

Sections 03 and 07**Curtain Wall Grout Injection Specification****PART 1 – GENERAL****1.01 SECTION INCLUDES**

Materials, equipment and procedures to pressure inject water activated polyurethane gel, for external sealing of areas with ground contact, area injection into highly porous, jointed, or cracked building materials, as well as sealing cavities, and for stabilization of concrete and soil.

1.02 SUBMITTALS

- A. Submit two copies of manufacturers' literature for products furnished, including application instructions, appropriate Material Safety Data Sheets (MSDS), and other safety requirements.
- B. Submit a letter attesting to the following:
 - 1. Workers that will perform work for this section have a minimum of 5 years' experience, successfully applying the materials specified in this section, or that workers have been properly trained, and will be supervised by someone who is properly trained and has necessary experience.
 - 2. Workers and supervisors have read and understand requirements described in the manufacturer's literature, and application instructions.
 - 3. Workers will have proper and adequate equipment, including a plural component pump, so as to be able to complete the work according to provisions of this section, and the manufacturer's instructions.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to job site in sealed undamaged containers with labels intact and legible, indicating material name, date of manufacture and lot number.
- B. Store material in indoors or outdoors and covered, at temperatures not below 32 degree Fahrenheit.

1.04 PROJECT CONDITIONS

- A. Install material in accordance with safety and weather conditions required by the manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction.
- B. Curing conditions for Water Reactive polyurethane gel:
 - 1. Do not apply if the air temperature is lower than 32 degrees Fahrenheit or if temperatures are expected to drop below 32 degrees Fahrenheit within 24 hours of application; or higher than 120 degrees Fahrenheit.
 - 2. Cure times are affected by water temperature. Lower temperatures and/or excess water can extend or prevent curing.

PART 2 – PRODUCTS**2.01 MATERIALS**

- A. "KOSTER Pur Gel" as manufactured by KOSTER American Corporation, 2585 Aviator Drive, Virginia Beach, VA 23453, 757-425-1206.
- B. Products shall be Solvent-free water activated polyurethane gel and have a highly elastic, foam-hydro-gel and must be resistant to pressurized water.
- C. It is the responsibility of the contractor to develop the correct mix proportions to achieve a consistent curtain injection. The mix proportions shall be approved by the Engineer.

2.02 ACCESSORIES

- A. Distributor Lances and Injector (packer) as recommended by the manufacturer.
- B. "KOSTER KB-Pur Cleaner" or other suitable solvent as recommended by the manufacturer.

2.03 EQUIPMENT

- A. 2-component injection pumps are required with an adjustable mix ratio from 1:1 to 1:15 feature. *Example: KOSTER Gel Pump (supplied by KOSTER American Corp.)*

- B. Solvent and moisture resistant hose.
- C. Distributor Lances and Injection Lances (for curtain and area injection) usually 18mm x 300 or 18mm x 550mm supplied by KOSTER American Corp.
- D. Hammer Drill, air powered or electric. *Examples: Hilti, Bosch, Black and Decker*
- E. Masonry drill bits various lengths and proper diameter to match injectors.
- F. Generator and/or 110 volt continuous electrical supply.

PART 3 – EXECUTION

3.01 PREPARATION

- A. The Installation Contractor shall thoroughly review the entire surface of area to be chemical gel injected to determine the applicability of gel materials in respect to thickness of wall or floor, existence to any foreign materials harmful to the application of the chemical gel used, inspection of soil grade, deterioration of concrete surface and existing cracks which shall be repaired and sealed prior to the application.
- B. If Installation Contractor finds any cracks/joints being too wide to receive an application of the gel material to be used, he shall submit to the Engineer a complete report regarding the locations, existing minimum and maximum thickness and length of cracks/joints. The Engineer shall verify the non-applicability of the material to be used in cracks/joints reported with the material manufacturer or supplier and direct the contractor with a proper repair method of cracks/joints prior to application of the gel material.
- C. Where any detrimental foreign material exist, the Contractor shall follow the recommendations of the chemical gel material manufacturer (subject to the Engineer's approval) in respect to the material and methods of cleaning or removing the foreign materials.
- D. Holes are drilled through the construction member to be sealed in a raster of maximum 12 inches horizontally and vertically, every second row centrally offset, or in a consistent grid pattern where the second row is directly below first packer placed. The diameter of the boreholes depends on the packers chosen.
- E. Existing joints are cleaned out and are closed using suitable means prior to the injection. Along crack holes are drilled on alternating sides of the crack at a 45 degree angle to the surface at a maximum distance of 19.5 inches from each other on each side.

3.02 APPLICATION

- A. Chemical gel shall be pumped and pressure injected in the Lance or Packers which have been inserted into pre-drilled holes. Packers compatible with the gel material to be used shall be installed.
- B. The applicator shall allow the gel material with sufficient time to flow into all Lances and/or Packers on its own.
- C. The Contractor shall clean surfaces of excess chemical gel used by proper means recommended by the manufacturer and/or supplier. Lances and/or Packers shall not extend beyond the plane of the surface of the existing concrete.
- D. The Contractor shall be responsible for performing test injections at a minimum of 3 selected locations to finalize on material selections, injection procedures with mixing ratios for viscosity, and testing procedures prior to the start of work.

3.03 FIELD QUALITY ASSURANCE

- A. A warranty shall be submitted to the Engineer which guarantees that in the event of any water leak through injected areas, the material manufacturer/supplier and the Installation Contractor will jointly repair areas which have failed any time during the warranty period of five (5) years with no cost to owner.

END SECTIONS 03 AND 07