

TECHNICAL DATA SHEET

Crystalline Durability Admixture



KIM BioGard®

DESCRIPTION

KIM BioGard is an advanced chemical admixture for protecting concrete in corrosive sewer and wastewater environments containing H₂S. Based on advanced Krystol waterproofing agents and special additives, KIM BioGard seals capillary pores, cracks and microcracks against water, sulfates, H₂S and acidic waters. The concrete is better able to resist the corrosive sewer environment, adding years to the concrete's service life and eliminating costly maintenance. KIM BioGard is more reliable than anti-microbial compounds, which leach from the concrete and are quickly consumed or overwhelmed by bio-film in a sewer environment.



PERFORMANCE

- Proven protection against:
 - Water penetration
 - H₂S
 - Acidic waters
 - Sulfate Attack
 - Salts/chlorides and Corrosion
 - Alkali Silica Reaction (ASR)
- Resists hydrostatic pressure, infiltration and exfiltration in pipes
- Seals and heals cracks and micro-casks
- Permanent integral protection - impervious to scrapes or punctures
- Non-leaching, non-consumptive protection

COST SAVINGS

- Extends service life and reduces costs for maintenance and repairs
- Easily added to ready-mix truck or central mixer - no installation labor
- Replaces costly membranes and liners for wastewater pipes or tanks

RECOMMENDED USES

- Wastewater structures
- Pipes, manholes and pump stations
- Pre-cast

PROPERTIES

Physical Properties	
Appearance	Light gray powder
Specific Gravity	~2.75
Bulk Density	~1.38 g/cm ³ (87 lb/ft ³)
Chloride Ion Content	< 0.1% by weight
VOC	None

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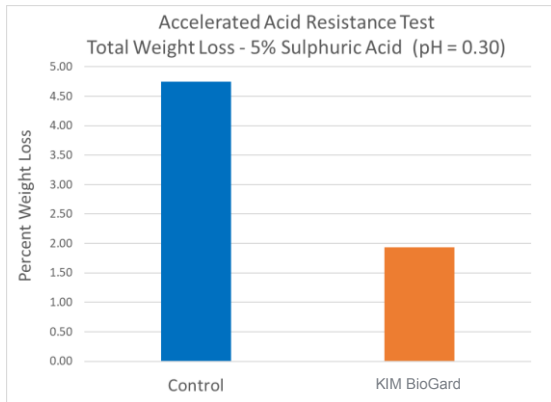
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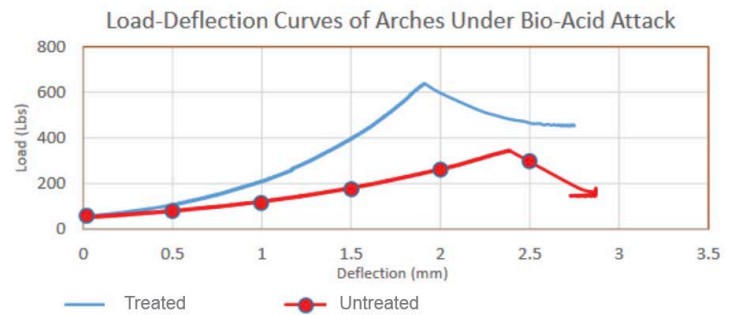
Effects on Plastic and Hardened Properties

Slump, ASTM C143	Negligible effect
Setting Time, ASTM C403	Negligible effect
Entrained Air Content and Stability, ASTM C231	Negligible effect
Compressive Strength	Equal or higher
Water Permeability	Greatly reduced

Acidic Waters



Bio-Acid Resistance



Treated arches were 85% tougher after bio-acid exposure

Effects on Hardened Properties

Permeability	up to 97% reduction
Crack Sealing	up to 0.5 mm
Crack Healing	Higher strength retention
ASR	Reduced ASR expansion
Corrosion	Inhibits corrosion
Shrinkage	Reduced up to 25%
Cracking	Reduces crack widths up to 53%
Freeze-Thaw	Reduces expansion up to 87%
Sulfate Resistance	Greater than control (no loss of strength)

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APPLICATION INSTRUCTIONS

Mix Design and Dosage: BioGard is concentrated and dosage should not exceed 1% of total cementitious content. Customized package weights are available to match the mix design. KIM BioGard is compatible with all cement types, supplementary cementitious materials (SCM's), admixtures and fibers. Proportion your mix to meet the project specification. KIM BioGard may have a small-to-modest delay in setting time. Normal-set water reducers (Type A and F) are preferred for most conditions. Reduce or remove set retarding admixtures (Type B or D) unless they are needed due to high ambient temperature or to control the heat of hydration for large pours. KIM BioGard has little effect on air content and air entraining admixtures may be dosed as normal. Concrete with KIM BioGard may develop slightly higher compressive strength. Trial batches are required to determine actual plastic properties.

Addition and Mixing: Bags – Add un-opened into the concrete mixer. These bags are designed to disintegrate in the mixer. For truck mixing, the bags can be added either before or after the truck is loaded with concrete. For a central mixer, add the bags any time prior to the final mixing period. Trial batches are recommended to ensure satisfactory disintegration of the bags. If the bags do not fully break down, the slump during mixing may be either too high or too low. You may improve results by extending the mixing time or by adjusting your batching order: In high slump mixes, hold back some water or plasticizer until after the product has been mixed. For low slump mixes, add the product with the coarse aggregate and some water and mix before adding cementing materials. Alternatively, you may open and empty the bags into the mixer. Be sure to wear the appropriate personal protective equipment. **Pails** - Loosen compacted material by turning the pail over once or twice. Dispense directly into concrete mixer. **Mixing:** Mix into the concrete at the batch plant using procedures suitable for your mixing equipment. At the jobsite, remix in the truck at high speed for minimum 1 minute per cubic meter/yard in the load and a minimum of 3 minutes just before discharge.

SPECIFICATIONS

For drawings, CAD details and specification text, visit www.kryton.com/technical-info/ or contact your authorized Kryton representative.

LIMITATIONS

Concrete structures must be designed to resist all structural loads including all hydrostatic forces. Self-sealing is effective for static (non-moving) cracks. For dynamic (moving) cracks, use a flexible sealant. For moving joints, use an engineered expansion joint.

TECHNICAL SERVICES

Product advice, training and technical support are available from your Authorized Kryton Representative.

SAFETY

Read the Safety Data Sheet (SDS) for this product. For professional use only. Avoid contact with skin or eyes. Avoid breathing dust. Wear a dust mask, long sleeves, safety goggles and impervious gloves.

PACKAGING

25 kg (55 lb.) re-sealable plastic pails
7 kg mixer-ready bags (1 bag per 2 cubic meters)
11 lb. mixer-ready bags (1 bag per 2 cubic yards)
Customized packaging options are available.

SHELF LIFE

At least 5 years when stored in a dry location. Pallets of mixer ready bags must be protected at all times from moisture and condensation.

WARRANTY

Kryton International Inc. (Kryton) 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.