

FIBSEAL (CRYSTAL)

A Crystalline water Proofing Coating

DESCRIPTION

Fibseal (Crystal) cementitious capillary waterproofing systems provides a permanent solution to leakage, seepage or ingress of water and moisture in concrete by sealing capillaries and shrinkage cracks in both the positive and negative side of the structure. The waterproofing effects is provided by reaction of different chemical components in Fibseal (Crystal) within the matrix of the concrete structure forming crystallization products that seal the capillaries and shrinkage cracks present. The reaction is osmotic in nature in the presence of moisture and free lime and insoluble crystals formed penetrate deep into the capillary structure and shrinkage cracks and blocks the passage of water while still permitting the transmission of water vapor and allowing the concrete structure to breath and eliminating water pressure build up.

AREAS OF APPLICATION

Fibseal (Crystal) is recommended for use in any concrete or block structure where it is required to keep water in or out of the structure. Because it can be applied on either the positive side (side in contact with water) or the negative side (side not in contact with water), it allows for all application requiring waterproofing.

- Water retaining structures
- Concrete roof decks
- Swimming pools
- Basements
- Sewerage plants
- Septic tanks
- Balconies
- Elevator Shafts
- Planter boxes
- Bathroom and toilets
- Tunnels
- Concrete pipes
- Containment walls

FEATURES & BENEFITS

- Becomes an integral part of the concrete structures instead of merely being a surface coating or membrane that can damage or delaminate.
- Penetrates deep into the capillary tracts and shrinkage cracks and can seal both the positive and negative side of the concrete structure.
- Un-reacted chemicals remain active and will react in contact with water providing additional protection against leakage.
- Protects against water borne corrosive chemicals that can cause corrosion of reinforcement.
- Does not require special protection during back filling, placement of reinforcement or other procedures necessary to protect a surface type waterproofing systems.

APPLICATION METHODOLOGY

PREPARATION

The concrete or concrete block surface to receive the Fibseal (Crystal) system must be structurally sound and be free from dirt, soil, oil release agents, laitance and any other foreign materials which may impair the bond, penetration and/or the overall performance of Fibseal



Fibseal (Crystal) materials.

- Extremely smooth concrete surface must be water blasted, sand blasted or acid etched to make sure the concrete surface has an open capillary system.-The surface to be treated should never have shiny appearance
- Rout out visible cracks exceeding 0.25 mm in size to a depth of 20 mm to 25 mm. Also rout out honeycombed pockets, holes and faulty construction joints to sound concrete.
- Construction joints should be routed out with a formed 20 mm x 20 mm regiet.
- Wet dry surface lightly prior to the application of Fibseal (Crystal) system. Moisture must be present in the concrete strata to ensure maximum chemical penetration. Surface should be damp when Fibseal (Crystal) products are applied..

MIXING

Brush application: Mix 8-10 ltrs of water with 25 kg of powder. Stir the slurry mixture frequently during the application and prepare only as much as can be applied within 20 minutes.

APPLICATION

- Apply Fibseal (Crystal) coating by masonry type brush (artificial fibers, if available)
- Prior to application of Fibseal (Crystal) coating, fill form tile holes, routed out cracks, honeycombed pockets, and seal strips at construction joints with Fibcrete WPC Putty.
- Fibseal (Crystal) slurry must be applied to damp concrete block surfaces only in a specified quantities. Each coat should have a thickness of just under 1.2 mm. The second coat should be applied when first coat is touch dry. Light spray of water may be required between coats in hot/dry climates.
For horizontal concrete surfaces apply Fibseal (Crystal) slurry in one coat with stiff bristle brush/broom or squeegee.

COVERAGE

- Horizontal Concrete Surfaces : Fibseal (Crystal) at 1.4 kg to 1.6 kg/m² in one coat
- Vertical Concrete Surfaces : Fibseal (Crystal) at 1.4 kg to 1.6 kg/ m² in two coats (0.8 kg per coat)

CURING

Except for extremely hot weather and very low humidity, curing of the Fibseal (Crystal) system is not required. In these extreme conditions curing must begin as soon as the Fibseal (Crystal) coating has hardened sufficiently.

TECHNICAL SPECIFICATIONS

COMPRESSIVE STRENGTH

The Fibseal (Crystal) treated and untreated (control) concrete cubes were treated for compressive strength with the following:

Concrete Cubes	14 days old	28 days old
Fibseal – CWP treated	3540	4150
Control (untreated)	3350	3915

MICROSCOPIC EXAMINATIONS

Both the Fibseal (Crystal) treated and untreated concrete samples were studied under magnification to determine the depth of penetration of the waterproofing compound into the concrete surface. Microscopic examination revealed that some components of the penetration diffusion into the concrete was as follows:

Depth from Concrete surface in mm	Depth Penetrated
0 – 5	Considerable
5 – 10	Moderate
10 – 25	some
25 – 50	Little

50+ Negligible

(*) These penetrations or diffusions reflect the observations made at the age of 14 days of Fibseal (Crystal) treatment. As the system ages, more diffusions of Fibseal (Crystal) components are expected.

WATER PERMEABILITY TEST

Both the Fibseal (Crystal) coated concrete and the un-coated (control) sample of the concrete were subjected to water permeability tests. The results showed the following: Sample ID

	Water Permeability, K		
Control (Untreated) Concrete	1.8 x 10	-11	cm/sec
Fibseal – CWP Concrete 14 days old	2.1 x 10	-13	cm/sec
Fibseal – CWP Concrete 28 days old	21.9 x 10	-14	cm/sec

CONCLUSIONS

Based on these test results, the following conclusions were drawn:

The compressive strength of the Fibseal (Crystal) treated concrete cubes were slightly higher than the untreated cubes. This increase corresponds to approximately 6% gain over the untreated concrete. However, the primary benefit of Fibseal (Crystal) is waterproofing concrete surface rather than increasing the compressive strength. Microscopic examinations revealed that the Fibseal (Crystal) components that diffused into the concrete surface resulted in a crystalline growth, white in colour. These crystalline growths appeared to be hydration products of the Fibseal (Crystal) components with cement calcium-silicate gel in the matrix of the concrete. The water permeability of Fibseal (Crystal) treated concrete was considerably slower than the water permeability of the untreated concrete. This indicates that Fibseal (Crystal) treatment improves the water proofing properties of the concrete considerably.

PACKAGING

Fibseal (Crystal) is packed in 25-kg bags & Project Standard.

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