

CONSTRUCTION / ENERGY**CarboPur WS****TWO-COMPONENT POLYURETHANE INJECTION RESIN**

CE identification according to EN 1504-5:2004

DESCRIPTION

Fast reacting two-component injection resin according, CFC-free and halogen-free, for sealing and consolidation in dry, water-bearing strata and against water under pressure.

CarboPur WS consists of a component A and a Component B. CarboPur WS component A is a mixture of various polyols and additives, which reacts with the CarboPur component B to a tough-rigid polyurethane resin. CarboPur Component B is a polyisocyanate.

APPLICATION AND USE

- Consolidation in dry, wet and water-bearing strata
- Sealing against water under hydrostatic pressure from strata, dams or shaft walls, also against salt-water
- Repair of wet shafts, tunnels, channels and walls

ADVANTAGES

- CarboPur WS is characterized by a very fast setting / immediate sealing effect
- Stabilising effect
- Due to the volume ratio 1:1 a simple and safe processing is possible
- Due to the inertia of the material and the absence of toxic reactions, there are no objections against CarboPur WS coming in contact with ground or surface water
- CarboPur WS fulfils fire test to DIN 4102-1 construction material class B2 (normal flammability)

TECHNICAL DATA

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

MATERIAL DATA

| Parameter | Unit | Comp. A | Comp. B | Standard |
|--------------------|-------------------|-----------|------------|-------------|
| Density at 25 °C | kg/m ³ | 1000 ± 30 | 1230 ± 30 | DIN 12791-1 |
| Colour | - | honey | dark brown | - |
| Flash point | °C | > 150 | > 150 | DIN 53213 |
| Viscosity at 30 °C | mPa*s | 220 ± 50 | 160 ± 50 | ISO 3219 |
| Viscosity at 25 °C | mPa*s | 290 ± 50 | 200 ± 50 | ISO 3219 |
| Viscosity at 15 °C | mPa*s | 650 ± 100 | 550 ± 100 | ISO 3219 |

REACTION DATA

| Starting temperature | End of foaming / setting time | Foaming factor | Test Method |
|--------------------------|-------------------------------|----------------|---------------|
| without contact to water | | | |
| 15 °C | 1 min 50 s ± 20 s | < 1,5 | MCT PV 10-301 |
| 25 °C | 50 s ± 15 s | < 1,3 | MCT PV 10-301 |
| 30 °C | 40 s ± 10 s | < 1,3 | MCT PV 10-301 |

REACTION DATA WITH CONTACT OF WATER

| Starting temperature | Start of foaming | End of foaming / setting time | Foaming factor | Test Method |
|--|------------------|-------------------------------|----------------|------------------|
| with contact to water (1% relative to mix) | | | | |
| 15°C | 35 s ± 15 s | 1 min 35 s ± 30 s | 5 ± 2 | MCT PV 10-301 |
| 25°C | 20 s ± 15 s | 1 min ± 20 s | 6 ± 2 | MCT PV 10-301 |
| with contact to water (2% relative to mix) | | | | |
| 15°C | 35 s ± 15 s | 1 min 30s ± 30 s | 7 ± 2 | MCT PV 10-301 |
| 25°C | 20 s ± 15 s | 1 min ± 20 s | 9 ± 2 | MCT PV 10-301 |

MECHANICAL DATA

| Parameter | Value | Standard |
|---|----------------------|----------------|
| Adhesive strength (dry surface, 30 °C, 80 % RH) | 1,0 MPa after 30' | DMT- Method |
| Flexural strength 2 % deformation (unfoamed) (2d/RT) | > 25 MPa | ISO 178 |
| Shore hardness D (2d/RT) | > 75 | ISO 7619-1 |
| Compression strength 10 % deformation (2d/RT) | > 50 MPa | ISO 604 |
| Fire class | B2 | DIN 4102-1 |

APPLICATION METHOD

The two components CarboPur WS component A and CarboPur component B are pumped by a dual component pump at the volumetric ratio 1 : 1; they are mixed thoroughly in a static mixer unit prior to injection into strata via a packer installed in a previously drilled borehole.

In contact with water, the resin foams up. The following reaction mix displaces then the preceding one. Since the mixture does not meet any more water, it hardens without foaming to form a pore-free material. Thus, a water-tight shell is foamed which, in turn, is surrounded by a zone consolidated by foamed-up polyurethane. This means that only one application cycle with one material is necessary for arriving at permanent sealing and consolidation.

It has to be assured that the product temperature is between 15 – 30 °C before processing and during application.

When the material is warmed up, local overheating, e. g. at the container wall, must be avoided.

With strong outflow of water or in case of cold water the use of CarboPur WFA or CarboPur WT is recommended.

SAFETY INSTRUCTIONS AND LIMITATIONS

Observe the usual precautionary measures for handling chemicals, see MSDS of CarboPur WS component A and CarboPur component B.

If the product is strongly cooled down (< 0 °C) or at temporary low temperatures (< -10 °C), it should be warmed up before application to the recommended processing temperature.

PACKAGING AND TRANSPORTATION

All forms of packaging comply with the dangerous goods regulations for road, rail and domestic shipping.

The components can be delivered in 18/26/200/1000 l units.

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

STORAGE AND SHELF LIFE

Shelf-life period is 18 months from the date of production when stored in dry and well-ventilated areas between 10°C and 30°C.

The local legislation on storage has to be considered.

DISPOSAL

Follow local regulations.

APPROVALS AND CERTIFICATES

Fulfils the criteria according to DIN EN 1504-5:2004: U(F1)W(5)(1)(5/30)(0),

1. Z-101.29-26 Approval as curtain injection resin, DIBt (Deutsches Institute für Bautechnik, 2024)
2. Expertise on compatibility with groundwater according to DIBt regulation (MFPA, Leipzig, 2024)
3. PZ 3.1 / 15-303-1 test on standard inflammability (construction material class B2) acc. to DIN 4102-1 (MFPA Leipzig, 2015)
4. Determination of performance characteristics of the crack filler CarboPur WS according to DIN EN 1504-5 (MFPA Leipzig, 2024)
5. Determination of the glass transition using DSC (Westfälische Hochschule, 2024)

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ADDITIONAL DOCUMENTATION

- Operating instructions on proper use of Minova injection resins
- MSDS of CarboPur WS component A and CarboPur component B

CUSTOMER SERVICE

For additional support options available at your area, contact our local offices.

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