Rods ("grout into bolt")
- o Sealing of roof bolts ("bolt into grout")

### Technical Data

The above data are laboratory data. They may vary in practice due to thermal exchange between resin and strata, surface properties of the rock, humidity, pressure, and other factors.

#### Reaction Data

<b>Initial temperature</b>	<b>30 °C</b>
Mix viscosity after 10 s	> 100 000 mPa s
Open time	40" ± 5"

#### Material Data

		Component A	Component B	Standard
Density at 25° C	kg/m <sup>3</sup>	1460 ± 50	1160 ± 50	DIN 12 791
Colour	-	brownish-turbid	brown	
Viscosity at 25° C	mPa*s	310 ± 50	190 ± 40	ISO 3219
Flash point	°C	n.a.	> 100	DIN 53 213

## Mechanical Data

Time	15 min	30 min	60 min	2 h	4 h
Strength in % at 25 °C	50	70	90	100	100
Modulus of Elasticity					ca. 200 MPa
Shear Strength					ca. 14 MPa
Shore Hardness					D 60

In pull tests according to DIN 21 521 with 25 mm dia threaded bolts (GEWI) a pull out force of 360 kN were achieved on 600 mm grouted length in a 32 mm hole after 4h as well as 7 d. In a 42 mm hole, 265 kN were achieved.

## Composition and Properties

### Components:

GEOTHIX, comp. A, is a special sodium silicate with additives.

GEOTHIX, comp. B, is a modified polyisocyanate.

### System:

After mixing the two components, the resin instantly achieves a grease-like viscosity level so that the mix stops flowing, even in large fissures, and requires pump pressure for displacement. The mix then hardens to form a hard resin.

### Final product:

The relatively low modulus of the resin, combined with high strength, provides a uniform transfer of local rock stresses over the whole length of the bolt rod.

## Processing

The two components are pumped by a dual component pump at the volumetric ratio of 1:1 and mixed thoroughly in a static mixer.

<u>Mixer:</u>	• with pulsation pumps, z.B. CT-DP 40	one static mixer tubes (32 parts Ø 13), l ≈ 320 mm
	• with pulsation-free pumps, z.B. CT-PM/A	two static mixer tubes in row (64 Teile Ø 13), l ≈ 640 mm

- a) sealing of injection bolts ("grout into bolt")  
The mixed resin is injected into the hole bottom via the injection channel (core of the tubular bolt or attached injection hose), thus filling the annular space and the adjacent large cracks.
- b) Sealing of roof bolts ("bolt into grout")  
The drillhole is filled using a filling lance or hose with the appropriate amount of resin. Immediately afterward, during the open time, the bolt rod is pushed into the resin mass. An intermediate fixation of the bolt is not required. The length of the lance/hose should not exceed 5 m.

In the container, a thin film of polyurea may form on the surface of Component B, but this will not affect pump suction.

For detailed instructions on use, consult the brochure "Operating instructions and safety references on proper use of Minova CarboTech GmbH injection resins in mining".

The regulations and references from the Approval of the District government Arnsberg are to be considered.

## **Risk and safety phrases for the handling of GEOTHIX**

Observe the usual precautionary measures for the handling of chemicals.

### **Component A**

Symbol: Xi (irritant)

R36/38 Irritating to eyes and skin.

S24/25 Avoid contact with skin and eyes. S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S27/28 After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water. S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

### **Component B**

Symbol: Xn (harmful), contains isocyanate

R20 Harmful by inhalation. R36/37/38 Irritating to eyes, respiratory system and skin. R42/43 May cause sensitization by inhalation or skin contact.

S23 Do not breathe fumes/aerosol. S24/25 Avoid contact with skin and eyes. S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S28 After contact with skin, wash immediately with plenty of water and soap. S36/37/39 Wear suitable protective clothing, gloves and eye/face protection. S38 In case of insufficient ventilation, wear suitable respiratory equipment. S45 In case of accident or if you feel unwell, seek medical advice immediately (show label where possible).

## **Packaging**

All forms of packing are approved to the danger goods regulation road (GGVS).

### **GEOTHIX, Component A**

19 l in a can  
190 l in a drum

### **GEOTHIX, Component B**

18 l in a can  
180 l in a drum

Other packing units on request.

**Storage, Shelf-Life:** at least six months from date of delivery or twelve months from date of production when stored in a dry place between -5 and 30 °C. If this time is exceeded, we recommend having the material checked by Minova CarboTech for compliance with specification.

### **Disposal:**

Follow local regulations.

We recommend either to dispose of liquid residues in an incineration plant (EU disposal code 070208 "other reaction and distillation residues") or to cure the liquids in ratio Comp.A : water : Comp.B = 2 : 1 : 2 and dispose of the cured foam in a domestic waste landfill or an incineration plant (EU disposal code 20 01 39).

Empty cans should be cleared of liquid by punching a hole through the edge of the cover and turn them upside down, until no liquid flows out any longer.

## **Expertise and Test Reports**

- 1 Approval of the German Mining Authority 84.12.22.67-7-4
2. Report on bolt pull tests according to DIN 51 521 (DMT, Essen)

The data in this sheet conform to our best knowledge and experience at the date of printing, which is indicated below. The state of knowledge and experience are evolving constantly. Please pay attention therefore, that you always refer to the current version of this data sheet.

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