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# Epoxy Injection Specification

## Low Temperature Low Mod Injection

With Epoxy.com Product #301 Injection Resin

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### SECTION 07902

### PRESSURE INJECTED EPOXY SPECIFICATION

#### SCOPE:

The work covered by this division of the specifications consists of furnishing all labor, materials and equipment to perform all operations in connection with the complete installation of the pressure injected epoxy as shown on the Drawings and/or as specified herein.

#### MATERIALS:

All material shall be new, of first grade quality.

A. Epoxy injection resin (for wet or dry application) shall be Epoxy Systems Injection Binder [Product #301](#) as supplied by Epoxy.com a division of [Epoxy Systems, Inc.](#),

with Principal offices at:

20774 W. Pennsylvania Ave.

Dunnellon, Florida 34431

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[www.epoxy.com](http://www.epoxy.com)

#### 1. General Requirements

a. Capable of penetration and performance in concrete separation 45 mils and greater in width.

b. Chemical resistant

c. Abrasive resistant

## 2. Special requirements

# APPLICATION PROPERTIES @ 77°F.

Mix Ratio	2:1 by Volume
Gel Time	10.8 minutes
Color	Light Amber
Viscosity Mixed - ASTM D-2393	400-450 cps
Initial Cure	24 hours
Final Cure	7 days
Packaging	gallons, pails, drums

# PHYSICAL PROPERTIES

Concrete Bond Strength (ASTM C-882)	2,280 p.s.i
Compressive Strength (ASTM D-695)	10,000 p.s.i
Tensile Strength (ASTM D-790)	3,500 p.s.i
Elongation (ASTM D-638)	>10%
Adhesion to Concrete (ACI Committee 403)	250 p.s.i (Concrete Fails)

B. Epoxy Paste Surface Seal shall be Epoxy Systems Epoxy Bonding Paste [Product #5](#) (fast setting), or [Product #6](#) (slow setting), as supplied by Epoxy.com a division of Epoxy Systems, Inc. of Dunnellon, Florida, and Vermont

## 1. General Requirements

- a. Two component epoxy resin which meets or exceeds requirements of epoxy resin Type I, Grade 1, class A per ASTM C881-78.
- b. 100% solid by weight
- c. Viscosity of paste.
- d. Capable of application, adhesion, and curing when applied on frost-free and dry surfaces at temperatures down to zero degrees F., and when applied on moist surfaces at temperatures above 32 degrees F.
- e. 7 day Compressive Strength not less than 10,900 p.s.i (ASTM D-695).

- f. Tensile Strength (ASTM D-638) 5,300 p.s.i
- g. Tensile Elongation (ASTM D-638) 4% - 9%
- h. Pot Life (200 gr.) 9 minutes (minimum) 63 (maximum)
- i. Shore D Hardness (ASTM D-2240) 83

C. Polyester Surface Seal Shall be Epoxy.com Product #48–Filler 7 as supplied by Epoxy Systems, Inc. of Dunnellon Florida and Vermont.

1. General Requirements

- a. Mix ratio 100 R to 2 H.
- b. 100% solid by weight.
- c. Viscosity of paste.
- d. Capable of application on dry surface down to 0°F.
- e. Density (lbs./gal) 14.13 (ASTM D-1475)
- f. Specific Gravity (g/cm<sup>3</sup>) 1.70 (ASTM D-792)
- g. Peak Service Temperature 400°F.
- h. Pot Life (100 grams @ 77°F) 4-7 min.
- i. Shore D Hardness 88-90 (ASTM D-2240)

## **SPECIALTY EQUIPMENT:**

A. Vacuum chuck and hollow drill bits and/or surface ports

B. The equipment used to inject the epoxy shall be acceptable to the epoxy manufacturer and shall conform to all of the following:

- 1. Capacity to automatically proportion the epoxy material by way of positive displacement type pumps for each component. These pumps shall have the capacity of proportioning components within the tolerances set by the epoxy manufacturer.

2. Capacity to automatically mix the epoxy materials completely in line. Batch mixing will not be permitted.
3. Capacity to inject the epoxy resin under controlled, variable pressures.

## **EXECUTION:**

A. The top surface of the cracks designated for injection shall be cleaned free of dust, silt, laitance, oil and grease, or any other material that would interfere with the bond of the surface sealer.

B. Entry ports for epoxy shall be provided, spaced far enough apart to assure that when the adhesive material shows at the adjacent port, it has completely filled the crack to its full depth. Entry ports shall be spaced along cracks and spacing usually determined by the tightness of the crack and the depth of the concrete substrate. Spacing is generally between 6 and 14 inches. A small reservoir shall be provided below the bottom of the port to aid in resin flow.

C. Injection ports shall be inserted into the drilled holes to about 1/2 inch allowing for the small reservoir below the port. The ports are then bordered into position with Epoxy Bonding Paste Product #5 or #6, for wet or dry applications, or Epoxy Systems' Product #48 (Filler 7), for dry applications. Care will be taken not to seal the ports from resin flow. If surface port system is used, care will be taken to insure that the crack is open at the point below the port, and that there is a proper reservoir beneath the port.

D. A surface seal or epoxy patch meeting the requirements of this specification shall first be applied to the exterior crack to prevent the escape of the injection resin. The cracks shall be covered with a bead of Epoxy Bonding Paste Product #5, #6 or #48 and smoothed with a putty knife to insure sealing.

E. Injection of the epoxy resin into a crack shall, unless permitted by the Engineer, begin first at the entry port of lowest elevation and continue until uncontaminated epoxy flows out of the adjacent port. Injection pressure shall be kept as low as practical and shall generally be between 20 p.s.i and 30 p.s.i plus any hydrostatic head. The connection between the entry port and the mix head of the injection nozzle must be sufficiently tight to prevent epoxy from running out on the concrete surfaces.

F. After injection at a given port is complete, this port shall be plugged and injection started at the next adjacent port. This procedure shall be repeated until the crack is completely filled. Upon completion surface to be left as noted on the Drawings.

## **QUALITY CONTROL**

A. The overall quality of the work shall be judged by the Contractors ability to achieve 90% penetration of the cracks. In case of a question as to quality of work, the Engineer will have

core samples taken from the completed work and assess the completeness of crack penetration.

B. The cores will be taken at location(s) determined by the Engineer and paid for by the OWNER. The contractor will not be responsible for the presence of inclusions of foreign matter in the cracks and susceptibility of such foreign matter to be removed by the recommended cleaning practices.

## **EXPERIENCE:**

It is expected that the contractor will furnish adequate labor, material and equipment such that the work will progress with out any undue and unnecessary interruption.

Proper mixing and installation is critical to the optimal success of all product. See [Installation Tips](#), [Techdata](#), & [MSDS](#) for more details on our products. Be sure to contact us with any questions and/or concerns that you have.

For more information please contact:

### **Epoxy.com**

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