

## DryCrete conCrete WaterProofing

### CRYSTALLINE WATERPROOFING

#### **DESCRIPTION**

Crystalline is a unique chemical treatment for the waterproofing, protection and repair of concrete. CRYSTALLINE CONCENTRATE is the most chemically active product within the Crystalline Waterproofing System. When mixed with water, this light grey powder is applied as a cementitious slurry coat to above ground or below ground concrete, either as a single coat or as the first of a two-coat application. It is also mixed in Dry-Pac form for sealing strips at construction joints, or for the repairing of cracks, faulty construction joints, and honeycombs. Crystalline prevents the penetration of water and other liquids from any direction by causing a catalytic reaction that produces a non-soluble crystalline formation within the pores and capillary tracts of the concrete and cement-based materials.

#### **RECOMMENDED FOR**

- Reservoirs
- Sewage and Water Treatment Plants
- Underground Vaults
- Secondary Containment Structures
- Foundations
- Tunnels and Subway Systems
- Swimming Pools
- Parking Structures
- Roof Decks

#### **ADVANTAGES**

- Resists extreme hydrostatic pressure
- Becomes an integral part of the substrate
- Can seal hairline cracks up to 0.4mm
- Allows concrete to breathe
- Highly resistant to aggressive chemicals
- Non-toxic
- Does not require a dry surface
- Cannot puncture, tear or come apart at the seams
- No costly surface priming or levelling prior to application
- Does not require sealing, lapping and finishing of seams at corners, edges or between membranes
- Can be applied to the positive or the negative side of the

- concrete surface
- Does not require protection during backfilling or during placement of steel, wire mesh or other materials
- Less costly to apply than most other methods
- Not subject to deterioration
- Permanent

## **TEST DATA**

### PERMEABILITY

*U.S. Army Corps of Engineers (USACE) CRD C48-73 "Permeability of Concrete" Pacific Testing Labs, Seattle, USA*

Two inch (51mm) thick, 2000 psi (13.8 MPa) Crystalline treated concrete samples were pressure tested up to a 405ft. (124) water head (175 psi/1.2MPa), the limit of the testing apparatus. While untreated samples showed marked leakage, the Crystalline-treated samples (as a result of the crystallisation process) became totally sealed and exhibited no measurable leakage.

*DIN 1048 "Water Impermeability of Concrete" Bautest – Corporation for Research & Testing of Building Materials, Augsburg, Germany.*

Twenty cm thick Crystalline-treated concrete samples were pressure tested up to 7 bars (230 ft./70m water head) for 24 hours to determine water impermeability. While the reference specimens measured water penetration up to depth of 92mm, Crystalline-treated samples measured water penetration of zero to an average of 4mm.

*ÖNORM B 3303 "Water Impermeability of Concrete" Technologisches Gewerbemuseum, Federal Higher Technical Education & Research Institute, Vienna, Austria*

Crystalline-treated concrete samples were pressure tested to a maximum 7 bars (230ft./70m water head) for 10 days. Test revealed that while 25 ml of water had penetrated the untreated concrete samples, zero ml had penetrated the Crystalline-treated samples. Test specimens were then broken and showed water penetration to a depth of 15 mm on untreated samples but no measurable water penetration on the Crystalline-treated samples.

*CSN 1209/1321/ "Impermeability and Resistance to Pressurized Water" Institute of Civil Engineering, Technology and Testing, Bratislava, Slovak Republic*

Crystalline-treated and untreated concrete samples were exposed to 1.2 MPa of pressure to determine water permeability. Results showed the Crystalline-treated samples provided effective

protection against hydrostatic water pressure. Treated and untreated samples were also subjected to contact with silage juices and various petroleum products (e.g diesel oil, transformer oil, gasoline) at 14 kPa for 28 days. The Crystalline-treated samples significantly reduced the penetration of these solutions.

