

CONSTRUCTION

CarboStop F – CarboAdd X

WATER-REACTIVE SINGLE-COMPONENT RESIN & REACTION ACCELERATOR

DESCRIPTION

CarboStop F is a low viscous water-reactive single-component resin. CarboStop F is free of VOCs, CFC and phthalate plasticisers.

CarboStop F consists of modified polyisocyanates with additives. CarboAdd X is a catalyst blend.

CarboStop F 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/fine sand in a low expansion rate and high strength.

Cured CarboStop F does not shrink nor swell with water.



APPLICATION AND USE

- Injection of cracks
- Injection of grouting hoses
- Consolidation of granular soil
- Stopping of water ingress
- Deep injection
- And many more special applications

Applicable at temperatures between 0 °C and 40 °C.

ADVANTAGES

- Ready for use without mixing
- Grouts fine to grained sands
- Suitable for deep injection

TECHNICAL DATA

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

MATERIAL DATA

Parameter	Unit	CarboStop F	CarboAdd X	Prepared mixture	Standard
Density at 25 °C	kg/m ³	1130 ± 30	960 ± 4	-	DIN 12791-1
Colour	-	brown	yellowish	-	-
Flash point	°C	> 100	> 100	-	DIN 53213
Viscosity at 5 °C	mPa*s	750 ± 80	-	330 ± 50	DIN EN ISO 3219
Viscosity at 10 °C	mPa*s	470 ± 60	-	-	DIN EN ISO 3219
Viscosity at 15 °C	mPa*s	310 ± 40	-	-	DIN EN ISO 3219
Viscosity at 25 °C	mPa*s	160 ± 40	5 ± 2	90 ± 10	DIN EN ISO 3219

REACTION DATA

Initial temperature	5 °C	10 °C	15 °C	25 °C
Reaction times* measured with 10 % CarboAdd X				
Start of foaming	10 s ± 2 s	8 s ± 2 s	8 s ± 2 s	7 s ± 2 s
End of foaming	59 s ± 10 s	50 s ± 10 s	41 s ± 10 s	38 s ± 10 s
Foaming factor (free rise)	40 - 45	40 - 45	40 - 45	40 - 45
Reaction times* measured with 15 % CarboAdd X				
Start of foaming	10 s ± 2 s	8 s ± 2 s	7 s ± 2 s	6 s ± 2 s
End of foaming	42 s ± 10 s	37 s ± 10 s	32 s ± 10 s	28 s ± 10 s
Foaming factor (free rise)	40 - 45	40 - 45	40 - 45	40 - 45

* all measurements regarding MCT PV10-305

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

MECHANICAL DATA

Parameter	Value	Unit	Standard
Resin demand	118 ± 10	kg/m ³ sand	-
Compressive strength, 7 d	28 ± 3	MPa	DIN 53421
Deformation at break, 7 d	6 ± 1	%	DIN 53421

Properties of injected quartz sand, 0.063 – 0.2 mm, 43 % pore volume.

APPLICATION METHOD

Prior to application, CarboAdd X is added to CarboStop F to increase its reactivity. The reaction mix thus obtained maintains its state for at least 8 hours without significant viscosity increase. After mixing with CarboAdd X, 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/CarboAdd products are 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 contains insufficient water, a full

hardening of the CarboStop mass can be achieved by preliminary or subsequent water injection.

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

Preferably, CarboStop F is used for stopping the water flow from working joint with preinstalled grouting hoses such as CarboTech injection hose type Line. Immediately after stopping the water flow by pumping CarboStop F, CarboCrackSeal H has to be injected to achieve a permanent elastic seal.

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.

For the consolidation of soil CarboStop F is used without CarboAdd and has to be injected via sleeve pipes (tube à manchette) or other injection pipes into natural moist or wet sand. The maximum radius of injection is approx. 30 cm; with a bigger radius the core is left uncured. The injection pressure should be no greater than the overburden pressure in order to avoid fracturing of the ground.

It needs 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 of the resin or accelerator canisters must be avoided by all means.

SAFETY INSTRUCTIONS AND LIMITATIONS

Observe the usual precautionary measures for handling chemicals, see MSDS of CarboStop F and CarboAdd X.

PACKAGING AND TRANSPORTATION

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

CarboStop F can be delivered in 20/26/200/1000 l units. CarboAdd X is delivered in 1/5 l units.

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

STORAGE AND SHELF LIFE

At least six months from date of delivery when stored in a dry place between 10 °C and 30 °C.

The local legislation on storage has to be observed

DISPOSAL

Follow local regulations.

APPROVALS AND CERTIFICATES

- Examination of the grouting CarboStop F with regard to the effects on soil and ground water (accordant DIBt)

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ADDITIONAL DOCUMENTATION

- Operating instructions on proper use of Minova injection resins
- MSDS CarboStop F
- MSDS CarboAdd X

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