

## MAK CRYSTAL SEAL

Crystalline waterproofing coating



### Description

Mak Crystal Seal is a crystalline waterproofing slurry for concrete substrates. It is very economic and easy to apply. Mak Crystal Seal becomes part of the concrete and creates a waterproof layer inside the concrete itself. It is especially strong against negative side water pressure. Mak Crystal Seal cures a lot faster than the current standard products eliminating the need for days of water curing and protection. Mak Crystal Seal creates a reactive layer inside the concrete that allows the structure to self-heal shrinkage cracks under contact with water. Mak Crystal Seal can be applied by brush, dry-shake or suitable spray equipment.

### Features

Mak Crystal Seal is a crystalline waterproofing slurry with unsurpassed strength development.

- ◆ Self-healing properties of up to 0.4 mm static cracks.
- ◆ Open to foot traffic after 4 hours.
- ◆ Shrinkage compensated, no spider-web cracking.
- ◆ Water curing only under hot and dry conditions required for 4 hours.
- ◆ Good resistance against aggressive media with a pH range of 3-12 and against soft water with low ion content.
- ◆ Good weathering resistance.
- ◆ Potable water approved.
- ◆ Good sulphate resistance.

### Application Areas

- ◆ Waterproofing of basements and below grade parking structures.
- ◆ Waterproofing of potable water structures.
- ◆ Protection of dams and spill-ways.
- ◆ Waterproofing of sewage structures.
- ◆ Waterproofing of tunnels and pipelines.
- ◆ Slab waterproofing (dry shake application).
- ◆ Waterproofing of elevator pits.

### Cleaning

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

### Application Procedure

**1.) Substrate preparation:** Mak Crystal Seal can only be used on concrete substrates.

a.) Hardened concrete must be prepared with sand blasting, shot blasting or ideally high pressure water blasting (>100 bar) to remove all bond breaking substances. Substrate must be pore open and load bearing. The minimum requirement for adhesive strength is 1 MPa and for the compressive strength 20 MPa. Active water leaks must be treated and fully stopped

with PU injection system. Leaking cracks need to be sealed with a PU injection material – Mak Polygrout 1K. Fill all blowholes, honeycombs or other surface defects with crystalline repair mortar. Before the application of Mak Crystal Seal, dampen the substrate with clean water to a saturated surface dry (SSD) condition.

b.) Cold joints can be treated by chiselling out approx. 5 cm (2") concrete in a U shape around

the joint. Fill the opening with crystalline repair mortar and finish with Mak Crystal Seal.

c.) Fresh concrete can be treated with Mak Crystal Seal in a dry-shake application. The concrete must have sufficiently stiffened that a helicopter trowel can work on it. Do not use any curing compounds or other bond breaking materials before applying Mak Crystal Seal.

## 2.) Processing

a.) Brush application: Mix Mak Crystal Seal with 22- 23 % potable water, i.e. 5.50 – 5.75 l water per 25 kg bag. Fill the complete mixing water into a suitable bucket and mix the powder with a slow speed drill (300 – 600 rpm) into the water until a lump-free mix with a consistency of an oil paint is achieved. With hard water (high Calcium content) a slight false seeing within the first 2 min. after mixing is possible. In such case, re-mix for another 30 seconds. Do not add water! The product is workable for 30 – 45 min. at 23 °C. Apply the first coat with a mason's brush in crossing applications to the pre-dampened substrate at the specified rate. The second coat must be applied within the recoat time, which is 60 – 90 min. at 23 °C. If too much time elapses after application of the first coat, a reduced bond between the layers may be the result.

b.) Spray application: Use suitable spray machines such as:

- Inotec GmbH: INOMAT-M8
- High Tech GmbH: High Pump Small
- Desoi GmbH: Desoi SP-Y

Prepare the product as described for the brush application under

a.) The water addition may be reduced slightly to get a more thixotropic mix. Fill the product into the feed hopper of the spray machine and spray continuously. If less water is used the whole specified amount of Mak Crystal Seal may be applied in one lift. Otherwise spray in two layers with a wait time of approx. 30 min. between coats. Long spray interruptions may result in clogging of the spray hose. The product may cure a lot faster if the hose is exposed to direct sunlight. Always empty and flush the machine

after spraying or before long spray interruptions. Mak Crystal Seal is a fast curing material and may be hard to remove if left in the machine.

b.) Dry-shake application: Mak Crystal Seal can be applied in powder form onto fresh concrete before finishing the surface. The product is applied uniformly onto the concrete and then finished with a helicopter trowel. Make sure that the trowel forces sufficient moisture to the surface to completely wet and embed the powdered Mak Crystal Seal.

## 3.) Curing

Mak Crystal Seal does not require long term curing as it reacts relatively fast with water. Only under hot weather or very dry conditions water curing for 3 – 4 hours are required.

Please consider for the dry shake application that the concrete may require curing. Take the required steps by either water curing as specified or applying a curing compound.

## Storage

Mak Crystal Seal can be stored in unopened original packs for 12 months at 5°C – 35 °C 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

## Packaging

Mak Crystal Seal is available in 25 kg watertight plastic bags.

## Estimating

|                                                          |                                                |
|----------------------------------------------------------|------------------------------------------------|
| Waterproofing concrete:<br>Brush application:            |                                                |
| 1st coat Mak Crystal Seal:<br>2nd coat Mak Crystal Seal: | 0.8 kg/m <sup>2</sup><br>0.7 kg/m <sup>2</sup> |
| Spray application:<br>Mak Crystal Seal:                  | 1.5 kg/m <sup>2</sup>                          |
| Dry-Shake application:<br>Mak Crystal Seal:              | 1.2 kg/m <sup>2</sup>                          |

## Technical Data

|                                         |   |                          |
|-----------------------------------------|---|--------------------------|
| Colour                                  | : | grey                     |
| Mixing ratio by weight                  | : | 100: 23                  |
| Mixing ratio by volume                  | : | 100: 28                  |
| Density                                 | : | 1.2 kg/l                 |
| Substrate temperature                   | : | 5 - 35 °C (40 - 95 °F)   |
| Service temperature                     | : | -18 - 97 °C (0 - 207 °F) |
| Water impermeability acc. to EN 12390-8 |   |                          |
| - Positive side                         | : | 5 bar                    |
| - Negative side                         | : | 5 bar                    |

## Disclaimer

Mak Crystal Seal is only available for professional applicators. The crystalline waterproofing principle requires several days of water contact to develop its full effect. Mak Crystal Seal may discolour or show strong efflorescence in water contact. This is normal and caused by the crystalline reaction.

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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