

**CONSTRUCTION**

# CarboStop E – CarboAdd X and XS

## WATER-REACTIVE SINGLE-COMPONENT RESIN & REACTION ACCELERATORS

**DESCRIPTION**

CarboSTop E is a water-reactive single-component resin. CarboStop E is free of CFC and phthalate plasticisers.

CarboStop E consists of modified polyisocyanates with additives. The CarboAdd X or XS products are catalyst blends.

CarboStop E cures by reaction with ambient water yielding a polyurethane/polyurea foam. The expansion rate of the foam depends in the first place on the counter-pressure exerted by the medium in which one inject. It is also affected 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 E does not shrink nor swell with water.

**APPLICATION AND USE**

- Stopping of water ingress, also seawater, in cracks
- Consolidation of soil
- Deep injection

Applicable at temperatures between 0 °C and 50 °C.



**ADVANTAGES**

- Ready for use without mixing
- Compatible with sea water
- Does not shrink or swell with water
- 100-years durability test performed

**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) contamination deque of water and other factors.

## MATERIAL DATA - CARBOSTOP E

Parameter	Unit	CarboStop E	Standard
Density at 25 °C	kg/m <sup>3</sup>	1130 ± 30	DIN 12791-1
Colour	-	brown	-
Flash point	°C	> 100	DIN 53213
Viscosity at 5 °C	mPa*s	1230 ± 200	DIN EN ISO 3219
Viscosity at 10 °C	mPa*s	820 ± 150	DIN EN ISO 3219
Viscosity at 15 °C	mPa*s	560 ± 100	DIN EN ISO 3219
Viscosity at 20 °C	mPa*s	370 ± 50	DIN EN ISO 3219
Viscosity at 25 °C	mPa*s	280 ± 50	DIN EN ISO 3219

## MATERIAL DATA - CARBOADD XS AND RESIN MIX

Parameter	Unit	CarboAdd XS	Resin mix 10 : 3.7 CarboStop E + Carbo Add XS	Standard
Density at 25 °C	kg/m <sup>3</sup>	930 ± 20	1125 ± 30	DIN 12791-1
Colour	-	yellowish	brown	-
Flash point	°C	> 90	-	DIN 53213
pH-value	-	10.9 ± 0.5	-	DIN 19268
Viscosity at 5 °C	mPa*s	-	1170± 200	DIN EN ISO 3219
Viscosity at 10 °C	mPa*s	-	820 ± 150	DIN EN ISO 3219
Viscosity at 15 °C	mPa*s	-	500 ± 100	DIN EN ISO 3219
Viscosity at 20 °C	mPa*s	-	310 ± 50	DIN EN ISO 3219
Viscosity at 25 °C	mPa*s	4 ± 2	250 ± 50	DIN EN ISO 3219

## REACTION DATA

Initial temperature	5 °C	10 °C	15 °C	20 °C	25 °C	
Reaction times* measured with 10 parts by weight CarboAdd X or 3.7 parts by weight CarboAdd XS						
Start of foaming	11s	10s	9s	8s	8s	± 2s
End of foaming	40s	34s	33s	31s	29s	± 10s
Foaming factor (free rise)	45	45	45	45	45	± 10

\* Note: the reaction is affected by addition of 10 parts by weight water to the freshly prepared blend.

## APPLICATION METHOD

Prior to application, CarboAdd X or XS is added to CarboStop E to increase its reactivity. The reaction mix thus obtained maintains its state for at least 5 hours without significant viscosity increase. After mixing with CarboAdd X or XS, 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 E CarboAdd X or XS 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 E mass can be achieved by preliminary or subsequent water injection.

In contrast to the two-component systems, CarboStop E will not start to react as long as there is no contact with water in damp or liquid form.

However, we would like to recommend to clear the pump and the system as soon as possible with CarboSolv D.

For standstill periods of more than one day, fill the pump with CarboSolv S after cleaning.

For the consolidation of soils CarboStop E is used without CarboAdd X or XS it is injected via sleeve pipes (tube à manchette) or other injection pipes into natural moist or wet sand. For the injection of soils with insufficient hygrometry special techniques can be explained by our application specialist. The injection pressure shouldn't be

much higher than the actual pressure in the surrounding medium.

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 E, CarboAdd X and XS.

## **PACKAGING AND TRANSPORTATION**

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

CarboStop E can be delivered in 20/26/200/1000 l units. CarboAdd X and XS can be delivered in 1/5 l units.

Other packaging units are 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. 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**

1. "Durability testing of 1-component Polyurethane: CarboStop E" (Technical research Institute of Sweden (SP), 2014)
2. Test report using the column test to the DIBt – Working Sheet "Assessment of the Effects of construction Product on Soil and Ground Water" (Hygiene Institute 2009)

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## **ADDITIONAL DOCUMENTATION**

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

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