## CHEMICAL RESISTANCE

*ASTM C 672 "Chemical Resistance to Mortars" Pacific Testing Labs, Seattle USA*

Crystalline-treated cylinders and untreated cylinders were exposed to hydrochloric acid, caustic soda, toluene, mineral oil, ethylene glycol, pool chlorine and brake fluid and other chemicals. Results indicated that chemical exposure did not have any detrimental effects on the Crystalline coating. Test following chemical exposure measured an average 17% higher compressive strength in the Crystalline-treated specimens over the untreated control samples.

*IWATE university Technical report "Resistance to Acid Attack" Morioka, Japan*

Crystalline-treated mortar and untreated mortar were measured for acid resistance after exposure to a 5% H<sub>2</sub>SO<sub>4</sub> solution for 100 days. Crystalline suppressed concrete erosion to 1/8 of the reference samples.

## FREEZE / THAW DURABILITY

*ASTM C 672 "Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to De-icing Chemicals" Twin City Testing Lab, St Paul, USA*

Crystalline-treated samples restricted chloride ion concentration to below the level necessary to promote electrolytic corrosion of reinforcing steel. Visual examination of untreated panels after 50 freeze/thaw cycles showed a marked increase in surface deterioration compared to Crystalline-treated samples.

*JIS A 6204 "Concrete Freeze/Thaw" Japan Testing Centre For Construction Materials, Tokyo, Japan*

The resonating frequency of both untreated and Crystalline-treated concrete samples were measured throughout 435 freeze/thaw cycles. At 204 cycles, the Crystalline-treated samples showed 96% relative durability compared to 90% in the untreated samples. At 435 cycles, the Crystalline-treated samples measured 91% relative durability compared to 78% in the untreated reference samples.

## POTABLE WATER EXPOSURE

*NSF 61 Drinking Water System Component – Health Effects” NSF International, Ann Arbor, USA*

Exposure testing of potable water in contact with Crystalline-treated samples indicated no harmful effects.

#### RADIATION RESISTANCE

*U.S.A. Standard No. N69 "Protective Coatings for the Nuclear Industry” Pacific Testing Labs, Seattle, USA*

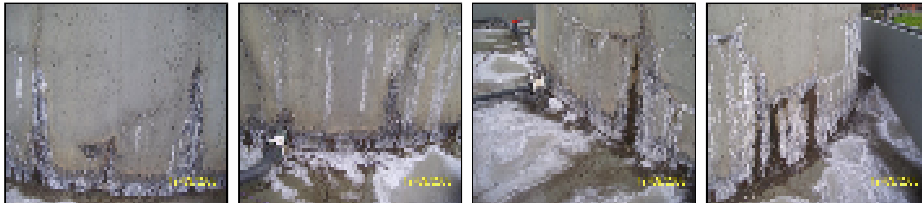
After exposure to  $5.76 \times 10^4$  rads of gamma radiation, the Crystalline treatment revealed no ill effects or damages.

#### WARRANTY

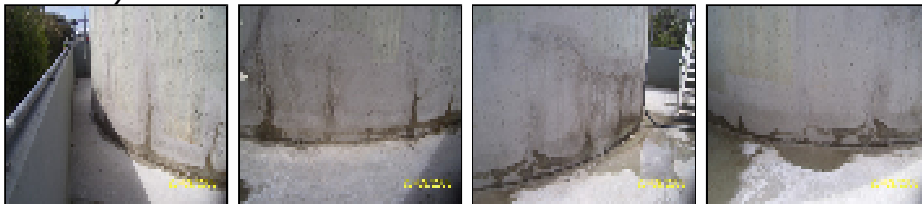
(the "Manufacturer") warrants that the products manufactured by it shall be free from material defects and of a consistent quality. Should any of the products be proven defective, the liability of the Manufacturer shall be limited to replacement of the product ex-factory. The Manufacturer gives no warranty as to fitness of the products for any particular purpose. The user shall: determine the suitability of the product for its intended use; comply with the directions for use and safe handling information available from Crystalline; where necessary, engage an experienced Crystalline applicator ( **DryCrete ConCrete WaterProofing** ) and assume all risks and liabilities in connection with the use of this product.

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*Before Treatment*



*After Crystalline Treatment*



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