

SUPER CRYSTAL KOTE P 102

CRYSTALLINE HYDROPHOBIC WATERPROOFING ADMIXTURE

PRODUCT DESCRIPTION:

SUPER CRYSTAL KOTE P 102 (PC 2161) is crystalline and hydrophobic waterproofing admixture for concrete. It is very economic and easy to apply. **SUPER CRYSTAL KOTE P102** becomes part of the concrete and creates a waterproof layer inside the concrete itself. It is especially strong against negative side water pressure. **SUPER CRYSTAL KOTE P 102** is crystalline waterproofing slurry with unsurpassed strength development. It cures a lot faster than the current standard products eliminating the need for days of water curing and protection. It creates a reactive layer inside the concrete that allows the structure to self-heal shrinkage cracks under contact with water.

STANDARDS:

SUPER CRYSTAL KOTE P 102 meets the requirements of EN 934-2 for concrete admixtures and is classified as a waterproofing additive according to table 9.

PERFORMANCE TEST DATA:

PROPERTIES	SUPER CRYSTAL KOTE P 102
Colour	Grey
Mixing ratio by weight	100:30
Density, kg/l	1.1 – 1.2
Substrate temperature, °C	5 to 35
Water impermeability acc EN 12390-8	
Positive side	13 bar (190 psi)
Negative side	13 bar (190 psi)
Compressive/ flexural strength, 28 days	51/7 MPa (7395/1015 psi)
Chloride ions	< 0.05 %
Carbonation resistance	passed
Capillary water absorption	0.4 kg/m ² x h ^{0.5}
Adhesive strength	2.8 MPa (406 psi)
Restrained shrinkage	2.8 MPa (406 psi)
Fire rating EN 13501-1	Class A1

ADVANTAGES

- Self healing properties of treated concrete of up to 0.4 mm static cracks
- Waterproof up to 13 bars in properly formulated mix designs
- Slightly hydrophobic
- 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
- Potable water approved
- Does not affect rebar passivation

AREA OF APPLICATION

- 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 (dry shake application)
- Waterproofing of elevator pits
- Waterproofing of shotcrete

APPLICATION METHODOLOGY

A. Concrete requirements

Waterproof concrete requires several measures to ensure a dense structure.

Cement: **SUPER CRYTAL KOTE P102** 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 (472 lbs. per yd³).

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 Microsilica or slag should be avoided as they compete with **SUPER CRYTAL KOTE P102** 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: **SUPER CRYTAL KOTE P102** is compatible with most concrete admixtures. Additional water reducers or super plasticizers may cause segregation at high dosage rates. For compatibility of **SUPER CRYTAL KOTE P102** 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 **SUPER CRYTAL KOTE P102**.

B. Processing

1. Batch-plant: Add **SUPER CRYTAL KOTE P102** together with the aggregates. Use normal mixing procedure.

2. Concrete truck: Add **SUPER CRYTAL KOTE P102** 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.

3. Site mixes: Concrete mixed in small tumbler mixers can also be improved with **SUPER CRYTAL KOTE P102**. As the mixing intensity is lower, we recommend producing slurry of **SUPER CRYTAL KOTE P102** with 100-200% water to ensure proper mixing results.

C. Placing

Concrete can be placed as specified. Take special care of the compaction by properly vibrating the placed concrete.

D. Curing

Follow standard curing procedures for the site conditions. Take the required steps by either water curing as specified or applying **SHELL CURE 131P** or **SHELL CURE 181R** curing compound as per requirement.

ESTIMATING

Dosage per m³ concrete

Water Cement	40%	45%	50%	55%
280 kg/m ³ (472lb/yd ³)	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/m ³ (522lb/yd ³)	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/m ³ (573lb/yd ³)	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/m ³ (623lb/yd ³)	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

Spillages of **SUPER CRYTAL KOTE P102** can be removed with water.

DOSAGE

The optimum dosage of **SUPER CRYTAL KOTE P 102** depends on the amount of mixing water including aggregate moisture in the batch mix. Add 1.8% **SUPER CRYTAL KOTE P102**, i.e. 1.8 kg per 100 liter (1.5 lbs. per 10 gal.). In typical 300 kg cement per m³ (505 lbs. per yd³) with a water/cement ratio of 0.42 this equals a dosage of 0.75% on cement.

PACKAGING

SUPER CRYTAL KOTE P 102 is available in 25 kg (55 lb.) water tight plastic bag

STORAGE AND SHELF LIFE

SUPER CRYTAL KOTE P 102 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.

HEALTH AND SAFETY

SUPER CRYTAL KOTE P 102 should not be swallowed or allowed to come in contact with skin or and eyes. Suitable protective gloves and goggles should be worn. Splashes on skin should be removed with water. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. If swallowed seek medical attention immediately do not induce vomiting.

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