

## CONSTRUCTION

# CarboStop 102 – CarboStop 102 ACC

## WATER-REACTIVE ONE-COMPONENT POLYURETHANE RESIN

### DESCRIPTION

CarboStop 102 is a water-reactive one-component polyurethane resin. CarboStop 102 is CFC- and solvent free. To adapt the reaction speed to the situation the accelerator CarboStop 102 ACC is added to the resin. The reaction starts after contact with a sufficient quantity of water.

CarboStop 102 resin consists of modified isocyanates with additives. CarboStop 102 ACC is a catalyst mixture designed to adapt the reaction speed to the situation. After the addition of the catalyst, the mixture has a shelf life of at least 48 hours, when completely protected from moisture or direct contact with water.



### APPLICATION AND USE

CarboStop 102 is used for for the coagulation, hardening and waterproofing in Tunnelling-, Underground-, Geological-, Hydraulic-, Maritime- and Off-Shore Constructions

- Stopping of water inflows under high pressure, volume, and speed (also salt water)
- Coagulation and water sealing of loose rock.
- Grouting of fine- to medium-fine grained sands and grounds
- Injection of anchors, self-drilling anchors and cable bolts in sand under water transit
- Deep injection
- Injection of cracks, honeycombs, cold joints and non-moving joints.
- Injections of man-accessible sewer lines and tubes

### ADVANTAGES

- CFC, halogen, phtalate free
- Due to separate available catalyst product can be adjusted to conditions on application site
- Works with high pressure water
- Grouts fine to grained sands
- After the addition of the catalyst, the mixture has a shelf life of 48 hours, when protected from moisture or direct water contact

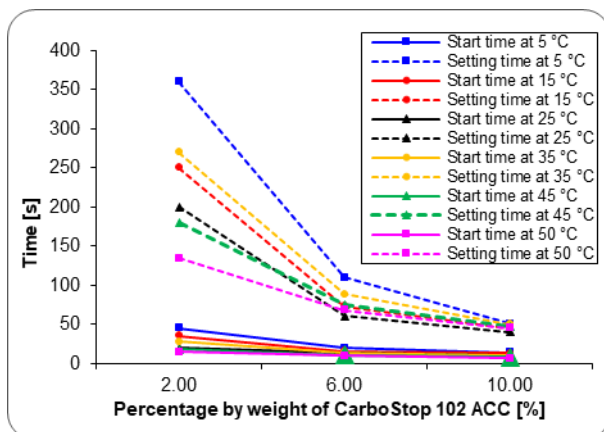
### TECHNICAL DATA

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 dequue of water and other factors.

### MATERIAL DATA

Parameter	Unit	CarboStop 102	CarboStop 102 ACC	Standard
Density at 25 °C	kg/m <sup>3</sup>	1120 ± 20	970 ± 15	DIN 12791-1
Colour		brown	yellow	
Flash point	°C	> 100	> 150	DIN 53213
Viscosity at 5 °C	mPa*s	710 ± 70	-	DIN EN ISO 3219
Viscosity at 10 °C	mPa*s	475 ± 70	-	DIN EN ISO 3219
Viscosity at 15 °C	mPa*s	315 ± 40	-	DIN EN ISO 3219
Viscosity at 20 °C	mPa*s	225 ± 40	-	DIN EN ISO 3219
Viscosity at 25 °C	mPa*s	170 ± 40	35 ± 10	DIN EN ISO 3219
Viscosity at 30 °C	mPa*s	130 ± 30	-	DIN EN ISO 3219
Viscosity at 35 °C	mPa*s	97 ± 20	-	DIN EN ISO 3219
Viscosity at 40 °C	mPa*s	77 ± 20	-	DIN EN ISO 3219
Viscosity at 45 °C	mPa*s	59 ± 10	-	DIN EN ISO 3219
Viscosity at 50 °C	mPa*s	48 ± 10	-	DIN EN ISO 3219

### REACTION TIMES



### REACTION DATA

Percentage by weight of CarboStop 102 ACC	[%]	2.00	6.00	10.00
<b>Temperature 5 °C</b>				
Start time	[s]	45	20	14
Setting time	[s]	360	110	51
<b>Temperature 15 °C</b>				
Start time	[s]	35	16	13
Setting time	[s]	250	73	45
<b>Temperature 25 °C</b>				
Start time	[s]	20	13	11
Setting time	[s]	200	61	40
<b>Temperature 30 °C</b>				
Start time	[s]	32	15	10
Setting time	[s]	290	99	57
<b>Temperature 35 °C</b>				
Start time	[s]	28	14	10
Setting time	[s]	270	89	50
<b>Temperature 40 °C</b>				
Start time	[s]	23	12	10
Setting time	[s]	210	82	49
<b>Temperature 45 °C</b>				
Start time	[s]	18	11	8
Setting time	[s]	180	75	47
<b>Temperature 50 °C</b>				
Start time	[s]	15	10	7
Setting time	[s]	135	68	45
<b>Temperature 25 °C</b>				
Foaming factor (free foamed)*	-	-	43	-
Room weight (free foamed)*	kg/m <sup>3</sup>	-	26	-

