

CONSTRUCTION

CarboStop 42 – CarboStop 42 ACC

WATER - REACTIVE ONE - COMPONENT RESIN & REACTION ACCELERATOR

DESCRIPTION

CarboStop 42 is an ultra- low viscosity, water-reactive, one-component polyurethane resin. CarboStop 42 is solvent- and CFC- free. To adapt the reaction speed to the situation the accelerator CarboStop 42 ACC is added to the resin and mixed before pumping. The reaction starts after contact with water.

CarboStop 42 resin consists of modified isocyanates with additives. CarboStop 42 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 42 can be used for stabilization, curing and sealing of soils and structures in tunnel- and underground engineering, for geotechnical- and off-shore constructions and hydraulic engineering.

- Grouting of ultra-fine, to very fine sands and porous materials- ground stabilization
- Deep injection
- Injection of anchors, self-drilling anchors, drill bolts and cable bolts in water-carrying fine sands
- Stabilisation and sealing of loose rock
- Supports stopping of water inflow (even salt water) under high pressure and speed
- Injections of man-accessible sewer lines and tubes

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, e. g. at the container wall, must be avoided.

ADVANTAGES

- CFC, halogen, phthalate free
- Due to separate available catalyst product can be adjusted to conditions on application site
- Deep injection thanks to ultra- low viscosity
- Works with high pressure water
- 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 due to water and other factors.

MATERIAL DATA

Parameter	Unit	CarboStop 42	CarboStop 42 ACC	Standard
Density at 25 °C	kg/m ³	1100 ± 20	1020 ± 20	DIN 12791-1
Colour	-	brown	light yellow	-
Flash point	°C	-	-	DIN 53213
Viscosity at 5 °C	mPa*s	95 ± 20	-	DIN EN ISO 3219
Viscosity at 10 °C	mPa*s	73 ± 20	-	DIN EN ISO 3219
Viscosity at 15 °C	mPa*s	55 ± 10	-	DIN EN ISO 3219
Viscosity at 20 °C	mPa*s	41 ± 10	-	DIN EN ISO 3219
Viscosity at 25 °C	mPa*s	30 ± 10	13 ± 5	DIN EN ISO 3219
Viscosity at 30 °C	mPa*s	20 ± 10	-	DIN EN ISO 3219
Viscosity at 35 °C	mPa*s	17 ± 10	-	DIN EN ISO 3219
Viscosity at 40 °C	mPa*s	< 15	-	DIN EN ISO 3219

REACTION DATA *

Percentage by weight of CarboStop 42 ACC	[%]	0.5	1	1.5	2	2.5
Temperature 5 °C						
Start time	[s]	410	175	75	65	47
Setting time	[s]	> 950**	645	275	235	145
Temperature 15 °C						
Start time	[s]	330	120	60	50	38
Setting time	[s]	> 950*	475	245	162	135
Temperature 25 °C						
Start time	[s]	180	80	48	39	18
Setting time	[s]	900	280	170	135	110
Temperature 30 °C						
Start time	[s]	165	67	47	34	17
Setting time	[s]	900	270	165	125	103
Temperature 35 °C						
Start time	[s]	150	57	39	28	14
Setting time	[s]	810	240	150	110	95
Temperature 40 °C						
Start time	[s]	135	54	34	17	13
Setting time	[s]	750	225	130	104	80

*all measurements regarding MCT PV10-305

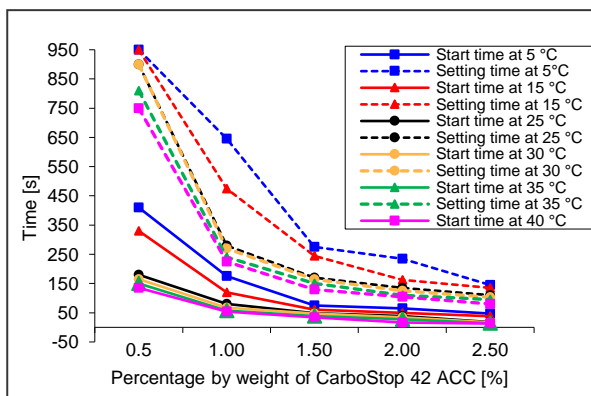
**extrapolated

Note 1: The reaction times were determined by mixing 100 g of the blend into 200 g sand (particle size 0.125-0.335).

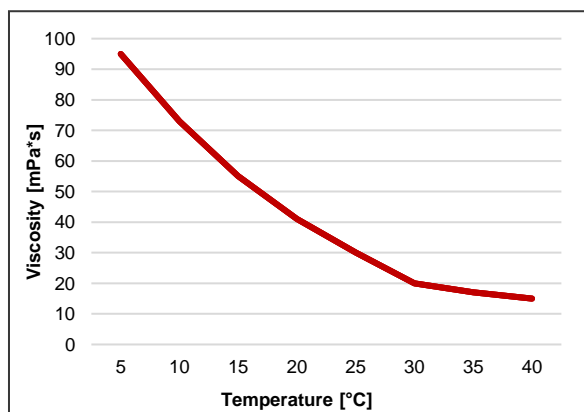
Note 2: The reaction has been triggered by the addition of 10 %, clean tap water, to the freshly prepared blend.

Note 3: Specific contaminants in the water on the site may give different reaction times.

REACTION TIMES



VISCOSITY WITH RESPECT TO TEMPERATURE



MECHANICAL DATA

CarboStop 42 + 0,25 % CarboStop 42 ACC injected in sand (particle size: 0.125 – 0.355 mm)

Parameter	Unit	24 hours	7 days	14 days	21 days	Standard
Compressive strength	MPa	4.4	9.3	9.4	11.2	DIN EN ISO 604
E-modulus	MPa	134.7	187.2	207.7	254.5	DIN EN ISO 604

APPLICATION METHOD

CarboStop 42 ACC must be added for a controlled start of the reaction.

Before the start of the pumping, the CarboStop 42 ACC is added in predestined quantity to the resin CarboStop 42. 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 to prevent obstructions in the pump.

The mix of CarboStop 42/CarboStop 42 ACC is injected as a one-component grout that reacts 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 42 can be achieved by pre-, simultaneous-, or post injection with water.

When compared to two-component systems, the CarboStop 42 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.

In contact with water, CarboStop 42 reacts to form a polyurethane/polyurea product (see 'Reaction time').

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 CarboStop 42-CarboStop 42 ACC MSDS.

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 42 can be delivered in 20/26/200/1000 l units. CarboStop 42 ACC is delivered in 1/5 l units.

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

STORAGE AND SHELF LIFE

CarboStop 42 and CarboStop 42 ACC are moisture-reactive systems 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.

APPROVALS AND CERTIFICATES

1. Test Report about the examination of CarboStop 42 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 Certificate according to the UBA - Coating Guideline (Hygiene Institut, Gelsenkirchen, 2017)

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MCT-200060/200070/CarboStop 42 – CarboStop 42 ACC_E30 (February 2019)

ADDITIONAL DOCUMENTATION

- Operating instructions on proper use of Minova injection resins
- CarboStop 42-CarboStop 42 ACC MSDS

LIST OF REPRESENTATIVES

- AUSTRIA: Minova MAI GmbH
- BELGIUM / FRANCE: Minova France C/O Orica Belgium SA
- CZECH REPUBLIC: Minova Bohemia s.r.o.
- GERMANY: Minova CarboTech GmbH
- ITALY: Minova CarboTech GmbH
- KAZAKHSTAN: Minova Kazakhstan JV LLP
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