Krystol T1® & T2®

(Cementitious Concrete Waterproofing)
Product Code: K-210, K-220

DESCRIPTION

The Krystol® Concrete Waterproofing System is an "in-depth" concrete treatment that is applied to the surface of existing concrete structures. Krystol T1 and Krystol T2 are the first and second coats of this two-coat system. Supplied as a dry powder, Krystol is mixed with water to a slurry and applied to the inner or outer side of the concrete structure with a brush, broom or spray equipment. In the presence of water, the special chemicals in Krystol will react with the concrete and will grow millions of long, needle-shaped crystals deep into the concrete mass. These crystals will permanently block and prevent the passage of water through capillary pores, micro-cracks and joints. The concrete itself becomes the waterproof layer and the surface treatment is not required to remain intact for the system to be effective. As a result, the Krystol system is extremely durable and will last the lifetime of the concrete.

FEATURES

- Stops water movement through concrete
- Provides a permanent treatment
- Protects reinforcing steel against corrosion
- Waterproofs minor cracking
- Waterproofing increases with time
- Reaches well below the surface and is not affected by surface wear or abrasion
- Treated concrete withstands significant hydrostatic pressure
- Treatment may be applied to positive or negative (inside) surface of concrete
- Treatment may be applied to old or new concrete
- Approved for use in drinking water containment
- Self-seals hairline cracks up to 0.5 mm (0.02 in)

RECOMMENDED USES *

- Concrete foundations and walls
- Concrete slabs on grade
- Marine structures *
- Elevator pits and equipment pits
- Parking structures
- Swimming pools and water features
- Water towers, reservoirs and storage tanks
- Tunnels, pipes and underground vaults
- Water treatment reservoirs
- Bridge decks *
- Elevated slabs and ramps *
- Rooftops and roof decks *

SURFACE PREPARATION

The concrete surface to receive a Krystol treatment must have an "open pore" surface to allow penetration of Krystol. In addition, concrete surfaces must free of all contaminants and be pre-soaked with clean water to achieve a saturated-surface-dry (SSD) condition. See Application Instruction 401 for more detailed surface preparation instructions.

APPLICATION

Slurry Application: Mix Krystol T1 to a slurry consistency (3 parts powder to 1 part clean water). With a concrete brush, use an aggressive circular motion to coat the concrete with the Krystol T1 slurry mix. To ensure complete coverage with no missed or thin spots, we recommend that you always apply two coats. While it is permissible to use Krystol T1 for both coats, using Krystol T2 for the second coat will give a harder, more durable finish and at a much lower cost. The second coat can be applied as soon as the Krystol T1 has set hard (usually after about 4 hours depending on conditions).

Note that in certain cases it may be acceptable to complete the Krystol application in a single coat and eliminate the requirement for a second coat. Specific conditions apply and each project is evaluated on a case-by-case basis. Consult your Kryton respresentative.

Spray Application: The mix may vary based on equipment but in general, mix Krystol T1 or T2 to a slurry consistency (3 parts powder to 1 part clean water). See Application Instruction 402 for more detailed Spray application instructions.

Dry-pack Application: Mix Krystol T1 to a very dry consistency (approximately 5 parts powder to 1 part clean water). Use as little water as possible. Pack the Krystol T1 tightly into the chase to a maximum thickness of 13 mm (1/2"). For detailed crack repair instructions, see Application Instruction 301.

PACKAGING

Krystol T1 & T2 are packaged in re-sealable plastic buckets in the following standard sizes:

- 5 kg (11 lbs.)
- 25 kg (55 lbs.)

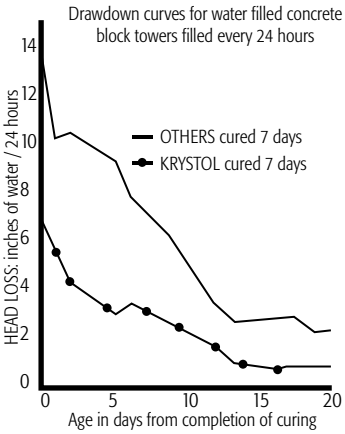
COVERAGE

- Used for surface slurry applications, the coverage rate per coat is 0.8 kg/m^2 (1.5 lbs/ sq. yd.) for each Krystol T1 and T2.
- As a component of the crack repair system (see Application Instruction 301) a 25kg (55lb) pail of Krystol T1 will complete approx. 30 m (100 ft.) of crack.