\*according to MCT-test procedure PV10-305

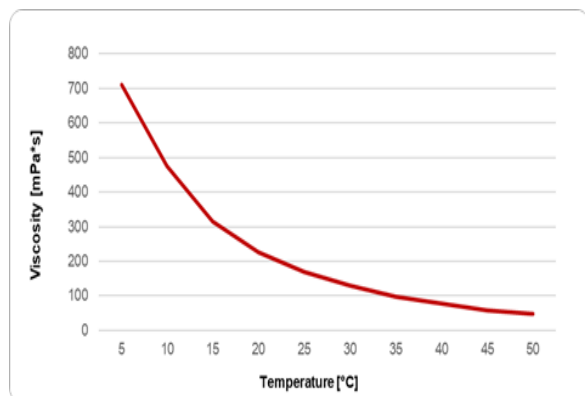
The reaction has been triggered by the addition of 10 %, clean tap water, to the freshly prepared blend. Specific contaminants in the water on the site may give different reaction times.

### MECHANICAL DATA

CarboStop 102 + CarboStop 102 ACC injected in sand (quartz type H 32 particle size: 0,125-1mm)

Parameter	Unit	Value	Standard
Compressive strength (after 6 weeks)	MPa	12	DIN EN ISO 604
E modulus (after 6 weeks)	MPa	302.9	DIN EN ISO 604

## VISCOSITY WITH RESPECT TO TEMPERATURE



## APPLICATION METHOD

CarboStop 102 ACC must be added for a controlled start of the reaction.

Before the start of the pumping, the CarboStop 102 ACC is added in predestined quantity to the resin CarboStop 102. Herewith the reactivity of the grout can be adjusted to the given situation. Both components have to be mixed thoroughly. The prepared grout mixture can be stored for at least 48 hours without significant increase in viscosity under the condition that the grout mix is efficiently protected from moisture and water. However, a skin may form on surface of the liquid surface, due to reaction with the moisture in the air. This has generally no further effect on the resin underneath, but we recommend to skim this skin and also prevent obstructions in the pump.

The mix of CarboStop 102/CarboStop 102 ACC is injected as a one-component grout that reacts strongly and hardens after the contact and interaction with a sufficient quantity of water. Should the area to be sealed contain an insufficient quantity of water to trigger all the elements of the resin, then a complete reaction of the CarboStop 102 can be achieved by pre-, simultaneous-, or post injection with water. In contact with water CarboStop 102 reacts to form a polyurethane/polyurea product

When compared to two-component systems, the CarboStop 102 contained in the high-pressure hose does not harden out. However, please assure yourself that the valves are closed so that no water can enter the hose and trigger the reaction of the grout. Nevertheless, we always advise to flush the pump with the cleaner CarboSolv D in order to prevent the pump and valves from sludging. Should the interruption

exceed one day, we'll always advise to lubricate the internal parts of the pumps and the hoses with CarboSolv S as well.

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 102 and CarboStop 102 ACC.

In practical application the foaming factor depends mainly from the counter-pressure in the medium, by the mechanical pressure generated by the pumping system, or by the contained expansion of reacting resin. The foaming factor is generally higher in wide cracks or in loose gravel, while fine cracks or sand will restrict the expansion factor. The density, rigidity and general strength of the foam will increase exponentially. It is in all cases advised to restrict the free expansion by the maintaining of sufficient back pressure. The foaming factor of the grout mix is not altered by the turbulence of the water streams.

## PACKAGING AND TRANSPORTATION

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

CarboStop 102 can be delivered in 20/26/200/1000 l units. CarboStop 102 ACC is delivered in 1/5 l units.

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

## STORAGE AND SHELF LIFE

CarboStop 102 and CarboStop 102 ACC are a moisture-reactive system and very sensitive to contact with moisture and humidity, and are therefore filled under a protective blanket of dry nitrogen. The components can be stored for at least 12 months at 10°-30°C when kept dry and in closed original package. Once opened, the components should be used as soon as possible.

**DISPOSAL**

Follow local regulations.

**CUSTOMER SERVICE**

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

[www.minovaglobal.com/emea-cis](http://www.minovaglobal.com/emea-cis)

**APPROVALS AND CERTIFICATES**

1. Test Report about the examination of CarboStop 102 using the column test following to the DIBt-working sheet „Assessment of the effects of construction products on soil and ground water“, Hygiene Institute Gelsenkirchen 2010
2. Test report according BS 6920:2000 No. MAT/LAB 553C/1, WRC-NSF Ltd., UK 2011Listing 2

**DISCLAIMER**

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**ADDITIONAL DOCUMENTATION**

- Operating instructions on proper use of Minova injection resins
- MSDS CarboStop 102
- MSDS CarboStop 102 ACC