



KRYTONITE™ SWELLING WATERSTOP SYSTEM

Section 03 & 07 - Krytonite™ Swelling Waterstop and Krystol Waterstop Treatment

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Waterproof joint design for non-moving joints in concrete consisting of Krytonite Swellable Waterstop and Krystol Waterstop Treatment to provide both immediate watertightness from a hydrophilic, swelling strip and additional long-term performance from permanent crystalline integral waterproofing.
- B. Provide all written materials and site services necessary to complete the installation as herein specified.

1.2 RELATED SECTIONS

- A. Section 03 30 00 – Cast-in-Place Concrete
- B. Section 03 37 00 – Specialty Placed Concrete
- C. Section 07 16 16 – Crystalline Waterproofing
- D. Section 07 90 00 – Joint Protection

1.3 REFERENCES

- A. NSF/ANSI 61 – Drinking Water System Components - Health Effects; 2000a.
- B. ACI 308R – Guide for Curing Concrete
- C. ACI 309R – Guide for Consolidation of Concrete
- D. ACI 506R – Guide to Shotcrete

1.4 SUBMITTALS

- A. Certificates of Conformance or Compliance: Before delivery of the materials a copy of the manufacturer's certificates, attesting that materials meet the requirements specified, shall be submitted to and approved by the contracting officer.
- B. Product Literature: Manufacturer's descriptive product literature shall be submitted and shall consist of detailed specifications, available performance test data and installation instructions.
- C. Certified Laboratory Test Reports: Before delivery of materials, copies of the reports of all tests specified herein or in reference publications shall be submitted to and approved by the contracting officer.
- D. Test reports shall be accompanied by certificates from the manufacturer certifying that the previously tested material is of the same type, quality and make as that proposed for this project.
- E. Training: Contractor shall advise manufacturer's representative 2 weeks prior to placement of jointing materials to ensure manufacturer's representative can be available on-site for application training.
- F. Shop Drawings: Show construction joint types, layout and location.

1.5 QUALITY ASSURANCE

- A. Krytonite Swelling Waterstop System consisting of Krytonite Swellable Waterstop and Krystol Waterstop Treatment, manufactured by Kryton International Inc., 1645 East Kent Avenue, Vancouver BC, V5P 2S8. Tel: 604.324.8280 or other licensed manufacturing facility.
- B. Installation shall be by a trained installer acceptable to the manufacturer.
- C. Prior to installation, hold a meeting of all relevant parties required for successful construction of a watertight structure. Verify installation and construction methods to ensure they align with the manufacturer's instructions and meet warranty requirements. Relevant parties may include installers of adjacent work or work penetrating or otherwise impacting the waterproofing system.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original, unopened, undamaged packages bearing the manufacturer's name, product name and batch number.
- B. Store materials in a dry storage area and protect from exposure to water or moisture.

1.7 WARRANTY

- A. Provide manufacturer's standard warranty document(s).

PART 2 PRODUCTS

- A. System Components: Concrete waterproofing joints shall consist of *Krytonite Swelling Waterstop* and crystalline waterproofing *Krytol Waterstop Treatment* manufactured by Kryton International Inc. - located at 1645 Kent Avenue NE, Vancouver, BC, V5P 2S8; Tel: 604.324.8280; Toll Free: 1.800.267.8280; Email: info@kryton.com; Web: www.kryton.com
- B. The waterproof joint design shall consist of two technologies: firstly a swelling, hydrophilic strip and secondly a crystalline waterproofing treatment and these shall be compatible and used together to deliver both immediate performance and also long-term performance.
- C. The products shall be from the same manufacturer.
- D. The swelling strip shall be composed of hydrophilic, synthetic rubber, capable of swelling 1000% in potable water, 700% in concrete water and 300% in sea water. Strong cohesion properties must be demonstrated by the strip's ability to repeatedly return to its original dimensions when drying. The swelling strip shall be shaped so that edges of the strip are angled inward at the top giving the strip a trapezoid shape resulting in better resistance to dislodgement by falling concrete. The swelling strip shall be yellow in color in order to assist inspection of the work.
- E. The crystalline waterproofing treatment shall be composed of reactive crystalline chemicals capable of growing long, needle-shaped crystals through the concrete to at least 10cm (4 ") in every direction; shall be proven to resist water column pressure of 140m (460 '); shall be certified to NSF/ANSI 61 – Drinking Water Components; shall not contain chlorides, stearates or any other hydrophobic materials; shall be yellow in color to assist inspection of the work.
- F. Substitutions are not permitted.

PART 3 EXECUTION

ATTENTION SPECIFIER The waterstop details will vary depending on the joint profile, whether the joint is subject to hydrostatic pressure, and whether the concrete is cast-in-place or shotcrete. The Krytonite Swelling Waterstop System is intended for static (non-moving) joints only. Use Instruction — 4.15 Waterproofing Construction Joints (Swellstrip Method), for wall-to-slab joints & for vertical joints. Joints in suspended slabs are vulnerable to movement and should be kept watertight using a flexible sealant following the procedure in Application Instruction 4.31 — Waterproofing Suspended Slab Joints. Additional information about specifying the best joint details is available at www.kryton.com or from your Kryton representative.



