

# VELOSIT® CA 112

## Crystalline Waterproofing Admixture



### Application fields

VELOSIT CA 112 is a crystalline waterproofing admixture for concrete. It is very economic and easy to apply. VELOSIT CA 112 creates a crystalline structure inside the concrete reducing the amount and diameter of the capillary pores. Treated concrete is able to self-heal static cracks up to 0.5 mm. Typical application fields besides others are as follows:

- Waterproof concrete for basements and below grade parking structures
- Waterproofing of potable water structures
- Waterproofing of sewage structures
- Waterproofing of tunnels and pipelines
- Slab waterproofing
- Waterproofing of elevator pits
- Waterproofing of shotcrete

### Properties

VELOSIT CA 112 is a powder admixture that initiates a crystalline reaction in concrete. The reaction takes place with the free lime of the concrete and creates a permanent reduction of water permeability. Besides that it allows the structure to self-heal shrinkage cracks under contact with water.

VELOSIT CA 112 meets the requirements of EN 934-2 for concrete admixtures and is classified as a waterproofing additive according table 9.

VELOSIT CA 112 is mixed into the concrete either at the batch plant or on site into the batch truck.

- Self healing properties of treated concrete of up to 0.5 mm static cracks
- Waterproof up to 16 bars in properly formulated mix designs
- Easy to mix
- Increased final strength
- Little influence on concrete setting and strength development

- Increased resistance against aggressive media with a pH range of 3-12 and against soft water with low ion content
- Does not effect rebar passivation.
- Potable water approved

## 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 in the long term. This is due to the fact that both Pozzolans & VELOSIT CA 112 compete for the available free lime.

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

**Cement:** Cement content must be at least 280 kg/m<sup>3</sup> (472 lbs. per yd<sup>3</sup>). VELOSIT CA 112 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 112 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 112 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 112.

### 2.) Processing

The dosage depends on the amount of mixing water including aggregate moisture in the batch mix. Add 1.8 % VELOSIT CA 112, i.e. 1.8 kg per 100 liter (1.5 lbs. per 10 gal.). In a typical 300 kg cement per m<sup>3</sup> (505 lbs. per yd<sup>3</sup>) with a water/cement ratio of 0.45 this equals a dosage of 0.8 % of Cement/Cementitious content.

a.) Batch-plant: Add VELOSIT CA 112 together with the aggregates. Use normal mixing procedure.

b.) Concrete truck: Add VELOSIT CA 112 into the drum when the truck arrives at the job site. Mix for 8 min. at high speed before pumping. Trial mixes with the concrete mix design are strongly recommended for this application.

c.) Site mixes: Concrete mixed in small tumbler mixers can also be improved with VELOSIT CA 112. As the mixing intensity is lower, we recommend producing a slurry of VELOSIT CA 112 with 100 – 200 % water to ensure proper mixing results.

### 3.) Placing

Concrete can be placed as specified. Take special care of the compaction by properly vibrating the placed concrete. Install joint waterproofing solutions for example VELOSIT WS 801 in any cold joints or construction joints.

### 4.) Curing

Follow standard curing procedures for the site conditions. Take the required steps by either water curing as specified or applying a curing compound.

## Estimating

Dosage per m<sup>3</sup> (yd<sup>3</sup>) concrete

Water Cement	40 %	45 %	50 %	55 %
280 kg cement/m <sup>3</sup> (472lb/yd <sup>3</sup> )	2.02 kg (3.40 lb.)	2.27 kg (3.83 lb.)	2.52 kg (4.25 lb.)	2.77 kg (4.67 lb.)
310 kg cement/m <sup>3</sup> (522lb/yd <sup>3</sup> )	2.24 kg (3.78 lb.)	2.51 kg (4.23 lb.)	2.79 kg (4.70 lb.)	3.07 kg (5.17 lb.)
340 kg cement/m <sup>3</sup> (573lb/yd <sup>3</sup> )	2.45 kg (4.13 lb.)	2.76 kg (4.65 lb.)	3.06 kg (5.16 lb.)	3.36 kg (5.66 lb.)
370 kg cement/m <sup>3</sup> (623lb/yd <sup>3</sup> )	2.66 kg (4.48 lb.)	3.00 kg (5.06 lb.)	3.33 kg (5.61 lb.)	3.66 kg (6.17 lb.)

## Cleaning

VELOSIT CA 112 can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid are required.

## Quality features

Color:	gray
Density:	1.1 kg/l
Water impermeability acc. EN 12390-8:	
- Positive side:	16 bar (232 psi)
- Negative side:	16 bar (232 psi)
Compressive strength compared to untreated concrete*:	
7 days:	+ 2 %
28 days:	+ 3 %
Self-healing of static cracks:	max. 0.5 mm (20 mils)
Chloride ions:	< 0.05 %
*Concrete mix design:	
CEM I 42.5N (Milke Classic):	310 kg per m <sup>3</sup>
Wesersand 0/2 (Sand):	670 kg per m <sup>3</sup>
Weserkies 2/8 (Aggregate):	750 kg per m <sup>3</sup>
Weserkies 8/16 (Aggregate):	700 kg per m <sup>3</sup>
water:	139.5 l per m <sup>3</sup>
w/c=0.45	
VELOSIT CA 112:	2.51 kg per m <sup>3</sup>

## Packaging

VELOSIT CA 112 is available in two pack sizes:  
 20 kg (44 lb.) watertight plastic bag  
 1000 kg (2200 lbs.) BigBags

## Storage

VELOSIT CA 112 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 CA 112 is only available for professional applicators.


Concrete treated with VELOSIT CA 112 may discolor or show strong efflorescence in water contact. This is normal and caused by the crystalline reaction.

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](http://www.velosit.de).

## Manufacturer

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 <small>0921-CRP-2211</small>	
VELOSIT GmbH & Co. KG Industriepark 7 D-32805 Horn-Bad Meinberg 18 <b>VELOSIT CA 112</b>	
EN 934-2 Water resisting admixture for concrete EN 934-2 : T9	
Water soluble Chlorid	≤ 0.10 %
Alkali content	≤ 12.5%
Corrosion behavior	Contains components only from EN 934-1:2008, annex A 1
Capillary absorption	passed
Compressive strength	passed
Air content of fresh concrete	passed
Dangerous substances	NPD