

**SECTION 09 67 23
RESINOUS FLOORING**

 SPEC WRITER NOTES:

1. Use this section only for NCA projects.
2. Delete // ____// if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.
3. Use in animal facilities, cage wash areas, and as scheduled in H-08-14.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies a seamless flooring system with integral base.
- B. Flooring consists of epoxy resin, aggregate, and finish coats for non-slip finish.

1.2 RELATED WORK

- A. Color and Room Finish Schedule: Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 SUSTAINABILITY REQUIREMENTS

- A. Materials in this section may contribute towards contract compliance with sustainability requirements. See Section 01 81 11, SUSTAINABLE DESIGN REQUIREMENTS, for project // local/regional materials, // low-emitting materials, // recycled content, // ____// requirements.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 1. Description of product to be provided; technical data showing compliance with specifications.
 2. Application and installation instructions, including proposed deviations from specifications.
- C. Samples:
 1. Each color specified in Section 09 06 00, SCHEDULE FOR FINISHES.
 2. Sample 300 mm (12-inch) square in each finish specified.
 3. Sample showing construction from substrate to finish surface in thickness specified.
- D. Certification and Approval:
 1. Submit manufacturer's certification of material compliance.
 2. Provide statement of manufacturer's approval of installers.

3. Submit Contractor's certificate of compliance with Quality Assurance requirements.
 4. Provide documentation from an independent testing agency indicating compliance with the FloorScore standard.
- E. Warranty: Manufacturer's warranty of materials and installation.

1.5 QUALITY ASSURANCE

- A. Single Source Responsibility:
1. Obtain primary resinous flooring materials including primers, resins, hardening agents, finish or sealing coats from a single manufacturer.
 2. Provide secondary materials only of type and from source recommended by manufacturer of primary materials.
- B. Installer Qualifications: Installer trained and approved by manufacturer of primary material and having completed at least five projects of similar size and complexity.
- C. Pre-Installation Conference:
1. Arrange a meeting not less than thirty days prior to starting work.
 2. Attendance:
 - a. Contractor.
 - b. RE/COR.
 - c. Manufacturer and Installer's Representative.

1.6 MATERIAL PACKAGING DELIVERY AND STORAGE

- A. Deliver materials to the site in original sealed packages or containers, clearly marked with the manufacturer's name or brand, type and color, production run number and date of manufacture.
- B. Protect materials from damage and contamination in storage.
- C. Maintain temperature of storage area between 15°C and 32°C (60° and 90°F).
- D. Package materials in factory pre-weighed and in single, easy to manage batches sized for ease of handling and mixing proportions from entire package or packages.

1.7 WARRANTY

- A. Work subject to the terms of the Article "Warranty of Construction" FAR clause 52.246-21.
- B. Extend warranty period to three years.

SPEC WRITER NOTES:

1. Update and specify in publications listing and Part 2 only that, which applies to the project.

1.8 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

SPEC WRITER NOTES:

1. Remove reference citations that do not remain in Part 2 or Part 3 of edited specification.
2. Verify and make dates indicated for remaining citations the most current at date of submittal; determine changes from date indicated on the TIL download of the section and modify requirements impacted by the changes.

B. American Society for Testing and Materials (ASTM):

B221M-21	Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
C267-20	Chemical Resistance of Mortars, Grouts, and Monolithic Surfacing
C413-18	Absorption of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacing, and Polymer Concretes
C580-18	Flexural Strength and Modulus of Elasticity of Chemical Resistant Mortars, Grouts, Monolithic Surfacing and Polymer Concretes
C722-18	Chemical-Resistant Resin Monolithic Surfacing
C882/C882M-20	Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear
D635-22	Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position
D2047-17	Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
D2240-15 (2021)	Rubber Property - Durometer Hardness
D4060-19	Abrasion Resistance of Organic Coatings by the Taber Abraser
F1869-22	Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
F2170-19a	Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

- C. National Association of Architectural Metal Manufacturers (NAAMM):
AMP 501 Finishes for Aluminum

PART 2 - PRODUCTS

SPEC WRITER NOTES:

1. Make material requirements agree with applicable publications specified in the referenced Applicable Publications. Update and specify only that which applies to the project.

2.1 SYSTEM DESCRIPTION

- A. Epoxy resinous flooring includes concrete epoxy primer, colored quartz aggregate epoxy resin mortar, clear epoxy sealer coat, and finish coat for non-slip finish.
- B. System to be resistant to chemicals and abrasion.
- C. Comply with requirements of FloorScore standard.

2.2 EPOXY FLOORING SYSTEM

SPEC WRITER NOTES:

1. Type A surfacings are chemical resistant and moderate to heavy traffic resistant.
2. Modify to Type B for mild chemical resistance and severe thermal shock stability.

