VELOSIT® NG 513

Underwater Non-Shrink Grout For 12 – 120 mm

DATA SHEET

HYCHEM

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VELOSIT NG 513 is a pumpable cementitious underwater grout for concrete substrates. It is used to fill large voids or restoration of concrete elements like piles or secant pile walls.

VELOSIT NG 513 creates an extremely well bonded, high strength connection between concrete and concrete or concrete and steel.

VELOSIT NG 513 is the result of many years in the field testing and research. VELOSIT NG 513 is a double shrinkage compensated cementitious underwater grout with quick strength development.

TYPICAL APPLICATIONS

- Interior and exterior use
- Repair of large surface defects on concrete piles
- Underwater filling of gaps between two concrete bodies
- Grouting underwater
- Anchoring of starter bars and dowels
- Use as micro-concrete

PROPERTIES

- Minimal shrinkage
- Salt and seawater water resistant
- Slight volume increase in the plastic stage to ensure good bond to base plates
- Excellent workability
- Fiber reinforced
- Advanced corrosion inhibitor technology
- 60 min. working time and 15 MPa (2175 psi) compressive strength after 6 hours
- Final strength of more than 65 MPa (9425 psi) after 28 days
- Excellent adhesion to properly prepared concrete and steel

TECHNICAL DETAILS

Color	gray
Mixing ratio by weight	100 : 13
Mixing ratio by volume	100 : 23
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: 15 / 3 MPa (2175/335 psi) 24 hours: 33 / 7 MPa (4785/1015 psi) 7 days: 51 / 8 MPa (7395/1160 psi) 28 days: 65 / 10 MPa (9425/1450 psi)
Chloride ions	< 0.05 %
Carbonation resistance	passed
Capillary water absorption	0.1 kg/m^2 x h$^{0.5}$
Adhesive strength*, concr.	> 2.0 MPa (290 psi)
Restrained shrinkage*	> 2.0 MPa (290 psi)
Fire rating EN13501-1	Class A1

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

APPLICATION GUIDELINES

Surface preparation

VELOSIT NG 513 is designed for concrete substrates.

Substrate must be rough, open porous and load bearing. Surfaces must be free from any bond breaking materials like oil, laitance or marine growth. The minimum requirement for adhesive strength is 2.0 MPa (290 psi) and for the compressive strength 30 MPa (4350 psi).

If applied outside water dampen the substrate with clean water to a saturated surface dry (SSD) condition before the application of VELOSIT NG 513. Remove standing water puddles

Processing

Mixing

Mix VELOSIT NG 513 with 12.5 – 14 % potable water, i.e. 2.5 – 2.8 l water per 20 kg bag. Fill the 12.5 % mixing water (2.5 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 1.5 % water under stirring until the desired consistency is achieved.

The product is workable for 60 min. at 23 °C. Cooler temperatures extend, warmer temperatures reduce the working time.

Manual application:

Pour VELOSIT NG 513 is poured into the shuttering bottom up displacing the water. The product can be applied into voids of minimum 12 mm and up to 120 mm width. For larger gaps the product can be extended with 4 – 8 mm aggregate. Rebars and other penetrations must be fully embedded into the mortar.

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
- mtec Duomix 2000

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 pump interruptions may result in clogging of the pump 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 513 is a fast curing material and may be hard to remove if left in the machine.

Never vibrate VELOSIT NG 513 to increase flow. Use wood or a steel rod to move the material in place.

Curing

VELOSIT NG 513 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 for applications outside water.

COVERAGE

Volume per bag:

20 kg* VELOSIT NG 513 results in approx. 10.4 liter cured mortar

* 20 kg VELOSIT NG 513 powder + 2.8 kg water, i.e. 22.8 kg mixed material per bag

CLEAN UP

VELOSIT NG 513 can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid and mechanical cleaning are required.

PACKAGING

20 kg watertight plastic bags.

STORAGE

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.

NOTE: Customer responsibility

The technical information and application advice given here is based on the best information available at the time of print. As the information herein is of a general nature, no assumption can be made as to the products suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by Commonwealth or State Legislation.

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If unsure contact Hychem for further technical advice before proceeding.

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ISSUE NUMBER 080720