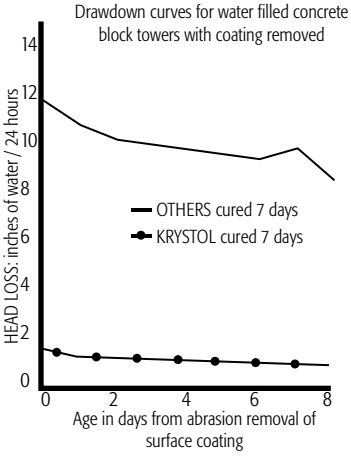
1645 East Kent Avenue, Vancouver BC, Canada V5P 2S8 Tel: 1-604-324-8280 Fax: 1-604-324-8899 Toll Free: 1-800-267-8280 Web: www.kryton.com

PERFORMANCE

Krystol T1/T2® coated samples compared with silicate-based coating material.



Coating materials then removed from the concrete surface and test results demonstrate in depth penetration of T1/T2 treated sample.



Independent testing concludes that KRYSTOL T1 & T2 Waterproofing System is a permanent, in-depth waterproofing treatment.

CURING

- Krystol growth and migration only occurs in the presence of water. For this reason Krystol T1/T2 must be "wet (moist) cured" for at least 3 days (continued curing for several days or even weeks will be beneficial in most cases).
- During the curing period, treatment area must be protected from frost, rain and traffic at least 24 hours.
- Heavy traffic must be avoided during the curing period.
- Wait at least 7 days before filling treated tanks and reservoirs. For reservoirs that will contain drinking water, cure longer if possible then rinse with fresh water several times. Initially, the drinking water may need pH adjustment using citric acid or similar water treatment chemicals.
- Finishes containing Portland cement may be applied over KRYSTOL T1 & T2 following the curing period but other paint and coating finishes should not be applied before 28 days (follow coating manufacturer's instructions).

* Limitations: Krystol is an effective waterproofing system for rigid concrete structures only and may not reliably seal cracks and joints that experience constant or repeated movement. Consult a Kryton representative for project specific recommendations before specifying Krystol in elevated structures.

PHYSICAL PROPERTIES OF KRYSTOL T1®

Appearance	Powder
Color	Gray
Bulk density (g/cc)	1.25
PH (when mixed with water)	13
Working Time (20°C, 50%RH)	60 minutes with continued stirring (slurry) 30 minutes (dry-pac)
Hardening Time (20°C, 50%RH)	5 hours (slurry) 3 hours (dry-pac)
Hydrostatic head resistance	140 m (460 ft.)
Typical Rate of Penetration	2 mm per week

PHYSICAL PROPERTIES OF KRYSTOL T2®

Appearance	Powder
Color	Gray
Bulk density	1.35
PH (when mixed with water)	13
Working Time (20°C, 50%RH)	60 minutes with continued stirring (slurry)
Hardening Time (20°C, 50%RH)	4 hours (slurry)

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SHELF LIFE
Krystol T1 and T2 have a minimum shelf life of 24 months for sealed pails, and 4 months for open and properly re-sealed pails.

PRECAUTIONS
- Application should not be made when the surface temperature is below 5ºC (41ºF).
- Krystol T1 & T2 is not a decorative coating and will change the color of the surface that it is applied to.

SAFETY
Before using or handling, read the Material Safety Data Sheet for this product. Krystol T1 and T2 become caustic when mixed with water or perspiration. Take appropriate safety precautions to prevent contact with skin or eyes and to prevent breathing dust.

TEST DATA
PERMEABILITY
DIN 1048: Part 5
Krystol T1 treated specimens were exposed to 72.5 psi (500 kPa) of hydrostatic pressure for 72 hours. This is equivalent to 167 vertical feet (51 m) of head pressure. Treated samples performed 7x better than the control, only allowing 5.3 mm of water to penetrate the sample. These results are very low and indicate excellent resistance to water under hydrostatic pressure.
Kuwait Institute for Scientific Research, November 2004

CHLORIDE PERMEABILITY
A 10% calcium chloride solution was allowed to pond on the surface of the T1/T2 treated samples for 90 days. After 90 days, the acid soluble chloride ion content was determined by Mohr's method (modified ASTM D1411) at various depths. The T1/T2-treated samples performed 3x better than the control at a depth of 5 mm, 6 x better at a depth of 10 mm, and 19x better at a depth of 15 mm.
HBT Agra Ltd., 1993

POTABLE WATER CONTAINMENT
NSF/ANSI Standard 61: Drinking Water System Components – Health Effects
Krystol T1 and T2 have been tested extensively and certified for concrete drinking water containment by NSF International, US Environmental Protection Agency, US Department of Agriculture, Health and Welfare Canada, and Bureau de Normalisation du Quebec.

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