

# VELOSIT® NG 511

## High Performance Non-Shrink Grout



### 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 4" (10 cm) 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 ¼" (6mm) to 4" (100 mm)
- Anchoring of starter bars and dowels

### Properties

VELOSIT NG 511 is a 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. It meets both CRD C-627 and ASTM C-1107 Grade C

VELOSIT NG 511 can be poured or pumped.

- 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 1740 psi (12 MPa) compressive strength after 6 hours
- Final strength of more than 10150 psi (70 MPa) 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 CO<sub>2</sub> 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 white metal.

b.) Concrete substrates must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (min 3000 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 1" 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 290 psi (2 MPa) and for the compressive strength 4350 psi (30 MPa). 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. 0.8 – 1.0 gal (3.2-4 l) water per 55 lb (25 kg) 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 more water under stirring until the desired consistency is achieved.

The product is workable for 60-75 min. at 70°F.

a.) Manual application: Pour VELOSIT NG 511 directly onto the proper prepared substrates. The product can be applied into voids of minimum ¼" (6 mm) and up to 4" (100 mm). Make sure to work in sections that can be

finished within 15 min. Up to 33 lbs of clean washed 3/8" pea gravel can be added to extend the product. 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.

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 above 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 3-4 hours is required

## Estimating

Repair of surface defects:

55 lbs (25 kg) VELOSIT NG 511 result in approx. 0.46 ft<sup>3</sup> cured mortar.

## 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:  | 40 – 95°F<br>(5-35°C)                    |
| Initial set:  | 120 min.                                 |
| Final set:  | 200 min.                                 |
| Compressive / flexural strength in fluid consistency (16% water per bag): |  |
| 6 hours:  | 1740/335 psi (12/3 MPa)                  |
| 24 hours:   | 5075/870 psi (35/6 MPa)                  |
| 7 days:   | 8410/1305 psi (58/9 MPa)                 |
| 28 days:  | 10295/1450 psi (71/10 MPa)               |
| In plastic consistency strength is approx.. 25% higher.                   |  |
| Chloride ions:  | < 0.05%                                  |
| Carbonation resistance:   | passed                                   |
| Capillary water absorption:   | 0.1 kg/m <sup>2</sup> x h <sup>0.5</sup> |
| Adhesive strength**, concr.:  | 319 psi (2.2 MPa)                        |
| Restrained shrinkage**:   | 305 psi (2.1 MPa)                        |
| Change of Volume:   | .0-.03%                                  |
| Fire rating EN13501-1:  | Class A1                                 |

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

## Packaging

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

## Storage

VELOSIT NG 511 can be stored in unopened original packs for 12 months at 40-95°F (5-35°C) 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. Velosit USA LLC warrants this product for a period of 1 year from the date of installation to be manufactured without defects and to be consistent with printed technical characteristics. Velosit USA LLC makes no warranty as to merchantability or fitness for a particular purpose and this warranty is in lieu of all other warranties expressed or implied. Please always use the latest version of this data sheet available from our website [www.velosit-usa.com](http://www.velosit-usa.com)

## Effective date

July 2014

## Manufacturer

VELOSIT GmbH & Co. KG  
Industriepark 7  
32805 Horn-Bad Meinberg  
Germany