

**CONSTRUCTION**

# CarboCrackSeal H Plus

**TWO-COMPONENT POLYURETHANE RESIN**

*CE identification according to DIN EN 1504-5: 0921-CPR-2168*

**DESCRIPTION**

Slow reacting, highly flexible two-component polyurethane resin.

The resin mix penetrates the cracks to be sealed. Any water present is chiefly displaced due to the hydrophobic character of the resin, a smaller fraction produces foaming of the resin with a closed pore structure.

CarboCrackSeal H Plus, Component A comprises of polyetherester polyols and additives. CarboCrackSeal H Plus, Component B is a modified isocyanate.



**APPLICATION AND USE**

CarboCrackSeal H Plus is used in buildings and other civil engineering structures constructed from concrete, brickwork or natural stone.

CarboCrackSeal H Plus serves for grouting/sealing and elastic connection of fissures and cavities.

Applicable at ambient temperatures of between 5 °C and 30 °C.

**ADVANTAGES**

- Easily injected
- Wide range of grouting and sealing applications
- Elastic and extendable when cured

**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.

**MATERIAL DATA**

Parameter	Unit	Comp A	Comp B	Mixture A+B	Standard
Density at 25 °C	kg/m <sup>3</sup>	985 ± 15	1092 ± 15	-	DIN 12791
Colour	-	honey	brown	-	-
Viscosity at 25 °C	mPa*s	285 ± 50	14 ± 3	150 ± 30	DIN EN ISO 3219
Viscosity at 15 °C	mPa*s	550 ± 60	20 ± 5	170 ± 40	DIN EN ISO 3219
Viscosity at 6 °C	mPa*s	995 ± 100	34 ± 7	290 ± 50	DIN EN ISO 3219

**REACTION DATA**

Mixing ratio A : B	1 : 1 parts by volume				
Starting temperature	Unit	6 °C	15 °C	25 °C	Standard
Mix viscosity 5 min. after end of mixing	mPa*s	290 ± 50	170 ± 40	150 ± 30	MCT PV 10-329
Viscosity of 1000 mPa*s 1 mm-crack (isotherm) after	min.	55-95	50-85	55-95	MCT PV 10-327
Gel Time	h	15 ±2.0	14,5 ±1.5	11 ±1.0	MCT PV 10-311
Foaming factor	-	ca. 1.0	ca. 1.0	ca. 1.0	MCT PV 10-301

**PROCESSING TIME**

Starting temperature	Unit	5 °C	18 °C	23 °C	Standard
Package processing time (1 kg-twin can)	min:	30 - 40	25 - 35	17 - 27	MCT PV 10-328

**MECHANICAL DATA**

Parameter	Unit	Value	Standard
Tensile strength	MPa	0.58 ± 0.12	DIN EN 1504-5 (EN ISO 527-1/-2)
Elongation at break	%	192 ± 38	DIN EN 1504-5 (EN ISO 527-1/-2)
E-module	MPa	0.20 ± 0.04	EN ISO 527-1/2
Hardness Shore A after 28 days	Shore A	55 ± 3	ISO 7619-1

**APPLICATION METHOD**

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. Two different techniques may be used for CarboCrackSeal H Plus application:

- One-component processing

The resin components are mixed carefully in a volumetric 1 : 1 ratio and injected by single-component-pump CT ET I or HD 1.

Thereby the pot life has to be taken into account.

- Two-component processing

The resin components are pumped separately by a twin pump in a volumetric 1: 1 ratio. The components are mixed by a specific reusable static mixer prior to the injection into the borehole.

Use for it exclusively the electro-hydraulic powered four plunger pump CT-EL 5 II Art.-Nr. 2228. As static mixer are exclusively used the static mixer stainless steel combining tubes, Art.-Nr 30551, length 140 mm for the acceptance of 12 static grid mixers plastic, Art.-Nr. 30549 or the specific ZTV-ING static mixer, Art.-Nr. 13454.

The volumetric 1 : 1 ratio of the pump has to be checked prior to injection.

After more than 10 hours, the resin is solid; the final curing takes several days. The cured resin is elastic and extendable even in tabular adhesion.

Applicable at volume flows ≥ 0.3 l/min, ambient or rather building element temperatures between 5 °C and 30 °C as well as product temperatures > 15 °C.

**SAFETY INSTRUCTIONS AND LIMITATIONS**

Observe the usual precautionary measures for handling chemicals, see MSDS of CarboCrackSeal H Plus Component A and Component B.

In case of water intrusions which cannot be stopped by CarboCrackSeal H Plus, CarboStop U is injected until the water flow stops. Immediately afterwards, the injection is continued with CarboCrackSeal H Plus, using separate packer.

## **PACKAGING AND TRANSPORTATION**

All forms of packing are approved to the danger goods regulation road, railway, domestic shipping.

The components can be delivered in 1/5/20/26/200/1000 l units and combi units.

Other packaging units are available on request. Details are shown in the offer.

## **STORAGE AND SHELF LIFE**

At least six months after delivery for dry storage between 10 °C and 30 °C. When this time is exceeded, we recommend having the material checked by Minova for compliance with specification. The local legislation on storage has to be observed.

## **DISPOSAL**

Follow local regulations.

## **APPROVALS AND CERTIFICATES**

Adapted for injection hoses embedded in concrete structures according to the criteria to DIN EN 1504-5: U(D1) W(1)(1/2/3/4)(5/30)

1. Certificate of conformity of the factory production control No. 0921-CPR-2168 (QDB, 2015)
2. Determination of identifying characteristics and performance P 2.1/07-431/2 (MFPA Leipzig, 2008)
3. Chemically toxicological analysis A-168400-08-WR (Hygiene Institut, 2008)
4. Assessment of the Effects of Construction Products on Soil and Ground Water C-184148-09-Bs (Column Test to the DiBt-Working sheet, Hygiene-Institut 2009)
5. EC Declaration of Conformity (Essen, 2009)
6. Certificate of Conformity reg. no. ZERT 124 | 15/ 759 (QDB, 2015)
7. Eluate fish toxicity 181637-09WR (18.08.2009)
8. Effect of the polyurethane CarboCrackSeal H Plus on polymeric deposits (Uni Essen, 2010)
9. General construction survey test certificate in combination with injection

- hose CEM-11: P-5000/6384 MPA-BS (MPA Braunschweig, 2011)
10. Certificate according to KTW-guidelines (LADR GmbH, 2011)
  11. General construction survey test certificate with "MASTERTUBE – Verpressschlauch": P-SAC 02 / 5.1 / 10 - 369 (MFPA Leipzig, 2011)
  12. Test report glas transition temperature (ibac, Aachen 2011)
  13. Determination of injection capacity according DIN EN 1771 UB 1.4/11-041 (MFPA Leipzig, 2012)

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**ADDITIONAL DOCUMENTATION**

- Operating instructions on proper use of Minova injection resins
- MSDS CarboCrackSeal H Plus

**LIST OF REPRESENTATIVES**

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