

CIMAISE

V/Réf. : A12-5.2.1

N/Réf. : 09350-55

Crystalline waterproofing coatings

Section 07 16 16E

Page 1 de 6

March 31st 2013

PART 1 – GENERAL

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|--|----------------------------|---|
| 1.1 Range of works | .1 .2 | Surfaces preparation. Supply and installation of crystalline waterproofing system for concrete. |
| 1.2 Related sections | .1 .2 .3 .4 | Adding fresh concrete additive, see Engineering Excavation, backfill, see Engineering.. Division 3 – Concrete, see Engineering. Division 9 – Finishes. |
| 1.3 Reference standards | .1 .1 .2 .1 | Canadian Standards Association (CSA)/CSA International CSA-A23.1/A23.2-F04(C2005), Concrete Materials and Methods of Concrete Construction/Test methods and Standard Practices for Concrete CAN/CSA-A3000-F03(C2005), Cementitious Materials for Use in Concrete (Content A3001, A3002, A3003, A3004 et A3005). CSA-A3001-F03, Cementitious Materials for Use in Concrete. |
| 1.4 Performance criterion | .1 | The waterproofing system must successfully resist permeability tests DIN 1048: part 5. NOTE: Krystol samples tested, exposed to a hydrostatic pressure of 72.5 lb/in ² (500 kPa) for 72 hours, which is equivalent to a vertical pressure of 167 ft. (51m) let in only 5.3 mm of water, which represents a performance 7 times higher than that of control samples. |
| 1.5 Submittal procedures | .1 .2 .1 .3 .1 | Submit documents and samples in accordance with section 01 33 00E – Submittal procedures. Datasheets Submit product data and specifications and the manufacturer's documentation for products. Manufacturer's instructions Submit instructions for implementation provided by the manufacturer. |
| 1.6 Quality assurance | .1 | Test Reports: Submit test reports certifying that the products, materials and equipment comply with the requirements regarding the physical characteristics and performance criteria. |

CIMAISE
V/Réf. : A12-5.2.1
N/Réf : 09350-55

Crystalline waterproofing coatings

Section 07 16 16E
Page 2 de 6
March 31st 2013

- 1.7 Management and removal of garbage**
- .1 Sort garbage for recycling.
 - .2 Route unused waterproofing products to a licensed site of hazardous materials approved by the Ministerial representative.
 - .3 It is forbidden to dump waterproofing products unused into sewers, into a lake, a river, on the ground or in other location where it could pose a risk to human health or the environment.
- 1.8 Conditions of implementation**
- .1 Ambient conditions and environment
 - .1 Maintain the temperature of the ambient air and those surfaces to be waterproofed above 5 degrees Celsius (41 °F) during the work implementation and during the 72 hours before and after the work.
- 1.9 Scheduling**
- 1. **Work carried out in two phases, see drawings limits.**
 - 2. **Scheduling, see section 01 32 18E** and directive Ministerial representative.
 - 3. The place of work is within an occupied building.
- 1.10 Guarantee**
- 4. Provide a certificate of guarantee, signed and issued on behalf of the Ministerial representative, stating that all the works in this section are warranted against defects for a period of five (5) years from the date of signature of the certificate of provisional acceptance work. Comply with section 01 78 00E.

PART 2 – PRODUCTS

- 2.1 Objective of the system**
- .1 Prevent or limit water infiltration through the concrete without creating vapor barrier. The system can be used in the positive or negative side. It must be designed for the new concrete recently poured or existing concrete and concrete products. The system shall consist of an in-depth treatment of the concrete.
- 2.2 System Features**
- System must:
- .1 Stopping the flow of water in the concrete;
 - .2 Provide permanent treatment;
 - .3 Protect the reinforcing steel against corrosion;
 - .4 Waterproof microcracks;
 - .5 Penetrate below the surface and is not affected by wear or abrasion;
 - .6 Process so that the concrete resists drastic hydrostatic pressure;
 - .7 Seal hairline cracks up to 0.5 mm (0.02 in.).
- 2.3 Clogging system of cavities, cracks and holes reinforcing rods**
- .1 Water barrier for repair of concrete, **Krystol type - BARI COTE** manufactured by **KRYTEX Products** or equivalent approved during submission period by Ministerial representative:
 - .1 Materials: Waterproofing cementitious powder when mixed with water,

