

# STONCHEM 678 GUIDE SPEC

**SECTION 09800 - SPECIAL COATINGS**

**PART I GENERAL**

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Definitions: Multilayer, reinforced resinous lining includes penetrating, two-component epoxy primer, three-component mortar consisting of novolac epoxy resin, curing agent and finely divided mineral composite aggregate, engineering fabric, penetrating, two-component saturant, three-component mortarcoat consisting of novolac epoxy resin, curing agent and finely divided mineral composite aggregate and a highly impermeable, mineral composite topcoat.

B. Related Work

1. Division 3 Section Cast-in-Place Concrete

2. Division 7 Section Fluid Applied Waterproofing

3. Division 7 Section Joint Sealers

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, installation instructions, and general recommendations for each resinous lining material required. Include certification indicating compliance of materials with requirements.

B. Samples: Submit, for verification purposes, 4-inch square samples of each type of resinous lining required, applied to a rigid backing, in color and finish indicated.

1. For initial selection of colors and finishes, submit manufacturer's color charts showing full range of colors and finishes available.

1.04 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain primary resinous lining materials including primers, resins, hardening agents, finish or sealing coats from a single manufacturer with not less than ten years of successful experience in manufacturing and installing principal materials described in this section. Contractor shall have completed at least five projects of similar size and complexity; Stonhard or approved equal. Provide secondary materials only of type and from source recommended by manufacturer of primary materials.

B. Pre-Installation Conference

1. General Contractor shall arrange a meeting not less than thirty days prior to starting work.

2. Attendance

a. General Contractor

b. Architect/Owner's Representative

c. Manufacturer/Installer's Representative

1.05 DELIVERY, STORAGE AND HANDLING

A. Material shall be delivered to job site and checked by lining contractor for completeness and shipping damage prior to job start.

B. All materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on-site mixing errors. No on-site weighing or volumetric measurements allowed.

C. Material shall be stored in a dry, enclosed area protected from exposure to moisture. Temperature of storage area shall be maintained between 50 to 75oF/10 to 24oC.

1.06 PROJECT CONDITIONS

A. Concrete substrate shall be dense, free of voids, fins, honeycombs and other imperfections. Horizontal surfaces shall have a “once over” steel trowel finish (wood float, broom or machine trowel finishes are unacceptable). Finish concrete to the required grade, less allowance for overlayment thickness. A vapor barrier shall be present for concrete on or below grade to prevent osmotic pressure forces from affecting adhesion of overlayment. Cure concrete 30 days minimum and conduct the following tests prior to application of overlayment:

1. Test for “bird baths,” if complete drainage is critical, by flooding horizontal surfaces with water and marking unacceptable areas. Unacceptable areas are to be corrected prior to application of overlayment.

2. Test for unacceptable moisture content in concrete by the “plastic sheet” method (Ref. ASTM D-4263). The number of test sites shall be representative for the scope of work.

3. Test for acceptable concrete surface tensile strength of 200 psi minimum by using a “pull-off test” (Ref. ASTM D-4541) in which a 1.0 inch diameter hole is cut into the concrete. Using a polymer adhesive, glue a 0.8 inch diameter dolly to the area cut in the concrete. The number of test sites shall be representative for the scope of the work.

4. All patching and repair materials must be compatible with the overlayment and must be tested for acceptable surface tensile strength of 200 psi minimum by using “pull-off test” (Ref. A.3. above). The number of test sites shall be representative for the scope of the work.

5. Test for substrate temperature by using a surface dial thermometer or equal. Temperature shall be equal to or greater than the minimum temperature recommended by the overlayment material manufacturer. Generally, ideal temperature range is between 60 to 80°F/16 to 27°C. Material should not be applied if humidity is above 85%. Substrate temperatures should be greater than 5°F/3°C above the dew point.

6. Inspect for contamination, such as oil, grease, or chemical spills. Contamination must be removed prior to application of overlayment.

B. Utilities, including electric, water, heat (air temperature between 50 to 75oF/10 to 24oC) and finished lighting to be supplied by General Contractor.

C. Job area to be free of other trades during, and for a period of 24 hours, after lining installation.

D. Protection of finished lining from damage by subsequent trades shall be the responsibility of the General Contractor.

1.07 WARRANTY

A. Manufacturer shall furnish a single, written warranty covering both material and workmanship for a period of one (1) full year from date of installation.

**PART II PRODUCTS**

2.01 COLORS

A. Colors: Available in manufacturer's gray only.

2.02 EPOXY LINING

A. Stonchem 678 as manufactured by Stonhard, Maple Shade, NJ, (800) 257-7953, [www.stonhard.com](http://www.stonhard.com), is a nominal 140 mil thick fiberglass reinforced system comprised of a penetrating, two-component epoxy primer, three-component mortar consisting of novolac epoxy resin, curing agent and finely divided mineral composite aggregate, engineering fabric, penetrating, two-component saturant, three-component mortarcoat consisting of novolac epoxy resin, curing agent and finely divided mineral composite aggregate and a highly impermeable, mineral composite topcoat.

