

MINING / CONSTRUCTION

CARBOTHIX 2

SILICATE RESIN ANCHORING GROUT

DESCRIPTION

CarboThix 2 is an instantly thickening fast curing dual component silicate resin for bonding of bolts and cable anchors. CarboThix 2 was developed to improve the productivity of ground support installations in underground mining and tunnelling applications. Using the pumpable resin enables load to be taken up in minutes rather than the typical 24 hours from cementitious grouted systems. Typical applications of CarboThix 2 include grouting of injection bolts, steel or GFRP rods, and sealing of roof bolts.

During application, the two components are intimately mixed and achieve a grease-like viscosity (the so called Thix effect) so that the grout stops flowing and cures to form a tough elastic and non-porous resin that will not mix with water or be diluted in wet holes. CarboThix 2 is resistant to dilute acids and alkalis as well as fats. As the system is under pump pressure, some grout is pushed into minor cracks and fissures around the anchor hole, ensuring full encapsulation of the anchor. As the two resin components are mixed at a set volume, consistent mixing of the grout is guaranteed, an advantage over cementitious grouts. This delivers a reliable quality of grout and anchoring performance. Operator safety and handling issues are also improved over cementitious grouting systems.

As a pumpable resin system, CarboThix 2 can be pumped over long distances (up to 1500 ft) improving operational flexibility.

USES

CarboThix 2 was developed to improve the productivity of ground support installation in underground mining and tunnelling applications. The thixotropic nature of the grout as well as its resistance against water provide a unique sealing against pressurized water inflow.



ADVANTAGES

- Full encapsulation of anchors
- Immediate loading capacity of the bolt
- Long distance pumping (up to 1500 ft)

APPLICATION METHOD

After thoroughly 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 components are to be pumped at the volumetric ratio of 1:1 by using a dual component pump with final mixing of the materials achieved at the wand via a static mixer prior to placement. CarboThix's high strength provides a uniform transfer of local rock stresses over the whole length of the bolt.

For bonding of injection anchors (SDA's, and hollow bar), the mixed resin is injected into the drilled hole to the maximum depth to fill the annular space and adjacent joints. For detailed instructions on use (particularly before a change of injection resins),

consult the Minova “Technical handbook for the safe use of injection resins within the mining sector”.

Sealing of Injection Bolts

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.

Sealing of Roof Bolts

The borehole 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 lance/hose length should not exceed 5 m.

For detailed instructions on use (particularly before a change of injection resins), consult the “Technical handbook for the safe use of injection resins within the mining sector”.

SAFETY INSTRUCTIONS AND LIMITATIONS

This product is designed, manufactured and sold specifically and exclusively for use in drilled boreholes in underground mining and tunneling applications. Any use of this product in wet open air outside of a fully encircled borehole is at the user’s sole risk and responsibility and Minova USA, Inc. disclaims all liability.

PACKAGING AND TRANSPORTATION

CONTAINER TYPE	CARBOTHIX 2 COMPONENT A	CARBOTHIX 2 COMPONENT B
PC (Jug)	77 lbs (35 kg)	66 lbs (27 kg)
Steel Drum	620 lbs (281 kg)	529 lbs (240 kg)
IBC (Tote)	3,100 lbs (1,406 kg)	1,104 kg (2,435 lbs)

Other packing units available on request.

STORAGE AND SHELF LIFE

At least 12 months from date of manufacture when stored in a dry place. If this time is exceeded, we recommend having the material checked by Minova USA, Inc. for compliance with specification. Instruction on storage conditions must be observed. Please see Safety Data Sheet (SDS) recommendations for product handling and storage.

DISPOSAL

If this product as supplied becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Dispose of material in accordance with all applicable federal, state/provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

TECHNICAL DATA

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

MATERIAL DATA

Parameter	Unit	Component A	Component B	Standard
Density at 25 °C	kg/m3	1430 ± 60	1160 ± 50	DIN 12791-1
Color		brownish-turbid	brown	
Flash point	F°	N/A	>212	DIN 53213
Viscosity at 25 °C	cps	310 ± 50	190 ± 40	ISO 3219

REACTION DATA

Initial Temperature	86°F (30°C)
Mix viscosity after 10 sec	>100.000 cps
Open Time	40 sec ± 5 sec

MECHANICAL DATA

Parameter	15 min	30 min	60 min	2 hrs	4 hrs
Strength in % at 77°F (25°C)	50	70	90	100	100
Modulus of Elasticity					Approx. 200 MPa
Shear Strength					Approx. 14 MPa
Shore Hardness					D 60

APPROVALS AND CERTIFICATES



an ISO 9001:2015
Quality Management System Certified Company.

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ADDITIONAL DOCUMENTATION

Started more than 135 years ago, Minova is a global manufacturer and supplier of chemical and mechanical earth control products and support equipment. With manufacturing plants on five continents and operations in more than 25 countries, Minova is an industry-leading provider of ground support solutions for the underground mining, construction and energy industries.

If further information is required consult Minova Americas website: www.minovaglobal.com.

- CarboThix 2 Component A SDS
- CarboThix 2 Component B SDS
- Minova Technical Handbook for the Safe Use of Injection Resins within the Mining Sector
- CarboThix Product Brochure
- Minova Field Manual – Handling Injection Resins in Tunneling and Civil Engineering
- Minova CarboThix Product Specification

MANUFACTURER

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