

Krystaline ULTRA

CRYSTALLINE WATERPROOFING ADMIXTURE FOR UHPC CONCRETE DOSAGE 1 kg/m³

DESCRIPTION

Krystaline ULTRA is a unique crystalline admixture specifically designed for precast products. It has been designed to self-heal, waterproof and improve the durability of concrete using hydrophilic, hydration enhancing C-S-H technology in extremely high strength concrete with low water-cement ratio.

Krystaline ULTRA is added to the fresh concrete easily at the batch plant of the precast factory. It works to increase the C-S-H crystals and gels in the concrete while lowering the Portlandite creating a stronger waterproof concrete that continuously enhances the C-S-H growth over time. The ability of **Krystaline ULTRA** to enhance the hydration process also provides it with an increased ability to self-heal micro cracking upon the presence of moisture.

FEATURES & KEY BENEFITS

- Increases concrete compressive strength
- Accelerates setting time
- Total and permanent waterproofing
- Stop water leaks in concrete
- Seal and waterproof cracks up to 0.5 mm
- Protects reinforcing steel against corrosion
- Waterproofing increases with time
- Gives concrete excellent resistance to attack by sulphates and chloride
- Not affected by surface wear or abrasion
- Effective against hydrostatic pressure up to 12 bar
- Waterproofs from any direction (positive or negative side)
- Water vapor permeable
- Safe for contact with potable water
- Replaces unreliable exterior membranes, liners and coatings
- Eliminates the use of a waterproofing sub-trade
- Will reactivate should water be present in the future
- Will increase the durability of the concrete

TYPICAL APPLICATIONS

Krystaline ULTRA applications include all precast concrete applications that should/must be protected against water ingress and may require future self-healing capabilities. This may include the structural components of:

- Culverts
- Bridge Beams
- Tunnels
- Pipes
- Maritime projects
- Marine structures
- Water treatment plants
- Channels
- Potable water tanks
- Concrete Walls
- Concrete Towers
- Concrete slabs

APPLICATION GUIDELINES

Precast concrete is low w/c ratio concrete that provides extreme strength gains and is critical in specific sectors of a project. The low water-cement ratio, although a critical requirement for high strength, may promote cracking and allow water penetration into the concrete. **Krystaline ULTRA** technology lowers porosity and inhibits cracking thereby mitigating these inherent weaknesses and results in increased durability.

Krystaline ULTRA acts by hydrophilic crystallization creating a chemical reaction between the unhydrated cement particles and water, creating additional insoluble C-H-S crystalline hydration products which fill the concrete's capillary network. These crystal and gel deposits become an integral part of the hydrated paste. The resulting concrete has a significantly greater ability to autogenously heal cracks and resist the penetration of water under hydrostatic pressure.

Krystaline ULTRA is a dry powder that is added directly to the concrete during mixing. The dosage rate is 1 kg per m³ of concrete. Add **Krystaline ULTRA** directly to the dry powders during mixing. Prior testing is highly recommended.

Considerations for batching

- Eliminate all variables such as recycled water or recycled aggregate.
- When adding multiple admixtures to a concrete batch, do not add other admixtures at the same time as **Krystaline ULTRA**. Add **Krystaline ULTRA** first and premix before adding other admixtures to eliminate intermixing and interference of the other admixtures.

Batch plant – Central mix operation instructions

1. Prepare a separate silo and addition system for **Krystaline ULTRA** and add it directly to the mixer after the cement has been added or add **Krystaline ULTRA** directly to the mixer manually after the cement has been added.
2. Mix as per mixer specification and standard practices.
3. If slump is lower than required add a water reducer or plasticizer to increase slump to the required slump.

Krystaline ULTRA is recommended for concretes using 300 kg or more of total cementitious materials

DOSAGE

- Dosage is 1 kg of **Krystaline ULTRA** per m³ of concrete.

PACKAGING

Krystaline ULTRA is supplied in in 20 kg pails each pail containing 20 x 1 kg water soluble bags to be added directly to the concrete mix for easy on-site dosage and handling.

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CRYSTALLINE WATERPROOFING ADMIXTURE FOR UHPC CONCRETE
DOSAGE 1 kg/m³

TECHNICAL DATA

Color	White
Appearance	Granular Powder
Density	1.2 g/cm ³
pH (Mixed with water)	13
Solids content	100%
Dosage	1 kg/m ³ of concrete
Crack self-sealing	0.5 mm
Particle size	40-150 microns

STORAGE

Krystaline ULTRA should be stored at room temperature (min 5°C and max 35°C), kept dry and out of direct sunlight. If these conditions are maintained and the product packaging is unopened, then a shelf life of 2 years can be expected.

		
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Krystaline ULTRA		
SPECIFIC REQUERIMENTS FOR WATER RESISTING ADMIXTURES (at equal consistence) according table 9 of the standard EN 934-2:2010+A1:2012		
Essential requirement	Performance	Harmonized technical specification
Chloride ion content	≤ 0,1%	UNE EN 934-2:2009+A1:2012
Alkali content	≤ 40%	
Corrosion behavior	Contains only approved substances according to EN 934-1:2008 Annex A1	
Capillary absorption (g/mm ²)	At 7 days: ≤ 50% A 28 days ≤ 60%	
Compressive strength at 28 days	At 28 days: ≥ 85%	
Air content	≤ 2%	
Dangerous substances	Anexo ZA de EN 934-2	

DISCLAIMER

Whilst any information and/or specification contained herein is to the best of our knowledge, true and accurate, we always recommend that a trial be carried out to confirm suitability of the product, as no warranty is given or implied in connection with any recommendations or suggestions made by us or our representatives, agents or distributors. The information in this data sheet is effective from the date shown and supersedes all previous.

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HEALTH & SAFETY

This product becomes caustic when mixed with water or perspiration.

Hazard statements

H315 Causes skin irritation.

H318 Causes serious eye damage.

H335 May cause respiratory irritation.

For more information, please check the safety data sheet for this product.

Precautionary statements

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.