

VELOSIT® CA 115

Liquid Crystalline Waterproofing Concrete Admixture

Application fields

VELOSIT CA 115 is an easy to use, economic, liquid crystalline waterproofing concrete admixture. VELOSIT CA 115 creates a crystalline “nano” structure within the concrete matrix, reducing the diameter of capillaries and sealing of any micro static cracks (up to 400 microns). Typical application fields include waterproofing of concrete:

- Basements and below grade parking structures
- Potable water structures
- Sewage retaining structures
- Tunnels and pipes
- On grade slabs, rafts and pile caps
- Providing waterproof shotcrete

Properties

VELOSIT CA 115 is a liquid admixture that initiates a crystalline reaction in concrete. The reaction takes place with the free lime in concrete pores and capillaries creating a permanent reduction of water

permeability. The crystalline effect allows the structure to self-heal shrinkage cracks when exposed to water.

VELOSIT CA 115 is mixed into the concrete either at the batching plant or in the mixer truck on site.

- VELOSIT C115-administered concrete self-seals both existing and futuristic static cracks of up to 0.4 mm
- Properly formulated mix designs result in waterproof concrete resistant against up to 13 bars
- Quick dispersion; easy to mix with no lumping or need for extensive mixing times
- Minimal influence on concrete setting time
- Increased resistance against low-ion soft water and aggressive media with a pH range of 3-12
- Suitable for potable water

Application

1.) Concrete requirements

Waterproof concrete requires several measures to ensure a dense structure.

Pozzolanic content: A maximum Pozzolanic content of 50 % by weight has been calculated to ensure the long term availability of sufficient free lime for a sustainably active crystalline waterproofing property in the concrete. This is due to the fact that both Pozzolans & VELOSIT CA 115 compete for the available free lime.

Water: potable water quality with a maximum dosage of 55 % on cement content (water/cement ratio ≤ 0.55).

Cement: Cement content must be at least 280 kg/m³ (472 lbs. per yd³). VELOSIT CA 115 can be used with most CEM I – III R and N (ASTM Type I – V) cements. Only cement types with more than 50 % pozzolanic content are not suitable.

Fly ash: Total fly ash must not exceed 50 % of the cement content by weight.

Micro Silica: VELOSIT CA 115 is compatible with micro silica

Aggregates and sand: Ensure a proper sieve curve according to good concreting practice as outlined for example in the ACI guidelines.

Admixtures: VELOSIT CA 115 is compatible with most concrete admixtures such water reducers, normal/super plasticisers, PCE-based super plasticisers, air-entrainers & accelerators.

Compatibility tests are recommended when in doubt.

Rebar: Amount and layout of reinforcement must be planned to minimize the risk of crack development. The rebar design is not influenced by the use of VELOSIT CA 115.

2.) Processing

The water content in any concrete mix is directly related to the porosity of the resultant concrete.

Hence, the dosage depends on the amount of mixing water (aggregate moisture included) in the batch mix. VELOSIT CA 115 is added at a rate of 5 % by weight of the total water (mixing water + aggregate moisture) i.e. 5 kg per 100 liter (4.2 lbs. per 10 gal.). In a typical 300 kg per m³ (505 lbs. per

yd³) total cementitious and a water:cement ratio of 0.40, use 6 Kgs of VELOSIT CA 115 (Please refer to the guideline table under “Estimating” later on in this technical data sheet.

a.) Batch-plant: Add VELOSIT CA 115 together with the mixing water. Reduce mixing water by 5 liter per m³ (1 gal per yd³) compared to an untreated mix design. Use normal mixing procedure.

b.) Concrete truck: Add VELOSIT CA 115 into the drum when the truck arrives at the job site. Mix for 8 min. at high speed before pumping. Preliminary lab trials are mandatory for this type of administration to adjust the required mixing water at the batch plant and at the job site.

c.) Site mixes: Concrete mixed in small tumbler mixers can also be improved with VELOSIT CA 115. Add the product in the calculated amount together with the water into the mixer. Start with a semi dry mix and adjust to the desired consistency after at 3 minutes of mixing.

3.) Placing

Standard concrete placing practice in accordance with ACI Recommendations or equivalent International codes must be followed to ensure optimum results. Install joint waterproofing solutions from the VELOSIT JT Range in cold joints and construction joints.

4.) Curing

Follow specified curing procedures as necessary. VELOSIT CA 115 is effective whether water curing or a curing compound is used.

Estimating

Dosage per m³ (yd³) concrete

Total water percentage	40 %	45 %	50 %	55 %
CA115 dosage Rate as % of total water	5 %			
CA115 dosage Rate as % of cement	2 %	2.25%	2.5%	2.75%
280 kg/m ³ (472lb/yd ³)	5.60 kg (9.42lb.)	6.30 kg (10.60 lb.)	7.00 kg (11.78 lb.)	7.70 kg (12.96 lb.)
310 kg/m ³ (522lb/yd ³)	6.20 kg (10.43 lb.)	6.98 kg (11.74 lb.)	7.76 kg (13.06 lb.)	8.52 kg (14.34 lb.)
340 kg/m ³ (573lb/yd ³)	6.80 kg (11.44 lb.)	7.66 kg (12.89 lb.)	8.50 kg (14.31 lb.)	9.36 kg (15.75 lb.)
370 kg/m ³ (623lb/yd ³)	7.40 kg (12.45 lb.)	8,32 kg (14.00 lb.)	9.26 kg (15.59 lb.)	10.18 kg (17.13 lb.)

Cleaning

VELOSIT CA 115 spillages are easily removed with water.

Quality features

Color: clear
 Density: 1.16 kg/l
 Water impermeability acc. EN 12390-8*:
 - Positive side: 13 bar (190 psi)
 - Negative side: 13 bar (190 psi)
 Compressive strength compared to untreated concrete* 28 days: +/- 0 %
 Self-healing of static cracks:
 max. 0.4 mm (16 mils)
 Fire rating EN13501-1: Class A1

*Concrete mix design:
 CEM I 42,5N (Milke Classic): 310 kg per m³
 Weser Fine sand 0/2: 670 kg per m³
 Weser Fine aggregate 2/8: 450 kg per m³
 Weser Coarse aggregate 8/16: 700 kg per m³
 Water: 135 l per m³
 w/c= 0.45
 VELOSIT CA 115: 7.00 kg per m³

Packaging

VELOSIT CA 115 is available in two pack sizes:
 25 kg (55 lb.) plastic pails
 1000 kg (2200 lb.) IBC containers

Storage

VELOSIT CA 115 has a shelf life of 12 months when stored in unopened original packs between 10°C & 35°C (50-95°F) in dry storage conditions and protected from direct sunlight.

Safety

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

Used product containers must be emptied completely after use. They can be returned to VELOSIT GmbH & Co. KG on request.

Recommendations

VELOSIT CA 115 is only available for professional applicators.

Concrete treated with VELOSIT CA 115 may discolor or show efflorescence once in contact with water. This is normal and mainly caused by the crystalline reaction. The discoloration does not affect performance.

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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