3.1 EXAMINATION AND SURFACE PREPARATION

- A. Safety precautions shall conform to the manufacturer's MSDS and all local regulations.
- B. Do not begin installation until substrates have been properly prepared.
- C. Concrete surfaces to receive Krytonite Swelling Waterstop material must be clean and free of contaminants or debris. Remove laitance, form release agents, curing compounds, sealers and any foreign material from surfaces to be treated. Use a chipping hammer or scabbler to remove all loose or protruding aggregates.
- D. Strictly follow manufacturer's published procedures for mixing, application, curing and protection of waterproofing products.

3.2 INSTALLATION

For detailed installation procedures, consult Application Instruction 4.15 – Waterproofing Construction Joints (Swellstrip Method)

STEP 1: SURFACE PREPARATION

1. Remove dust, dirt and loose debris by air blasting or sweeping.
2. Install in dry conditions only. Installation during heavy rain or in contact with water can result in a premature swelling of the strip, which must be avoided.
3. Protect the installed Krytonite from heavy rain or flooding until concrete is poured. If premature swelling occurs, Krytonite must be dried to restore its original dimensions before pouring concrete.

STEP 2A: INSTALL KRYTONITE USING ADHESIVE

1. Select a high-quality, solvent-free construction adhesive. Apply a thick bead of adhesive to the concrete surface where the Krytonite is to be installed. There must be enough adhesive so that when the Krytonite strip is pressed into the adhesive it squeezes out from the sides and does not leave any void between the Krytonite strip and the concrete. Typical adhesive coverage is 8 m (26 ft.) per tube with a bead size of 6 mm (1/4 in.). Rough surfaces will require more adhesive.
2. Immediately press the Krytonite strip into the adhesive – unrolling the coil as you progress. Do not allow time for the adhesive to form a skin.
3. Cut Krytonite to length using scissors. At corners, cut both strips at an angle as illustrated in Application Instruction 4.15 – Waterproofing Construction Joints (Swellstrip Method)
4. For vertical installations, it may be necessary to add mechanical fasteners, such as nails or screws to prevent the Krytonite from sagging. See Step 2B for more information.
5. Adhesive is the preferred installation method around pipes and other penetrations.
6. Allow adhesive to dry before pouring concrete.

STEP 2B: INSTALL KRYTONITE USING MECHANICAL FASTENERS

1. Unroll the Krytonite Swelling Waterstop strip along the placement location.
2. Cut Krytonite to length using scissors. Strip ends should be tightly and squarely butted and not overlapped.
3. Use nails with washers to fasten the Krytonite strip firmly to the concrete. Use one nail every 30 cm (12 in.). Screws with washers may be used instead of nails.
4. In case of vertical or hanging installations, the Krytonite strip may sag unless adhesive is also used or additional nails are installed. See STEP 2A for adhesive installation instructions. If adding nails, place nails 15 to 20 cm (6-8 in.) apart.

STEP 3: APPLY KRYSTOL WATERSTOP TREATMENT

1. For added long-term waterproofing performance and to protect outboard rebar from corrosion, crystalline technology is incorporated into this waterstop system by applying Krystol Waterstop Treatment to the joint location.
2. Carefully follow the instructions on the Krystol Waterstop Treatment product label to mix Krystol Waterstop Treatment and apply to the concrete on both sides of the Krytonite strip, but do not apply over the Krytonite strip. The Kryton Waterstop Treatment must extend at least to the edge of the joint location.
3. Note that you may alternatively choose to apply Krystol Waterstop Treatment first and delay application of Krytonite until closer to the time of concrete pour. In this case you will be applying Krytonite over the Krystol Waterstop Treatment, therefore be sure that the Treatment is dry and free from dust or loose materials.

STEP 4: POUR AND CONSOLIDATE THE CONCRETE

1. Pour concrete directly over the Krytonite using good placement practices. Take care not to dislodge the Krytonite installation during concrete placement. Do not drop concrete from a great height. If placement is by shotcrete method, avoid shooting at the side of the Krytonite strip.
2. Properly consolidated concrete is the key to success. Be sure to vibrate all construction joints in accordance with American Concrete Institute Guideline ACI 309R – Guide for Consolidation of Concrete. Be sure that vibration equipment can reach the bottom of concrete forms to fully consolidate concrete at wall-slab joints.
3. In order to prevent drying shrinkage cracking, wet-cure the concrete or apply a curing compound in accordance with American Concrete Institute Guideline ACI 308R – Guide for Curing Concrete.
4. Shotcrete must be placed by ACI certified nozzlemen following procedures in accordance with ACI 506R – Guide to Shotcrete.

3.3 FIELD QUALITY CONTROL

- A. Do not cover the Krytonite Swelling Waterstop System with concrete until it has been observed by manufacturer's field representative or a designated inspector.
- B. Inspection in two stages:
 1. Following the installation of the Krytonite Swelling Waterstop, an inspector shall visually inspect the application to verify the presence of the yellow trapezoid-shaped strip in the correct location and proper dimensions.
 2. Following the installation of Krystol Waterstop Treatment, an inspector shall visually inspect the application to verify the presence of the yellow slurry coat covering the entire contact area of the joint, but not covering the Krytonite strip. Check for a consistent yellow coating without any thin or bare spots.
- C. If a two stage inspection is not possible, a single inspection shall verify the proper installation, but may complicate corrective action if required.
- D. Observe placement of concrete with attention to proper consolidation of the concrete at the joint locations in accordance with ACI 309R.

END OF SECTION