

## Carbothix™ is an instantly thickening fast curing two component silicate resin for high strength bonding of solid bolts and cable anchors.

Carbothix™ was developed to improve the productivity of ground support installation 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™ include grouting of cable bolts, solid steel or GRP bolts, self drilling anchors and one-step bolting systems.

During application, the two components of Carbothix™ 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. 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 is achieved.

Different versions of Carbothix™ are available to suit the various mine site environmental conditions and desired load capacities.

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 cement grout systems.

As a pumpable resin system, Carbothix™ can be handled over long distances (up to 500 m) improving operational flexibility.



### Advantages

- Immediate loading capacity
- Faster re-entry and support installation
- Full encapsulation of anchors
- Improved operator safety
- Consistent grout quality
- Resistance of grout to water
- Longer shelf life than resin capsules
- Ease of storage
- Long distance pumping

### Technical Data

	Component A	Component B	Standard
Density KG/M <sup>3</sup>	1445 +/- 50	1150 +/- 25	DIN 12 791
Colour	Light brown	Dark brown/red tinge	-
Flash point °C	-	> 140	DIN 53 213
Viscosity @ 25°C mPas	320-420	250-350	ISO 3219

## Tests performed at 22°C

		Ratio A:B 1:2
Punched Shear Strength (MPa)	3 mins	5
	5 mins	14
	1 hour	25
Gel Time (secs)		10
Cure Time (Penetrometer hardness test) (secs)		33
UCS (MPa)	1 hour	70
	24 hours	75
Store D Hardness	2 mins	42
	5 mins	55
	10 mins	62
	30 mins	70

**Note:** The properties listed are an indication only, they may vary with temperature, mining conditions, strata conditions, equipment, bolt hole annulus, injection quantity etc.

## Packaging

All forms of packing are approved to the relevant dangerous goods regulation.

**Carbothix™ – Component A** 20 litres per steel pail (weight 24 kg)

**Carbothix™ – Component B** 20 litres per steel pail (weight 19 kg)

Other packing options are available on request.

## Storage and Shelf-Life

Shelf life of Carbothix™ is at least six months from the date of delivery or twelve months from the date of production when stored in a dry place. If this time is exceeded, it is recommended to have the material checked by Minova for compliance with specification.

It is also recommended that Carbothix™ is stored at <25°C and

achieves that temperature before use. Storage should be away from humid environments and away from direct sunlight.

## Processing

The two components are pumped by a dual component SK90 gear pump, usual volume flow of 4-6 litre/minute, at the volumetric ratio of 1:2 and mixed thoroughly in a specific static mixer.



## Health and Safety

Carbothix™ contains substances that may be an irritant to some persons. Minova strongly recommends that the individual Material Safety Data Sheet and operating procedures are thoroughly reviewed prior to handling or use, copies of which are available on our website.

Minova recommends disposing of liquid residues and empty drums in an authorised incineration plant.