CIMAISE

V/Réf. : A12-5.2.1

N/Réf : 09350-55

Crystalline waterproofing coatings

Section 07 16 16E

Page 3 de 6

March 31st 2013

produces a quick-setting mortar or grout. Its formula contains Krystol crystals that penetrate concrete with moisture.

Gray powder density 1.25 g/cc, PH 13 when mixed with water

Workability period: 15 minutes

Curing time: 30 minutes (about 1 hour drive)

Resistance in compression: 2 hours = 4,8 MPa; 24 hours = 20,7MPa;
7 days: 43,4 MPa; 28 days 46,2 MPa.

.2 Water: potable.

.3 Use: Just before performing the waterproofing Krystol system T1 and T2.

2.4 Waterproofing system

.1 Two (2) layers waterproofing system of concrete, KRYSTOL type manufactured by KRYTEX Products or equivalent approved during submission period by Ministerial representative:

.1 Materials: Waterproofing cementitious powder containing ingredients which waterproof by crystallization in the capillaries of concrete.

.1 **Base coat: dry powder KRYSTOL T1**

Gray powder density 1.25 g/cc, PH 13 when mixed with water

Workability period: 60 minutes (30 minutes when mastic)

Curing time: about 5 hours

.2 **Second coat: dry powder KRYSTOL T2**

Gray powder density 1.35 g/cc, PH 13 when mixed with water

Workability period: about 60 minutes, by constant stirring

Curing time: about 4 hours

.2 Water: potable.

Note: The powder mixed with water forms a slurry material that we apply to the inner or outer side of the concrete structure using a brush or a sprayer. In the presence of water, KRYSTOL chemicals will react with the concrete to produce millions of crystal in form of needles that will deeply agglutinate into the concrete mass. These crystals form a continuous barrier to prevent the passage of water through the capillary pores, cracks and joints. The concrete itself becomes a impermeable layer to water and the surface treatment is not required to remain intact for the system to be effective.

PART 3 – WORK

3.1 Manufacturer's instruction

.1 Compliance: comply with requirements, recommendations and manufacturer's written, including technical bulletins, instructions appearing in the product catalog, to those appearing on the packaging of products and data sheets.

.2 Confirm, as required, installation techniques with respect to the existing conditions in the presence of the manufacturer and Ministerial representative.

CIMAISE
V/Réf. : A12-5.2.1
N/Réf : 09350-55

Crystalline waterproofing coatings

Section 07 16 16E
Page 4 de 6
March 31st 2013

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| 3.2 Surface preparation | .1 .2 .1 .2 .3 .4 .5 .6 .7 .3 .4 | Clean surfaces to be waterproofed. Remove dust, dirt and all traces of wax, oil or grease. Correction of surface irregularities Cut the attachment wires to a depth of 40 mm. Stripping holes, honeycombs, open joints and porous surfaces. Shaping the notches squareness or shrink at a depth of 25 to 40 mm. Widening cracks in at least 25 mm. Do not make conical cuts or V cuts. Clean surfaces thoroughly with a wire brush and a vacuum cleaner. Moisten surfaces with water. Before receiving the crystalline waterproofing system, the concrete surface should be open pore to ensure penetration. The concrete surface must be free of all contaminants and be pre-soaked in clean water to achieve a saturated surface dry (SSD). Follow the directive of application 401 of KRYTEX Manufacturer to prepare the surface. |
| 3.3 Clogging of cavities, cracks and holes reinforcement rods | .1 .2 .1 .2 .3 .4 | Unless otherwise specified, perform the sealants in accordance with manufacturer's written instructions. Prepare surfaces and mix products For mortar: Allow 4 parts powder to 1 part water For grout: Allow 5 parts powder to 2 parts water Apply with a trowel, brush or flow if necessary. Rate: 430 cm ³ /kg (25 in ³ /lb) Wait for the treatment recommended by the manufacturer before covering waterproofing system bilayer. |
| 3.4 Implementation of the bi-layer waterproofing system | .1 .2 .1 .2 .3 .4 .5 .6 .7 | Unless otherwise specified, carry out waterproofing coatings in accordance with manufacturer's written instructions. Apply with a brush: Apply waterproofing with stiff bristle brush. Do penetrate the surface. Allow between each coat a minimum interval of 4 hours. Do not apply a new coat before the previous coat is completely oxidized and the color is uniform. Moisten surfaces to be waterproofed continuously for the time recommended by the manufacturer before brushing the first layer of waterproofing. Mix Krystol T1 until the consistency of slurry (3 parts powder to one part water). Cover the concrete with Krystol T1 mixture with a firm circular motion. |

