

SECTION 09 67 23.14

CHEMICAL RESISTIVE RESINOUS FLOORING
04/08

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ACI INTERNATIONAL (ACI)

ACI 503R (1993; R 2008) Use of Epoxy Compounds with Concrete

ASTM INTERNATIONAL (ASTM)

ASTM C 307 (2003; R 2008) Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing

ASTM C 413 (2001; R 2006) Absorption of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing and Polymer Concretes

ASTM C 531 (2000; R 2005) Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing, and Polymer Concretes

ASTM C 579 (2001; R 2006) Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes

ASTM C 580 (2002; R 2008) Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes

ASTM C 722 (2004) Chemical-Resistant Resin Monolithic Surfacing

ASTM D 1308 (2002; R 2007) Effect of Household Chemicals on Clear and Pigmented Organic Finishes

ASTM D 4060 (2007) Abrasion Resistance of Organic Coatings by the Taber Abraser

ASTM D 4263 (1983; R 2005) Indicating Moisture in Concrete by the Plastic Sheet Method

ASTM E 162 (2009) Surface Flammability of Materials
Using a Radiant Heat Energy Source

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910 Occupational Safety and Health Standards

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Flooring; G

Drawings indicating the type and layout of the floor system.

SD-03 Product Data

Sealer and Resin; G
Floor Surfacing; G

Flooring manufacturer's descriptive data, mixing, proportioning, and installation instructions. Include maintenance literature for resinous flooring.

SD-04 Samples

Flooring Systems; G

Cured samples of each floor finish or color combination.

SD-07 Certificates

Qualifications of Installer; G

A written statement from the floor manufacturer that the installer is acceptable.

SD-08 Manufacturer's Instructions

Application; G

Complete instructions for application of flooring system including any precautions or special handling instructions required to comply with OSHA 29 CFR 1910-Subpart Z.

SD-10 Operation and Maintenance Data

Flooring Systems; G; G,

Data Package 1 in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

1.3 QUALITY ASSURANCE

Perform installation by an applicator approved by the manufacturer of the floor surfacing materials. Furnish a written statement from the manufacturer detailing the Qualifications of Installer.

1.4 DELIVERY, STORAGE, AND HANDLING

Deliver the materials to the project site in unopened bags and containers clearly labeled with the name of the manufacturer, type of material, batch number, and date of manufacture. Store materials, other than aggregates, away from fire, sparks, or smoking areas. Maintain the storage area between 50 and 90 degrees F.

1.5 ENVIRONMENTAL REQUIREMENTS

Maintain the ambient room and floor temperatures at 65 degrees F, or above, for a period extending from 48 hours before installation until one week after installation. Cure concrete for at least 28 days and keep it free of water for at least 7 days prior to receiving surfacing in accordance with ASTM D 4263. Measure and insure moisture content of wood substrates between 8 and 10 percent prior to application.

PART 2 PRODUCTS

2.1 MATERIALS

Provide materials (except aggregate) used in the flooring from a single manufacturer. Furnish and install trowel or spray applied 1/8 inch thick, epoxy, polyester, or other resinous material conforming to ASTM C 722 with Type A surfacings (chemical resistance and moderate to heavy traffic resistance) resin-based flooring. Meet the following material requirements:

2.1.1 Primer

Type recommended by the manufacturer to penetrate into the pores of the substrate and bond with the floor surfacing matrix to form a permanent monolithic bond between substrate and surfacing matrix.

2.1.2 Aggregate

Provide silica sand, quartz, granite, or other suitable chemical resistant material having a Mohr's hardness of not less than 6.0 selected from manufacturer's standard aggregates aggregate.

2.1.3 Binder

Provide thermo-setting epoxy binder.

2.1.4 Fillers

If required, provide inert silica, quartz or other hard aggregate material fillers as recommended by the flooring manufacturer. Furnish fillers in the quantity necessary to impart the required color and physical characteristics. Provide a filler containing sufficient fines to obtain an even-textured, nonslip type of surface on the finished topping.

2.1.5 Top Coating

Furnish gray color coating of type recommended by the manufacturer.

