

TECHNICAL DATA SHEET

Concrete Waterproofing & Durability Enhancing Admixture



Krystol Internal Membrane™ (KIM®)

DESCRIPTION

Krystol Internal Membrane™ (KIM®) is a hydrophilic crystalline waterproofing admixture in dry powdered form, effective in creating waterproof concrete. KIM is the STANDARD used for qualifying **Permeability Reducing Admixture - Hydrostatic Conditions as specified by 'ACI 212'** (Highest Grade of Permeability Reducing Admixture). KIM is used in place of externally applied surface membranes to protect against moisture transmission, chemical attack, corrosion of reinforcing steel and enhances durability of the structure.

KIM admixture consists of portland cement, quartz, sand and propriety chemicals, but does not contain sterates and sodium-silicates. When combined with fresh concrete, Kryton's unique and proven Krystol® technology reacts with un-hydrated cement particles and moisture to form millions of needle-shaped crystals. These crystals grow in a catalytic reaction, filling the naturally occurring pores and voids in concrete, and permanently blocking the pathways for water and waterborne contaminants. Later, if cracks form due to settling or shrinkage, incoming water triggers the crystallization process and additional crystals form, filling cracks and ensuring that the structure's waterproofing barrier is maintained and protected.

In addition to filling the pores and capillaries of the concrete matrix with crystals, KIM enhances the natural hydration process by intensifying and prolonging the hydration of the cementing materials. This reduces the size and number of capillary pores within the concrete matrix, making it dramatically less porous, and improving strength and durability characteristics.

FEATURES & BENEFITS

- **KIM** is the **STANDARD** for Permeability Reducing Admixture - Hydrostatic Conditions (PRAH) as Specified by 'ACI212' - 2010
- **Crystalline Waterproofing Admixture** with **BIS Certification** (adhering to 'Make In India' movement)
- Reduces Chemical Attack by deleterious materials
- **Significantly** prevents **Corrosion** of Steel in the RCC
- Replaces unreliable exterior membranes, liners and coatings
- Added directly to ready-mix truck or at batch plant, no mixing with water or additional step of premix with water required
- Self-seals hairline cracks up to 0.5 mm (0.02 inches) - **Best in Industry**
- Reactivates in the presence of moisture
- Waterproofs from any direction (i.e. positive or negative side) as it makes the total mass of the concrete watertight
- Impervious to physical damage and deterioration
- **Significantly** reduces permeability, concrete shrinkage and cracking - **Best in Industry**
- Provides excellent resistance to waterborne chemicals such as sulfates, chlorides & acids
- Compatible with self-compacting concrete (SCC)
- Safe for contact with potable water
- Increases durability of concrete and life of concrete structures
- Increases reliability and quality control
- Shaves weeks off the construction schedule
- Reduces the cost of maintenance and repair
- CE Certified

TECHNICAL DATA SHEET

Concrete Waterproofing & Durability Enhancing Admixture



RECOMMENDED USES

Use KIM® to provide permanent protection for all concrete that will be subject to water pressure, such as:

- Below grade parking structures, basements, elevator pits and foundations of high-rise towers
- Recreational facilities such as aquatic centers, aquariums, zoos, water parks and marinas
- Architectural water features such as fountains and waterfalls
- Water containment reservoirs, water treatment tanks, sewage tanks, manholes, traffic tunnels, below grade pipelines and subway tunnels, marine structures
- Sewage treatment plant & Effluent Treatment plant
- Bridges, dams and highway infrastructure
- Concrete buildings including basements, foundations, swimming pools, decks, bathrooms, garages and exteriors
- Properly designed roof tops, plaza decks and podiums
- Shotcreting & Guniting

PROPERTIES

Physical Properties	
Appearance	Grey Powder
Bulk density g/cm ³ (lb/ft ³)	~1.35 (84)
Specific gravity	~2.6
Hardened Properties	
Coefficient of Water Permeability, DIN 1048 Part 5	Reduced more than 90%*
Drying Shrinkage, BS 1881-5	Reduced 25%
Compressive Strength (28 Days), BS EN 12390-3	Increased 8%
Flexural Strength (28 Days), BS EN 12390-5	Increased 7%
Modulus of Elasticity, BS 1881-122	Increased 16%

PLASTIC PROPERTIES

KIM typically retards the setting time of the concrete. Consult a Kryton Representative to ensure proper compatibility with concrete admixtures. It can be used for most common applications and is compatible with common admixtures such as plasticizers, accelerators, retarders and air-entrainers.

WORKABILITY

ASTM C143 – Standard Test Method for Slump of Hydraulic Cement Concrete

KIM enhances the workability and plastic properties of concrete in many ways. KIM provides plasticizing effects at low and high slump requirements and provides better flow and consolidation even at low slumps. KIM works very well with superplasticizers to achieve high slumps for long pumping distances and unique applications without segregation.

TECHNICAL DATA SHEET

Concrete Waterproofing & Durability Enhancing Admixture



DOSAGE

0.8-2.0% by weight of Cement. Dosage should be matched to site requirements. Please consult a KRYTON representative to determine the appropriate dosage rate for specific projects or specific mix design.

(*Cement as per IS 456:2000). Trial tests are required to determine actual plastic properties.

APPLICATION

KIM can be mixed directly into wet concrete in the dry powdered form it does not require pre-wetting or mixing into slurry prior to adding to Ready Mix Concrete. The dry application ensures that your w/c ratio in concrete is maintained and the durability and strength gain are as designed.

- **Central Mixer**

KIM can be added directly to the central mixer in the plant. A mixing time of 5-7 minutes should be sufficient depending on mix speed. The concrete then should be transferred to the site and poured in accordance with good concrete practices and IS guidelines. Proper curing is essential to achieve the performance and benefits of KIM. Cure in accordance with IS guidelines.

- **Transit Mixer**

KIM can be added directly in to the drum of a transit mixer after it reaches the site. A mixing time of 5-7 minutes should be sufficient depending on mix speed. The concrete then should be transferred to the site and poured in accordance with IS guidelines. Proper curing is essential to achieve the performance and benefits of KIM. Cure in accordance with IS guidelines.

SAFETY

For professional use only. This product becomes caustic when mixed with water or perspiration. Avoid contact with skin or eyes. Avoid breathing dust. Wear long sleeves, safety goggles and impervious gloves.

PACKAGING

KIM is available in 25 kg resealable pails and 20 kg bags.

SHELF LIFE

When stored in a dry enclosed area in unopened and undamaged pails and bags KIM has a shelf life of 5 years in pails and 4 years in bags.

WARRANTY

Kryton Buildmat Co. Pvt. Ltd. warrants that Kryton products are free from manufacturing defects and comply with the specifications given in their respective technical data sheet. Because conditions of use, such as site conditions, surface preparations, workmanship, concrete ingredients, weather, structural issues and other factors are beyond the control of Kryton, no warranty can be given as to the results of use. Purchaser agrees to seek the advice of qualified professionals and to determine for themselves the suitability of the products for their intended purpose and assumes all risks. Purchaser's sole remedy is limited to replacement of any product proven defective or at Kryton's option refund of the purchase price paid. THIS LIMITED WARRANTY CONTAINS THE ENTIRE OBLIGATION OF KRYTON. NO OTHER WARRANTIES, EXPRESS OR IMPLIED, SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. KRYTON SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. No representative of Kryton has the authority to make any representations or provision except as stated herein. Kryton reserves the right to change the properties of its products without notice.