1. Physical Properties: Provide lining system in which physical properties of topping, when tested in accordance with standards or procedures referenced below, are as follows:

Compressive Strength 10,000 psi

(ASTM C-579)

Tensile Strength 3,000 psi

(ASTM D-638)

Flexural Strength 13,000 psi

(ASTM C-580)

Hardness 85-90

(ASTM D-2240, Shore D)

Bond Strength >400 psi

(ASTM D-4541) (100% concrete failure)

Abrasion Resistance 0.12 gm max. weight loss

(ASTM D-4060, CS-17)

Flexural Modulus of Elasticity 1.0 x 106 psi

(ASTM C-580)

Thermal Coefficient of

Linear Expansion 2.2 x 10-5 in./in.oC

(ASTM C-531)

Cure Rate 24 hours for normal operations

(@ 70oF/21oC)

2.03 ENGINEERING DETAILS

A. POINTS OF TERMINATION

1. Edges shall be chased to “lock” the lining into the concrete.

2. Tank perimeters shall be treated in one of three methods as specified by the Owner prior to bid:

a. Lining shall terminate at tank perimeter without sealing perimeter edge, to allow detection of leaks that may occur under the tank.

b. Lining shall terminate at tank perimeter with a compatible elastomer sealing the interface between the lining and the tank.

c. Lining shall lap and seal onto the perimeter of the tank by bridging over compatible elastomer at the tank/slab interface to compensate for possible movement.

3. Equipment support legs shall be treated in one of the two methods described in 2.b. or 2.c. above as specified by the Owner prior to bid.

4. Trench drains shall be treated in one of three methods as specified by the Owner prior to bid:

a. Steel angle trench lip must be anchored to prevent movement between the steel and concrete. Lining shall be chased to “lock” the lining where it terminates at the angle. Steel angle will be coated with material compatible with the lining material or will remain uncoated at Owner’s option.

b. Prefabricated polymer or alloy trenches must be anchored to prevent movement between the concrete and trench. Lining shall be chased to “lock” the lining where it terminates at the trench.

c. Concrete trench will be lined to maintain monolithic protection. “Cold Joint” will be treated by lining manufacturer to assure bridging of potential cracks.

5. Pipe drains shall be treated by chasing the lining to “lock” in place at point of termination. Pipe drain must be anchored to prevent movement between concrete and trench.

6. Pipe chases shall be treated by having the lining lap and seal onto the perimeter of the pipe chase.

B. JOINTS AND CRACKS

1. Control joints shall be treated by lining manufacturer to assure bridging of potential cracks and to maintain monolithic protection.

2. Cold joints or construction joints shall be treated by lining manufacturers to assure bridging potential cracks and to maintain monolithic protection on horizontal and vertical surfaces as well as horizontal and vertical interfaces.

3. Vertical and horizontal expansion/contraction joints shall be honored by installing backer rod and compatible sealant after lining is installed. Sealant shall be sufficient to handle traffic conditions and chemical exposures in area.

4. Cracks in vertical or horizontal concrete substrates shall be treated by lining manufacturer to assure bridging of cracks and to maintain monolithic protection.

**PART III EXECUTION**

3.01 PREPARATION

A. Substrate: Concrete preparation shall be by mechanical means and include use of a scabbler, scarifier or shot blast machine for removal of bond inhibiting materials such as curing compounds or laitance.

3.02 APPLICATION

A. General: Apply each component of resinous lining system in compliance with manufacturer's directions to produce a uniform monolithic wearing surface of thickness indicated, uninterrupted except at divider strips, saw joints or other types of joints (if any), indicated or required.

B. Primer: Mix and apply primer over properly prepared substrate with strict adherence to manufacturer's installation procedures and coverage rates. Coordinate timing of primer application with application of troweled mortar to ensure optimum adhesion between resinous lining materials and substrate.

C. Troweled Mortar: Mix mortar material according to manufacturer's recommended procedures. Uniformly spread mortar over substrate using manufacturer's specially designed hand trowel to manufacturer's recommended thickness. Hand trowel apply mixed material over freshly primed substrate.

D. Engineering Fabric: Embed fiberglass fabric into mortar material with strict adherence to manufacturer's installation procedures.

E. Saturant: Uniformly roll the saturant into the fiberglass fabric as recommended in manufacturer's application procedures.

F. Mortarcoat: Mix mortarcoat according to manufacturer's recommended procedures. Apply mixed material over surface with strict adherence to manufacturer's installation procedures.

G. Topcoat: Remove any surface irregularities. Mix and apply mineral composite topcoat with strict adherence to manufacturer's installation procedures.

3.03 FIELD QUALITY CONTROL

A. The right is reserved to invoke the following material testing procedure at any time, and any number of times during period of lining application.

B. The Owner will engage service of an independent testing laboratory to sample materials being used on the job site. Samples of material will be taken, identified and sealed, and certified in presence of Contractor.

C. Testing laboratory will perform tests for any of the characteristics specified, using applicable testing procedures referenced herein, or if none are referenced, in manufacturer's product data.

D. If test results show materials being used do not comply with specified requirements, Contractor may be directed by Owner to stop work; remove non-complying materials; pay for testing; reapply lining materials to properly prepared surfaces which had previously been coated with unacceptable materials.

3.04 CURING, PROTECTION AND CLEANING

A. Cure resinous lining materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 24 hours.

B. Protect resinous lining materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application. General Contractor is responsible for protection and cleaning of surfaces after final coats.

C. Cleaning: Remove temporary covering and clean resinous lining just prior to final inspection. Use cleaning materials and procedures recommended by resinous lining manufacturer.

END OF SECTION

10/09/03