

**CONSTRUCTION**

# CARBOSTOP U PLUS

## WATER-REACTIVE SINGLE-COMPONENT RESIN

**DESCRIPTION**

CarboStop U Plus is a water-reactive single-component resin with integral catalyst. CarboStop U Plus is free of CFC and phthalate plasticisers. CarboStop U Plus consists of modified polyisocyanates with additives.

CarboStop U-Plus cures by reaction with ambient water yielding a polyurethane/polyurea foam.

The expansion rate of the foam depends in the first place on the backpressure effected by the propagation of the resin into the structure to be sealed, i.e., wide cracks/gravel result in a high foaming factor, narrow cracks/ sand in a low expansion rate and high strength.

**APPLICATION AND USE**

CarboStop U-Plus stops water inflows and provides a temporary seal, which often is satisfactory for the sealing of excavation sites during the construction work.

CarboStop U Plus is used for the following applications:

- Stopping of water inflow (also salt water)
- Stopping of water ingress, also seawater, in cracks
- Consolidation of gravelly sand
- Sealing of drill holes
- Seals in tunnel construction
- Used as pre-seal for sealing of concrete structures in combination with CarboCrackSeal H Plus (approval according to the German ZTV-RISS regulations)

**ADVANTAGES**

- Free of CFC and phthalate plasticisers
- Ready for use without mixing
- Works with high pressure water
- Grouts fine to grained sands
- Insignificant disturbance of the groundwater quality (tested for groundwater compatibility according to the official guidelines of the German Institute for Construction Technology (DIBt))<sup>2</sup>

**TECHNICAL DATA**

Our Minova products undergo stringent laboratory and field testing to ensure consistent and high quality.

**MATERIAL DATA**

Parameter	CarboStop U Plus	Unit	Standard
Density at 25 °C	1100 - 1140	kg/m <sup>3</sup>	DIN 12791-1
Colour	brown	-	-
Flash point	> 100	°C	DIN 53213
Viscosity at 5 °C	750 - 5000	mPa*s	ISO 3219
Viscosity at 10 °C	500 - 2500	mPa*s	ISO 3219
Viscosity at 15 °C	300 - 1200	mPa*s	ISO 3219
Viscosity at 20 °C	200 - 800	mPa*s	ISO 3219
Viscosity at 25 °C	140 - 500	mPa*s	ISO 3219

**REACTION DATA**

Initial Temperature	5 °C	10 °C	15 °C	20 °C	25 °C
Start of Foaming (±10 s)	30 s	30 s	25 s	23 s	20 s
End of Foaming (±30 s)	2 min 50 s	2 min 45 s	2 min 40 s	2 min 20 s	2 min 00 s
Foam Factor (free rise) (±15 s)	45	45	45	45	45

Note 1: The reaction is affected by addition of 10 % water to the freshly prepared blend.

**MECHANICAL DATA**

CarboStop U-Plus injected in sand (quartz sand type H32).

Parameter	CarboStop U Plus	Unit	Standard
Compressive strength (after 6 weeks)	12,0	MPa	DIN EN ISO 604
E-modulus (after 6 weeks)	302,9	MPa	DIN EN ISO 604

**APPLICATION METHOD**

This product is intended for application at ambient temperature range 5 °C to 40 °C.

The temperature of the components during application must be within the range 15 °C to 30 °C.

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

CarboStop U-Plus reacts with water.

In open cans, a skin may be formed on the surface of the liquid by reaction with the humidity contained in the air; but this does not affect the pumping operation.

CarboStop U-Plus is injected as a single component via packers into the water-bearing zones using manual or motor-driven pumps. When in contact with water, the reaction mix foams up strongly and hardens. If the zone to be sealed is dry, a full hardening of the CarboStop U-Plus mass can be achieved by preliminary or subsequent water injection.

In contrast to the two-component systems, CarboStop U-Plus will not harden in the injection pipe for hours since contact with the water contained in the ground is necessary for hardening.

If used in combination with CarboCrackSeal H Plus, following the injection of CarboStop U Plus, CarboCrackSeal H Plus is injected into the not fully cured foam.

Immediately after ending the injection work, flush the pump with CarboSolv D, in order to prevent clogging. For standstill periods of more than one day, fill the pump with CarboSolv S afterwards.

**SAFETY INSTRUCTIONS AND LIMITATIONS**

Observe the usual precautionary measures for handling chemicals, see MSDS of CarboStop U Plus.

**PACKAGING AND TRANSPORTATION**

All forms of packaging are approved according to the dangerous goods regulations for road, railway, and shipping – refer to section 14 of the SDS.

CarboStop U Plus can be delivered in 5 or 18 l units. Other packing units available on request.

**STORAGE AND SHELF LIFE**

The product shelf life is six months from date of delivery when stored in a dry place between 10 °C and 30 °C.

If 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.

Liquid Product can be disposed of in an incineration plant.

Cured CarboStop U Plus can be disposed of as municipal waste.

**APPROVALS AND CERTIFICATES**

1. German approval as curtain injection Z-101.29-44 (DIBT, 2024)
2. Investigation of the elution behaviour of an injection resin on polyurethane (MFPA, Leipzig, PB 5.4/23-033-1, 2023)
3. Expertise on compatibility with groundwater according to DIBt regulation (Hygiene-Institut, Gelsenkirchen, K-298124-18-Bs, 2018)

**DISCLAIMER**

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**ADDITIONAL DOCUMENTATION**

- MSDS of CarboStop U Plus

**CUSTOMER SERVICE**

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

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