SECTION 07 19 11.10
INJECTION GROUTING
Display hidden notes to specifier.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Sealing cracks in concrete structures through pressure injection.

B. Sealing hairline cracks, expansion joints, wide cracks, pipe joints, pipe penetrations.

C. Saturating dry oakum to create a flexible gasket for sealing pipe penetrations, joints and larger defects in concrete structures.

1.2 REFERENCES

A. ASTM D1042 - Standard Test Method for Linear Dimensional Changes of Plastics Under Accelerated Service Conditions.

B. ASTM D1623 - Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.

C. ASTM D3574 - Standard Test Methods for Flexible Cellular Materials - Slab, Bonded, and Molded Urethane Foams.

D. ASTM D4878 - Standard Test Methods for Polyurethane Raw Materials: Determination of Viscosity of Polyols.

1.3 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5 year experience manufacturing similar products.

B. Installer Qualifications: Minimum 2 year experience installing similar products.

C. Test Section: Provide a test section for evaluation of injection techniques and application workmanship.

1. Finish areas designated by Engineer.
2. Do not proceed with remaining work until workmanship is approved by Engineer.
3. Refinish test section as required to produce acceptable work.

1.5 PRE-INSTALLATION MEETINGS

A. Convene minimum two weeks prior to starting work of this section.

1. Review the latest Technical Data Sheets, Safety Data Sheets, and instructions from manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.

B. Keep lids on tightly to prevent moisture from entering containers. Avoid direct contact with product. Use caution when opening as pressure may build up inside

containers.

C. Handling: Handle materials to avoid damage.

1.7 PROJECT CONDITIONS

A. Low temperatures will increase viscosity making product more difficult to pump. Low temperatures or cold water will slow down the reaction time. pH of reaction water should be between 3 and 10 for optimum foam. Keep lid tightly closed.

B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Alchatek; 4508 Bibb. Blvd Suite B5, Tucker, GA 30084. Tel: (404) 618-0438. Fax: (678) 805-4783. Email: info@Alchatek.com. Web: http://www.Alchatek.com.

B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

2.2 APPLICATIONS/SCOPE FOR HYDROPHILIC RESIN

A. Product: Spetec GT500 as manufactured by Alchatek.

B. Material:

1. Single component, low viscosity, flexible hydrophilic polyurethane foam injection resin.
2. Accessory: Alchatek Pump Flush.
3. Accessory: Alchatek Oakum.
4. Accessory: Alchatek Injection Ports.
5. Accessory: Alchatek Soak 130.

C. Physical Properties 77 degree F (25 degree C) – Liquid:

1. Viscosity 215 cP.

D. Physical Properties – Cured:

1. Tensile Strength (ASTM D-3574): 450 psi.
2. Tensile Elongation (ASTM D-3574): 350%.
3. Tear Resistance (ASTM D-3574): 21 lbs / inch
4. The properties were based on foam cured under pressure to simulate conditions inside a confined crack. Properties will vary depending on application conditions.

E. Reaction Times:

1. Initial Reaction: 30 seconds.
2. Full Rise; 1 minute, 30 seconds.
3. Full Cure: 24 hours

2.3 APPLICATIONS/SCOPE FOR HYDROPHOBIC RESIN

A. Product: Spetec F400 as manufactured by Alchatek.

B. Material:

1. Single component, water activated, semi-rigid hydrophobic polyurethane foam injection resin requiring catalyst to adjust set time.

2. Accessory: Alchatek Gen Cat.
3. Accessory: Alchatek Gen Cat Fast.

2. Accessory: Alchatek Pump Flush.
3. Accessory: Alchatek Injection Ports.
4. Accessory: Alchatek Soak 130.

C. Physical Properties 77 degree F (25 degree C) – Liquid:
1. Viscosity 350 cP.

D. Physical Properties – Cured:
Tensile Elongation at Break: 100%
2Properties will vary depending on application conditions.

E. Reaction Times (depending on type and amount of catalyst):

1. Alchatek Gen Cat, 10 percent at 77 degree F: Initial reaction 17 seconds; end of reaction 73 seconds.
2. Alchatek Gen Cat Fast, 10 percent at 77 degree F: Initial reaction 14 seconds; end of reaction 47 seconds.
3.

2.4 MATERIAL SELECTION

A. Hydrophilic materials shall be used to inject moving cracks and joints.
B. Hydrophobic materials shall be used in the following situations:
1. Filling voids behind the structure.
2. Injection of gushing leaks in non-moving cracks and joints.

PART 3 EXECUTION

3.1 PREPARATION

A. Condition material overnight to 70 to 80 degrees F (21 to 26 degrees C). Heat bands or hot water bath may be used to warm containers. Do not heat above 80 degrees F (26 degrees C).
B. Equipment: Single-component airless sprayer recommended.
C. If necessary, grind off any surface contamination (coatings, efflorescence, etc.) to fully expose the cracks.
D. Personal Protection: Use safety goggles, face shield, impermeable gloves, long sleeves and pants.
E. Use in well-ventilated areas. Open doors and windows. In confined areas use mechanical ventilation to keep vapor concentrations low. Prevent direct contact with skin and eyes. Refer to SDS.

3.2 INSTALLATION OF HYDROPHILIC MATERIALS

A. Mixing: None required. Keep lid tightly sealed when not in use and avoid splashing water into pails.
B. Install in accordance with manufacturer's instructions.
1. Expose the cracks.
2. Drill injection holes.
3. Flush injection holes with water using a probe that reaches the back of the hole.
4. Install injection ports and zerk fittings.
5. Flush the crack with water.
6. Inject resin and allow to cure.

C. Cured material is chemically inert and safe to dispose of in landfill. Cleanup any spilled liquid resin and place in a suitable sealed container. Dispose of in accordance

to applicable environmental regulations.

3.3 INSTALLATION OF HYDROPHOBIC MATERIALS

A. Mixing:

1. Mix only the amount of material to be used within a few hours.
2. Use a low speed drill with a mixing paddle.
3. Be careful not to whip too much air into the mixture.
4. Pour in catalyst while mixing.
5. Wear safety glasses or goggles whenever handling or mixing chemicals.

B. Install in accordance with manufacturer's instructions.

1. Expose the cracks.
2. Drill injection holes.
3. Flush injection holes with water using a probe that reaches the back of the hole.
4. Install injection ports and zerk fittings.
5. Flush the crack with water if necessary.
6. Inject resin and allow to cure.

C. Cured material is chemically inert and safe to dispose of in landfill. Cleanup any spilled liquid resin and place in a suitable sealed container. Dispose of in accordance to applicable environmental regulations.

3.4 Dress Out

A. Remove injection ports and fill holes with either a cementitious or epoxy based patching material.

B. Grind excess resin from face of concrete.

3.5 CLEAN-UP

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B. Clean off of skin with soap and water.

3.6 PROTECTION

A. Protect adjacent work area using plastic sheeting if necessary.

END OF SECTION