

Tunnelling and Civil Engineering

CarboCrackSeal NV

Technical Data Sheet



MINOVA



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Uses

Slow reacting, highly flexible two-component polyurethane resin. CarboCrackSeal NV serves for grouting/sealing and elastic connection of fissures and cavities in buildings and other civil engineering structures constructed from concrete, brickwork or natural stone, applicable as one-component resin, such as

- o Tunnel linings
- o Park decks
- o Concrete foundations
- o Subterraneous curtains
- o Injection hoses

CarboCrackSeal NV has a very low viscosity. CarboCrackSeal NV may be injected via adhesive packers, borehole packers or embedded injection hoses into the pervious structure. CarboCrackSeal NV meets the requirements of German ZTV-ING (Regulations for sealing of concrete structures). Applicable at ambient temperatures of between 6 and 40 °C.

Technical Data

The data below are laboratory data. They may vary in practice by thermal exchange between resin and concrete, the surface properties of the concrete, humidity, pressure, and other factors.

Reaction Data

Mixing ratio A:B 2.5 : 1 parts by volume = 2 : 1 parts by weight

Starting temperature	°C	8	15	23	Test procedure
Mix viscosity	mPa*s	290 ± 50	160 ± 40	85 ± 30	TL/TP FG PUR
Pot life	min	>60	>60	60	CTF PV 10-312
1.000 mPa*s after	min	approx. 100	approx. 115	approx. 120	CTF PV 10-313
Foaming factor		approx. 1.0	approx. 1.0	approx. 1.0	CTF PV 10-301
Surface tension	mN/m			30	EN 14210
Glass transition temperature when cured in dry environment	°C		-6		EN 12614

Material Data

		Component A	Component B	
Density at 23 °C	kg/m ³	990 ± 15	1220 ± 20	DIN 12791
Colour	-	honey	brown	
Viscosity at 23 °C	mPa*s	100 ± 20	70 ± 20	ISO 3219
Viscosity at 15 °C	mPa*s	210 ± 40	170 ± 40	ISO 3219
Viscosity at 8 °C	mPa*s	370 ± 50	320 ± 50	ISO 3219

Mechanical Data

Tensile Strength		2,0 ± 0,2	MPa	DIN 53455
Elongation at Break		110 ± 20	%	DIN 53455
Hardness Shore A		50 ± 3		ISO 7619-1

Composition and Properties

Components:

CarboCrackSeal NV, Comp. A comprises of polyols and additives. CarboCrackSeal NV, Comp. B, is a modified isocyanate.

System :

The resin mix penetrates the cracks to be sealed. The major part of the water in there is displaced by the hydrophobic resin, the remainder causes the acceleration of the curing and the formation of a mainly closed cell foam resin.

Final Product: :

After more than 10 h, the resin is solid; the final curing takes several days. The cured resin is elastic and extendable even in tabular adhesion. It meets the requirements of the minimum extendability of 10 % according to ZTV-ING.¹

CarboCrackSeal NV is compatible with groundwater. ²

Application

Generally, the resin mix is injected via a borehole packer and a borehole into the fissure to be sealed, until resin matter is discharged by monitoring boreholes. CarboCrackSeal NV can be injected as well via the CT – injection hose which has to be installed beforehand into the concrete joint. The resin components are mixed carefully in a volumetric 2.5 : 1 ratio or weight 2: 1 ratio, poured into a second container or hopper and injected by the single component pump CT ET I. The pot life in accordance to the application temperature has to be taken into account.

With strong water inflow, the fast reacting aquareactive resin CarboStop W, accelerated by CarboAdd X, or CarboStop U have to be pre-injected, subsequently followed by the CarboCrackSeal injection.

Risk and Safety phrases for the Handling of CarboCrackSeal NV

Observe the general safety regulations when handling chemicals.

Component A:

The product is not subject to identification regulations under EU Directives and the Ordinance on Hazardous Materials (German GefStoffV).

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/aesol. 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. 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 (safety data sheet available with manufacturer on request).

Packing:

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

Component A

10 kg in a tin can

20 kg in a tin can

Component B

5 kg in a tin can

10 kg in a tin can

Other 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 10 and 30 °C. When this time is exceeded, we recommend having the material checked by Minova CarboTech for compliance with specification. The local legislation on storage has to be observed.

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 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

- 1 Adhesive Strength and Extension in a crack (Institut f. Massivbau, Essen, 2000)
- 2 Expertise on compatibility with drinking water (KTW-Gutachten Hygiene-Institut Gelsenkirchen, 2000)

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.

The description of the product application in this sheet cannot take the special conditions and circumstances into account emerging from the individual case. Please check our product therefore in any case prior to use for its aptitude in the actual application. Application, use and processing of our product occur outside of our control capabilities. That is why they as well as the processing result achieved based on our information are exclusively subject to your own responsibility.

No data in this sheet constitute a guarantee in a legal sense. It is clarified that our liability is limited to the contractual acknowledgements for the purchase of this product.

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