APPLICATION INSTRUCTION

Concrete Waterproofing Admixture

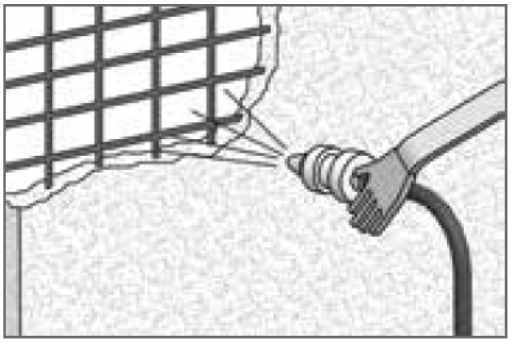
1.21

SMART CONCRETE®

Instructions for Shotcrete Nozzleman & Crew

Krystol Internal Membrane™ (KIM®)

DESCRIPTION



Krystol Internal Membrane (KIM) is a chemical admixture in powder form used to create waterproof concrete. KIM is used in place of externally applied surface membranes to protect against moisture transmission, chemical attack, and corrosion of reinforcing steel.

IMPORTANT: All nozzlemen and crew must be familiar with and follow the guidelines of ACI 506R Guide to Shotcrete. You are making a waterproof membrane out of the concrete. This is different from traditional construction where the concrete just forms the structure. The KIM concrete you are placing will be the only barrier to water penetration. This means that common defects found in typical concrete cannot be tolerated. Poor consolidation, unplanned cold joints, cracks, penetrations, contaminations, etc. will all result in a leaking structure. To avoid leakage and to achieve success, you must follow the critical instructions outlined in this document.

Drawings and Specifications:

For section drawings, CAD details and specification language related to this product, visit www.kryton.com/technical-info/ or contact your authorized Kryton representative.

PREPARATION FOR SHOTCRETING

- Ensure all formwork, reinforcing steel and embedded items are braced to avoid vibration and are designed to allow for the escape of compressed air and rebound.
- Ensure sufficient clearance around reinforcement to allow for complete encapsulation.
- Ensure that the Krystol® Waterstop System has been applied to all existing concrete/ shotcrete surfaces (refer to Cold Joints and Construction Joints section below).
- Ensure that all pipes and other penetrations are prepared according to Application Instruction 4.17 — Waterproofing Tie Holes and Pipe Penetrations.
- Ensure there are no unintended penetrations through the shotcrete element such as excess rebar, tie wires, etc. that could provide a migration path for water.
- Ensure that all surfaces to be shot are dampened to a saturated-surface-dry (SSD) condition immediately prior to shotcrete application. Drain free standing water away from shotcrete operations.

SHOTCRETE SUPPLY

- Inspect the ready mix shotcrete batch ticket to verify that the correct shotcrete mixture has been supplied with KIM added at the specified addition rate.

Kryton International Inc. 1645 East Kent Avenue, Vancouver BC, V5P 2S8 | TEL: 1.604.324.8280 | TOLL 1.800.267.8280 | WEB kryton.com

APPLICATION INSTRUCTION

Concrete Waterproofing Admixture

1.21

SMART CONCRETE®

SHOTCRETE APPLICATION

- Place shotcrete with sufficient velocity and plasticity so material flows around and behind the reinforcement. Follow proper shooting technique as detailed in ACI 506R Guide to Shotcrete.
- Cut out defects while the shotcrete is still plastic and reshoot the affected areas. Defects include:
    - Sloughs, delamination, plastic shrinkage cracks, etc.
    - Entrapped rebound and overspray
    - Voids of incomplete consolidation, including shadows behind rebar
- Have an air lance available at all times to remove excess water and debris just prior to shooting, and to remove rebound and overspray.
- Immediately remove all overspray from exposed reinforcement at construction joints.
- Inform the shotcrete inspector or quality control supervisor of any conditions that prevent the placement of fully consolidated, waterproof shotcrete.

COLD JOINTS AND CONSTRUCTION JOINTS

- Cold joints represent a break in the shotcrete membrane and are vulnerable to water penetration. Whenever possible, build shotcrete elements to their full thickness in one layer to avoid cold joints.
- Apply the Krystol Waterstop System (consisting of Krystol Waterstop Grout™ and Krystol Waterstop Treatment™) to all preplanned construction joints at the end of a shift using one of the following procedures:
    - Application Instruction 4.11 — Waterproofing Horizontal Construction Joints — Internal Grout Method.
    - Application Instruction 4.21 — Waterproofing Horizontal and Vertical Construction Joints for Shotcrete — External Grout Method.
- Prepare pipes and other penetrations to receive the Krystol Waterstop System as described in Application Instruction 4.17 — Waterproofing Tie Holes and Pipe Penetrations.
- All surfaces to receive the Krystol Waterstop System must be free of contaminates and dampened to a saturated- surface-dry (SSD) condition to ensure adequate bonding.

IMPORTANT: Unintended cold joints may develop long lift breaks during bench gunning if the previous layer of shotcrete hardens before the next layer is placed. This is common during hot weather or when using highly accelerated mixes. Inspect all lift breaks as described in Application Instruction 4.22 — Waterproofing Unintended Cold Joints (Shotcrete), and apply a coating of Krystol Waterstop Treatment before shooting the next layer if the previous layer has already hardened.

Kryton International Inc. 1645 East Kent Avenue, Vancouver BC, V5P 2S8 | TEL: 1.604.324.8280 | TOLL 1.800.267.8280 | WEB kryton.com