2.2 FLOORING SYSTEMS

The complete systems, after curing, shall have the following properties when tested in accordance with the test methods listed for each property.

2.2.1 Epoxy Matrix Floor Surfacing

- a. Compressive Strength: ASTM C 579; 10,000 psi minimum at 7 days.
- b. Tensile Strength: ASTM C 307; 600 psi minimum at 7 days.
- c. Flexural Modulus of Elasticity: ASTM C 580; 250,000 psi minimum at 7 days.
- d. Thermal Coefficient of Expansion: ASTM C 531; 0.00004 inches per inch per degree F maximum.
- e. Shrinkage: ASTM C 531; 0.5 percent maximum.
- f. Bond Strength: ACI 503R, 300 psi minimum with 100 percent concrete failure (2500 psi Compressive Strength Concrete).
- g. Flame Spread Index: ASTM E 162; 25 maximum.
- h. Smoke Deposited: ASTM E 162; 4 mg maximum.
- i. Abrasion Resistance: ASTM D 4060; 15 mg maximum weight loss.
- j. Moisture Absorption: ASTM C 413; 1.0 percent maximum.
- k. Chemical Resistance: ASTM D 1308; no effect when exposed to the following reagents for 7 days:

Acetic acid: 5 percent solution
Ammonium Hydroxide: 10 percent solution
Citric Acid: 5 percent solution
Coffee
Coca Cola Syrup
Isopropyl Alcohol
Mineral Oil
Sodium Hydroxide: 5 percent solution
Tri-Sodium Phosphate: 5 percent solution
Urea: 6.6 percent solution

2.3 SEALER AND RESIN

Provide a sealer product recommended by the industrial resin-based flooring manufacturer; when applied to the resin topping and dried, it must be nonslip and resistant to staining and suitable for the type application indicated.

2.4 WALL BASE

2.4.1 Resilient Base

Provide Type I (rubber) Style B, (coved) base, 4 inches high and a minimum 1/8 inch thick with Job formed corners.

2.5 COLOR

Provide color gray.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

Completely remove existing resilient flooring and adhesive by scraping. Remove all dirt, dust, debris, and other loose particles by sweeping or vacuum cleaning. Protect adjacent surfaces not scheduled to receive the flooring by masking, or by other means, to maintain these surfaces free of the flooring material.

3.1.1 Concrete Surfaces

3.1.1.1 Mechanical Cleaning

Completely remove dirt, wax, paint, laitance, by grinding with a terrazzo machine, sanding with coarse open grid sandpaper, sand blasting, chipping, bush hammering, or wire brushing.

3.1.2 Substrate Cracks, Spalls, Joints, and Depressions

Fill all cracks, joints, spalls, and other depressions in the substrate with a latex underlayment, as recommended by the manufacturer compatible with the floor surfacing material.

3.2 MIXING

Proportion and mix the floor surfacing components in accordance with the manufacturer's instructions.

3.3 APPLICATION

Apply primer, floor surfacing, and seal coat in accordance with the manufacturer's recommendations and the following requirements.

3.3.1 Primer

Apply primer uniformly over the entire area to receive floor surfacing using clean rubber squeegees or clean steel trowels. Do not allow primer to collect in depressions. Allow primer to dry thoroughly before the next coat is applied. Reprime porous areas or areas where primer has dried.

3.3.2 Floor Surfacing

Apply mixed surfacing material to provide a non slip finish floor surfacing not less than 1/8 inch thick. The entire surfacing in any one room or area must be one continuous operation except for placement of divider strips at structural floor control joints or as indicated. All surfaces must be flush, true to plane and line, and level within 1/4 inch in 10 feet.

3.3.3 Seal Coat

Apply seal coat uniformly covering all surfaces after floor surfacing has cured and as recommended by the supplier.

3.4 PROTECTION

Allow surfacing to set for a minimum period of 48 hours before traffic is allowed on the floor. Protect finished flooring from traffic by covering with 30 pound building paper or other equally effective means until final acceptance of the project.

-- End of Section --