

Proposed specification - For review by qualified architects and engineers.

SECTION 04117C
GLACIER STRUCTURAL INJECTION FOR MEDIUM CRACKS IN
NATURAL STONE/ MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Application of structural injection knife grade urethane for mending cracks in natural stone. Injection of crack with manual equipment. Furnish all materials, labor, and equipment.

1.02 RELATED SECTIONS

- A. Section 04200 – Masonry
- B. Section 04500 - Masonry Cleaning

1.03 REFERENCE STANDARDS

- A. ASTM D 638 Test method for Tensile Properties of Plastics
- B. ASTM D 648 Test method for Deflection Temperature of Plastics under Flexural Load.
- C. ASTM D 695 Test Method for Compressive Properties of Rigid Plastics
- D. ASTM D 790 Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- E. ASTM D 2240 Test Method for Rubber Property - Durometer Hardness

1.04 QUALITY ASSURANCE

- A. Manufacturer qualifications: Company regularly engaged in the manufacturing of the products specified in this section.
- B. Contractor qualifications: Qualified to perform the work specified by reason of manufacturer's contractor certification or experience in the installation and repair of dimensional building stone.

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1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in original factory packaging bearing identification of product, manufacturer, and batch number. Provide Material Safety Data Sheets for each product
- B. Store products above 60 degrees F in an area protected from precipitation, construction activity, and direct sunlight.
- C. Condition products to a temperature between 60 and 85 degrees F before application.
- D. Handle all products in accordance with Material Safety Data Sheets.

1.06 PROJECT CONDITIONS

- A. Apply product under ambient conditions between 50 and 85 degrees F. Protect site from precipitation, or apply product only after stone has thoroughly dried. Apply when stone temperature is between 45 and 85 degrees F.
- B. Mask or otherwise protect all adjacent work from Urethane, its components, and when injecting the urethane.

PART 2

2.01 MANUFACTURERS

- A. Bonstone Materials Corporation; 707 Swan Drive; Mukwonago, WI 53226; 262-363-9877; conforms to the requirements of this specification
- B. Substitutions: Alternates to the acceptable manufacturer will be considered only upon the basis of written request and shall include substantiation of product performance as listed in section 2.02 below.

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2.02 PERFORMANCE CRITERIA

A. **Touchstone Glacier** meets the requirements of this section.

B. Properties of the mixed Urethane utilized for injection of cracks in natural stone, shall meet the following:

1. Pot life: 1 to 2 minutes at 75 degrees F
2. Consistency at 75 degrees F. Knife-grade (GEL consistency)
3. Color: Clear Cloudy (other colors and color matching available)
4. Mix Ratio 1 parts "A" to 1 part "B" by volume (180ml cartridges available as well)
5. Initial setting time at 75 degrees F. 10 to 20 minutes, sand or grind in one hour (accelerator available for faster cure or during colder temperatures))
6. Full cure time at 75 degrees F. 24 hours

B. Cured properties of the Urethane utilized for injection, shall meet or exceed the following:

1. Tensile Strength - 14 days ASTM D-638/ 6452 psi minimum
2. Tensile Elongation - 14 days ASTM D-638/ 3.1% minimum
3. Tensile Modulus - 14 days ASTM D-638/ 349,248 psi minimum
4. Compressive Strength - 28 days ASTM D-695/ 9,258 psi minimum
5. Compressive Modulus -28 days ASTM D-695/ 163,523 psi minimum

C. Thickening powder used to modify viscosity of the mortar shall come from the compound manufacturer. (used mainly in high temperatures)

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PART 3 - EXECUTION

3.01 EXAMINATION

A. Inspect all areas to be repaired for possible exposure to precipitation, soundness of stone to be repaired, need for masking of adjacent objects, and the existence of any coating or contamination on the stone surface or in the stone's crack.

3.02 PREPARATION

A. Protect all adjacent surroundings from exposure to mixed Urethane repair compounds or their components.

B. Ensure that all coatings or contaminants are removed before application of Urethane repair compound to a natural stone surface or before injection into a crack.

C. Ensure that all natural stone (both on the surface area and in cracks) is clean, dry, sound, and dust free.

3.03 APPLICATION

A. Preparation of stone and crack area

1. Precondition materials to a temperature between 60 and 85 degrees F.
2. Clean the crack out with acetone and a rag or Q tips. Removing dust is the most important prep work before applying adhesives. Substrate must be completely dry before using **Glacier**. Use blue tape along both sides of crack as close as possible without covering crack.

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3. Review **Glacier** cartridge use before mixing and applying the **Glacier**

4. Recommend having a cooler with heat packs to keep cartridges fluid. Resin will thicken up in cold weather. Note if cartridge nozzle is too short to get all the way up into the hole- tape a straw to the end of the mix nozzle. Pinch the straw and insert into the crack while moving back and forth through crack depth.

5. Slightly overfill the **Glacier** in the crack. For polished stones- razor blade **Glacier** flush before it sets up and pull tape off. For honed surfaces let the **Glacier** set up to a rubbery feel and then razor blade flush or sand overfill when **Glacier** cures.

6. Clean up any residue of **Glacier** off surface of stone with denatured alcohol. Refer to cleaning section for more information

3.04 FIELD QUALITY CONTROL

A. Keep samples of cured urethane for quality control. Log time and dates of use.

3.05 CLEANING

A Remove uncured urethane compound from tools and equipment with lint free dry towel or denatured alcohol.

B. Remove cured Urethane repair compound mechanically.

C. Remove all debris related to the urethane repair application from the work site in accordance with all applicable regulations for hazardous waste disposal.

END OF SECTION

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