

## Technical Data Sheet Concretum D-ZERO 11, 12 and 32 (L)

### A) Description

#### Product:

Concretum® D-ZERO 11, 12 and 32 (L) are multi functional liquid additives for concrete. The products are shrinkage reducing agents. They meet all requirements on a concrete additive of the group FM according to EN 934-2.

The additives Concretum® D-ZERO 11, 12 and 32 (L) are used to produce the low-shrinking concrete Concretum® D-ZERO, or in combination with Concretum® D-ZERO Plus (P) for the production of the low-shrinking concrete Concretum® D-ZERO Plus.

#### Application:

Concretum® D-ZERO 11, 12 and 32 (L) are used for the production of concretes with low shrinkage. Therefore, Concretum® D-ZERO 11, 12 and 32 (L) minimize the risk of cracking in concrete construction units due to shrinkage. Typical examples are:

- Covercrete
- Coverings with large joint distances
- Bottom and ceiling plates
- Construction units with high risk of cracking and low reinforcement
- "Waterproof" construction units

See also product information on Concretum® D-ZERO and D-ZERO Plus.

Concretum® D-ZERO 11, 12 and 32 (L) can be used to produce concretes in plants on and off site.

#### Advantages:

Concretum® D-ZERO 11, 12 and 32 (L) combine different functions. Apart from the reduction of shrinkage, the severe reduction of the required amount of water leads to concretes with high impermeability against liquids, injurious substances and gases.

The concretes Concretum® D-ZERO and D-ZERO Plus which are produced with Concretum® D-ZERO 11, 12 and 32 (L) show the following advantages:

- low shrinkage
- low risk of cracking
- low water permeability
- high chloride resistance
- slow carbonation

See also the correspondent product information on Concretum® D-ZERO and D-ZERO Plus.

### B) Product data

#### Function:

Concretum® D-ZERO 11, 12 and 32 (L) meet all requirements on a concrete additive of the group FM according to EN 934-2. Furthermore, they guarantee to stay within the limits of shrinkage according to SN EN 262/1 Anhang F on a defined concrete of reference after a drying period of 90 days, of max. 2‰, or max. 0.1‰ in combination with Concretum® D-ZERO Plus (P) (see separate technical data sheet of Concretum® D-ZERO Plus (P)).

#### Colour:

Brown liquid.



Delivery:  
10 kg canister, 200 kg barrel, 1000 kg IBC-container.

Shelf life:  
Twelve months from production if stored properly.

Storage:  
Without direct insolation between +5 °C and +30 °C.

Chemical basis:  
Modified polymer in water.

Relative density:  
1.05 +/- 0.02 kg/l

pH-content:  
5.5 +/- 1.0

Alkali content:  
< 3.0 M-% (Na<sup>2</sup>O-equivalent)

Uniformity:  
homogeneous

Usual hard material content:  
30 +/- 2 M-%

Viscosity:  
70 to 120 mPa s at 20°C

Content of water-soluble chlorides:  
< 0.1 M-%

### C) Operating instructions

#### Application:

The additives Concretum® D-ZERO 11, 12 and 32 (L) are solely permitted for the production of the low-shrinking concretes Concretum® D-ZERO and D-ZERO Plus. It is recommended to define the concrete mix design in cooperation with Concretum AG by a set-up of the concrete plant. This set-up usually consists of preliminary concrete tests to check relevant properties of fresh and hardened concrete. The compatibility between local raw materials such as cement and aggregates and Concretum® D-ZERO 11, 12 and 32 (L) tested also.

#### Dosage:

The dosage is defined by Concretum AG for every concrete plant during the set-up process. Referring to the total weight of cement and additives, the dosage is normally between 1.5 bis 3.5%. In particular cases the dosage defined by Concretum AG shall be authoritative.

#### Mixing:

Concretum® D-ZERO 11, 12 and 32 (L) are added to the mixing water or added to the mixer together with the



water. To fully exploit the high water reduction a wet mixing time of 90 - 120 seconds is recommended. To prevent excess water it is recommended to start the additional water dosage (on top of the mixing water) not before 2/3 of the wet mixing time.

**Additional information:**

As long as there are no other regulations in this data sheet, the general rules of good practise in concrete production have to be followed. In addition, all measures on optimal processing and curing of concrete to standard SIA 262 have to be taken.

The product has to be profoundly mixed before every use. In case of freezing, Concretum® D-ZERO 11, 12 and 32 (L) can be re-used after slow defrosting in room temperature and intense mixing.

**Compatibility:**

A combination of Concretum® D-ZERO 11, 12 and 32 (L) with other additives such as air-entraining agents or retarders will be individually tested during the preliminary set-up process. After successful testing possible combinations will be approved by Concretum AG.

**D) Data**

All data published in this technical data sheet is based on internal laboratory tests of Concretum AG. Real values may vary due to external factors that cannot be affected by Concretum AG.

**E) Country specific data**

Data and values on products of Concretum AG may vary depending on the country of application. The corresponding local technical data sheets are valid. In the case of doubt Concretum AG provides information on valid data and values for the country in question.

**F) Important safety information**

For detailed safety information it is recommended to seek advice in the current material safety data sheet on our homepage ([www.concretum.com](http://www.concretum.com)).

**G) Proof of defects**

Products of Concretum AG feature the specific properties that are completely described in this data sheet. For quality control purposes Concretum AG retains samples of each production batch for 24 months. If products of Concretum AG are censured as defective by a customer, a verification of this statement is done solely by checking the corresponding batch sample by an internal testing procedure.

**H) Legal information**

This data sheet is part of a possible contract between Concretum AG and the customer. The properties of the products are completely described in section B. An application of the products has to be done according to both the instruction of Concretum AG and this data sheet.

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