



MAK CRYSTAL SEAL ADMIX

Description

Mak Crystal Seal Admix is a crystalline waterproofing admixture for concrete. It is very economic and easy to apply. Mak Crystal Seal Admix 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 0.4 mm.

Features

Mak Crystal Seal Admix 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.

Mak Crystal Seal Admix 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 0.4 mm static cracks.
- ◆ Waterproof up to 5 bars in properly formulated mix designs.
- ◆ Easy to mix.
- ◆ Increased final strength.
- ◆ Little influence on concrete setting and strength development.

Application Areas

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

Application Procedure

1.) Concrete requirements

Waterproof concrete requires several measures to ensure a dense structure.

Cement: Mak Crystal Seal Admix 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. Cement content must be at least 280 kg/m³.

Fly ash: Total fly ash must be less than 50 % of the cement content.

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

Pozzolans: Pozzolanic additives like Micro silica or slag should be avoided as they compete with Mak Crystal Seal Admix for the available lime.

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

Admixtures: Mak Crystal Seal Admix is compatible with most concrete admixtures. For compatibility of Mak Crystal Seal Admix trial mixes are strongly recommended.

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 Mak Crystal Seal Admix.

2.) Processing

The dosage depends on the amount of mixing water including aggregate moisture in the batch mix. Add 1.8 % Mak Crystal Seal Admix, i.e. 1.8 kg per 100 litres (1.5 lbs. per 10 gal.). In a typical 300 kg cement per m³ with a water/cement ratio of 0.45 this equals a dosage of 0.8 % of Cement/Cementitious content.

a.) Batch-plant: Add Mak Crystal Seal Admix together with the aggregates. Use normal

mixing procedure.

b.) Concrete truck: Add Mak Crystal Seal Admix 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 Mak Crystal Seal Admix. As the mixing intensity is lower, we recommend producing a slurry of Mak Crystal Seal Admix 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 swellable water stop bars 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.

Compressive strength with addition of aggregates

Water cement	40%	45%	50%	55%
280 kg/m ³	2.02 kg	2.27 kg	2.52 kg	2.52 kg
310 kg/m ³	2.24 kg	2.51 kg	2.79 kg	3.07 kg
340 kg/m ³	2.45 kg	2.76 kg	3.06 kg	3.36 kg
370 kg/m ³	2.66 kg	3.00 kg	3.33 kg	3.66 kg

Cleaning

Mak Crystal Seal Admix can be removed in the fresh state with water. Once it has cured acidic cleaners like muriatic acid are required.

Storage and safety

Mak Crystal Seal Admix can be stored in unopened original packs for 12 months at 5 – 35 °C in a dry storage place protected against sunlight.

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

Recommendations

Mak Crystal Seal Admix is only available for professional applicators. Concrete treated with Mak Crystal Seal Admix may discolour or show strong efflorescence in water contact. This is normal and caused by the crystalline reaction.

Packaging

Mak Crystal Seal Admix is available in two pack sizes: 20 kg watertight plastic bag

Quality features

- ◆ Colour : Grey
- ◆ Density : 1.1 kg/l
- ◆ Water impermeability acc. EN 12390-8:
 - Positive side : 5 bar
 - Negative side : 5 bar
- ◆ Self-healing of static cracks: max. 0.4mm.

Disclaimer

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

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