CIMAISE
V/Réf. : A12-5.2.1
N/Réf. : 09350-55

Crystalline waterproofing coatings

Section 07 16 16E
Page 5 de 6
March 31st 2013

Minimum coverage per coat: 0.8 kg/m² (1.5 lb/verge²)

.8 Mix Krystol T2 until a slurry consistency (3 parts powder to one part water)

.9 To ensure complete coverage without location missed or too thin, apply a second layer with the Krystol T2 mixture to give a hard, durable.
Minimum coverage per layer: 0,8 kg/m² (1,5 lb/verge²)

.3 Application by spraying:

.1 The composition may vary depending on the equipment used. Consult the manufacturer and follow the instructions.

.2 In general, mixing Krystol T1 and T2 until it's slurry (3 parts powder to 1 part clean water).

.3 **Follow the directive of application 402 Manufacturer KRYTEX for spray application.**

.4 Application - mastic consistency:

.1 Krystol T1 mix until consistency is very dry (approximately 5 parts powder to 1 part clean water).

Insert the mastic in the groove of a thickness / depth of 13mm maximum.

.2 Rate: 1 bucket of 25kg (55 lb) will cover 30m (100 ft) of cracks.

.3 **Follow the directive of application 301 manufacturing KRYTEX for repairing cracks.**

3.5 Installation - General

.1 Extension of the waterproof coating on the adjacent surfaces.

.1 Apply waterproofing product on the floors extending the coating on the columns, walls and interior walls to a height of 300 mm.

.2 Extend the coating on a height of 600 mm on both sides of the concrete inner walls, and on a height of 1200 mm on both sides of the inner walls of masonry.

3.6 Cure

.1 Cure between coats: spray a fine mist of water on each layer to keep it moist during the oxidation period.

Growth and migration of the system occurs only in the presence of water. The cure must be in a humid environment for at least 3 days. During this period, the treated area should be protected from frost and rain, in addition to restricting the circulation for at least 24 hours. In the case of a tank, wait at least 7 days before filling. Other restrictions, consult the manufacturer.

.2 Ensure waterproofing coatings cure by spraying frequently with water for at least three (3) days and protect against rapid loss of moisture for four (4) additional days, according to the method recommended by the manufacturer.

.3 Also ensure that they are not exposed to direct sunlight.

3.7 Quality control on site

.1 If necessary, make the necessary arrangements for the manufacturer of products supplied under this Section review Work involved in handling, installation /

CIMAISE

Crystalline waterproofing coatings

Section 07 16 16E

V/Réf. : A12-5.2.1

Page 6 de 6

N/Réf : 09350-55

March 31st 2013

application, protection and cleaning of the work, then submit written reports, in acceptable format, which will determine whether the work was carried out under the terms of the contract.

3.8 Cleaning

- .1 Perform cleanup in accordance with Section 01 74 11E – Cleaning.
- .2 After completion of installation, remove the construction products, materials and surplus equipment, materials, rubbish, tools and security barriers.

***** END *****