

VELOSIT® NG 511

High Performance
Non-Shrink Grout
For 6 – 50 mm



Application fields

VELOSIT NG 511 is a cementitious non-shrink grout for concrete substrates. It is used to fill large voids or underneath base plates of machinery or building columns up to 50 mm (2") clearance. Typical application fields besides others are as follows:

- Repair of large surface defects on concrete
- Filling of gaps between two concrete bodies
- Grouting of machinery and construction columns
- Application thickness from 6 mm (¼") to 50 mm (2")
- Anchoring of starter bars and dowels

Properties

VELOSIT NG 511 is a double shrinkage compensated cementitious grout with quick strength development. VELOSIT NG 511 binds the mixing water quickly reducing or completely eliminating the need for water curing and protection.

VELOSIT NG 511 creates an extremely well bonded, high strength connection between concrete and concrete or concrete and steel.

VELOSIT NG 511 surpasses the requirements of EN 1504-3 class R4 for concrete repair (CR) and can be used according to the principles 3, 4 and 7 acc. to EN 1504-9.

VELOSIT NG 511 can be poured or pumped.

- Minimal shrinkage
- Slight volume increase in the plastic stage to ensure good bond to base plates
- Excellent workability
- Wide range of water addition allowing consistencies from plastic to fluid
- Fiber reinforced
- Advanced corrosion inhibitor technology
- 60 min. working time and 12 MPa (1740 psi) compressive strength after 6 hours
- Final strength of more than 70 MPa (10150 psi) after 28 days in fluid consistency
- Open to foot traffic after 6 hours

- Excellent adhesion to properly prepared concrete and steel
- Minimal water penetration
- Water curing only under hot and dry conditions required for max. 4 hours
- Good resistance against CO₂ and Chloride penetration due to a very tight pore structure

Application

1.) Substrate preparation

VELOSIT NG 511 is designed for concrete and steel substrates.

a.) Steel

must be prepared to a purity of SA 2.5 acc. SIS 05 5900.

b.) Concrete substrates

must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (> 100 bar/ 1450 psi) to remove all bond breaking substances.

Remove all carbonated concrete. Test with Phenolphthalein or other suitable indicator until concrete with sufficient alkalinity for rebar protection is reached. If rebar is exposed remove concrete at least 6 mm (¼") behind rebar to fully embed the steel into VELOSIT NG 511.

Substrate must be rough, open porous and load bearing. The minimum requirement for adhesive strength is 2.0 MPa (290 psi) and for the compressive strength 30 MPa (4350 psi). Before the application of VELOSIT NG 511, dampen the substrate with clean water to a saturated surface dry (SSD) condition. Remove standing water puddles .

2.) Processing

Mixing: Mix VELOSIT NG 511 with 13 – 16 % potable water, i.e. 3.2 – 4.0 l (0.8 – 1.0 gal.) water per 25 kg (55 lb.) bag. Fill the 13 % mixing water (3.2 l per bag) into a suitable bucket and mix the powder with a slow speed drill (300 – 600 rpm) into the water until

a lump-free mix is achieved. Add up to 3 % water under stirring until the desired consistency is achieved.

The product is workable for 60 min. at 23 °C.

a.) Manual application:

Pour VELOSIT NG 511 can be applied directly onto the proper prepared substrates. The product can be applied into voids of minimum 6 mm (¼") and up to 50 mm (2") width. Make sure to work in sections that can be finished within 15 min. Cooler temperatures extend, warmer temperatures reduce the working time. Rebars and other penetrations must be fully embedded into the mortar. If grouting underneath large base plates use a fluid consistency. The max. travel distance of the grout depends on the min. clearance of the gap. Without forcing the material the travel distance is approx. the gap width multiplied by 50. For example a 50 mm (2") gap allows 2.5 m (8'4") travel distance just by gravity.

b.) Pump application:

Suitable grouting pumps are for example:

- PFT GmbH: PFT G4
- HighTech GmbH: HighComb Big
- Wagner GmbH: PC 25
- Putzmeister GmbH: SP12 or MP 25

In mixing pumps feed the powder into the product hopper and adjust the water to the desired consistency. With grout pumps add the mixed product as described under „Mixing“ into the feed hopper of the pump and pump continuously. Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine after pumping or before long work interruptions. VELOSIT NG 511 is a fast curing material and may be hard to remove if left in the machine.

Never vibrate VELOSIT NG 511 to increase flow. Use wood or a steel rod to move the material in place.

3.) Curing

VELOSIT NG 511 does not require long term curing as it reacts relatively fast with water. Only under hot

weather or very dry conditions water curing for max. 4 hours is required.

Estimating

Repair of surface defects:

25 kg (55 lbs.)* VELOSIT NG 511 result in approx. 13.3 liter (0.46 ft³) cured mortar.

* 25 kg VELOSIT NG 511 powder + 3.2 kg water, i.e. 28.2 kg mixed material per bag

Cleaning

VELOSIT NG 511 can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid and mechanical cleaning are required.

Quality features

Color:	gray
Mixing ratio by weight:	100 : 14
Mixing ratio by volume:	100 : 24
Density:	1.7 kg /l
Substrate temperature:	5 – 35 °C (40 – 95 °F)
Initial set:	120 min.
Final set:	200 min.
Compressive / flexural strength in fluid consistency (16 % water per bag):	
6 hours:	12 / 3 MPa (1740/335 psi)
24 hours:	35 / 6 MPa (5075/870 psi)
7 days:	58 / 9 MPa (8410/1305 psi)
28 days:	71 / 10 MPa (10295/1450 psi)
In plastic consistency strength values are achieved	
Chloride ions:	< 0.05 %
Carbonation resistance:	passed
Capillary water absorption:	0.1 kg/m ² x h ^{0.5}
Adhesive strength*, concr.:	2.2 MPa (319 psi)
Restrained shrinkage*:	2.1 MPa (305 psi)
Fire rating EN13501-1:	Class A1

*acc. EN 1542. Adhesion depends very much on proper surface preparation!

Packaging

VELOSIT NG 511 is available in 25 kg (55 lb.) watertight plastic bags.

Storage

VELOSIT NG 511 can be stored in unopened original packs for 12 months at 5 – 35 °C (40 – 95 °F) in a dry storage place protected against sunlight.

Safety

Please observe the actual valid material safety data sheet and follow the described safety measures for handling of the product.

Recommendations

VELOSIT NG is only available for professional applicators.

Never add water to VELOSIT NG 511 when it has started to set. Stiffened material must be disposed.

All described product features are determined under controlled laboratory conditions according to the relevant international standards. Values determined under job site conditions may deviate from the stated values.

Please always use the latest version of this data sheet available from our website www.velosit.de.

Manufacturer

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