- A. Conform to ASTM C722, Type A, Epoxy resin, quartz aggregate.
- B. Physical Properties of flooring system addition to C722 when tested as follows:

PROPERTY	TEST	VALUE
Hardness	ASTM D2240 Shore Durometer	75-80
Bond	ASTM C882 Bonding epoxy flooring to hardened concrete	min 400 psi
Water Absorption	ASTM C413	max 0.1 percent
Abrasion Resistance	ASTM D4060 Taber Abrader CS-17 wheel, 1000 gm load; 1000 cycle	max 0.10 gms. weight loss
Flexural Strength	ASTM C580	min 2200 psi
Extent of Burning extinguishing Heat Resistant	ASTM D635 For continuous exposure min 140 deg. F For intermittent spills min 200 deg. F	max 0.25-inch self No Effect No Effect
Coefficient of Friction	ASTM D 2047	0.7
Chemical Resistance of the following: Acetic acid	ASTM C267 5 percent	No Effect

PROPERTY	TEST	VALUE
Ammonium hydroxide	10 percent	
Citric Acid	50 percent	
Fatty acid Motor Oil, 20W		
Hydrochloric acid	10 percent	
Salt water	10 percent	
Sodium Hydroxide	10 percent	
Sulfuric acid	5 percent	
Trisodium phosphate		
Urine		
Feces		
Hydrogen peroxide	28 percent	
Distilled Water		
Sodium Hypochloride	5.28 percent	

- C. Primer, Coloring, Sealer, and Finish coats as standard with manufacture of flooring system.
- D. Base Cap: Extruded aluminum, clear anodized finish unless specified otherwise in Section 09 06 00, SCHEDULE FOR FINISHES.

2.3 BASE CAP STRIP

- A. Aluminum, Extruded: ASTM B221, Alloy 6063-T6.
- B. Shape for 5 mm (3/16 inch) depth of base material, "J" configuration.
- C. Finish:
1. Finish exposed surfaces in accordance with NAAMM Metal Finishes Manual.
 2. Aluminum: NAAMM Amp 501:
 - a. Clear anodic coating, AA-C22A41 chemically etched medium matte, with Architectural Class 1, 0.7 mils or thicker.
 - b. Colored anodic coating, AA-C22A42, chemically etched medium matte with Architectural Class 1, 0.7 mils or thicker.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

- A. Maintain temperature of materials above 21°C (70 degrees F), for 48 hours before installation.
- B. Maintain temperature of rooms where work occurs, between 21°C and 32°C (70°F and 90°F) for at least 48 hours, before, during, and 24 hours after installation. Maintain temperature at least 21°C (70 degrees F) thereafter.
- C. Do not install materials until building is permanently enclosed and wet construction is complete, dry, and cured.
- D. Concrete substrate cured and not less than 30 days old.

- E. Area free of other trades during and for a period of 24 hours after installation.

3.2 INSTALLATION REQUIREMENTS

- A. The respective manufacturer's instructions for application and installation will be considered for use when approved by the RE/COR.
- B. Submit proposed installation deviation from this specification to the RE/COR indicating the differences in the method of installation.

3.3 PREPARATION

- A. Prepare surface in accordance with manufacturer's instructions.
- B. Mechanically remove bond inhibiting materials and loose or laitance materials to ensure bond.
- C. Moisture Testing: Perform moisture and pH test as recommended by the flooring and adhesive manufacturers. Perform test locations starting on the deepest part of the concrete structure. Proceed with installation only after concrete substrates meet or exceed the manufacturer's requirements. In the absence of specific guidance from the flooring or adhesive manufacturer the following requirements are to be met:
 - 1. Perform moisture vapor emission tests in accordance with ASTM F1869. Proceed with installation only after substrates have a maximum moisture-vapor-emission rate of 1.36 kg of water/92.9 sq. m (3lb of water/1000 sq. ft.) in 24 hours.
 - 2. Perform concrete internal relative humidity testing using situ probes in accordance with ASTM F2170. Proceed with installation only after concrete reaches maximum 75 percent relative humidity level measurement.
- D. Prepare wall and set base cap mold level.
 - 1. Fill voids within the height of the wall where base is applied even with the wall surface.
 - 2. Grind, sand, or cut away protrusions.

3.4 APPLICATION

- A. Mix and apply each component of resinous flooring system in compliance with manufacturer's specifications to produce a uniform monolithic flooring surface of 5 mm (3/16 inch) minimum thickness.
- B. Turn flooring up for coved 100 mm (4-inch) high base at vertical wall surfaces and penetrations. Cove joint with floor; 6 mm (1/4 inch) radius. Round interior and external corners.
- C. Apply primer over prepared substrate at manufacturers specified rate. Coordinate timing of primer application with application of troweled

mortar to ensure optimum adhesion between resinous flooring materials and substrate.

- D. Uniformly spread mortar over substrate adjusted to manufacturer's recommended maximum thickness to plane line of floor.
- E. Trowel finish for smooth surface on base and coved surface.
- F. Grout mortar surface as specified by manufacturer and broad cast colored quartz aggregate uniformly distributed for non-slip texture on floors to within one inch of base cove horizontal edge.
- G. Apply a clear finish coat.

3.5 CURING, PROTECTION, AND CLEANING

- A. Cure resinous flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process.
- B. Close area of application for a minimum of 24 hours.
- C. Protect resinous flooring materials from damage and wear during construction operation.
 - 1. Cover flooring with kraft paper.
 - 2. Covers paper with 6 mm (1/4 inch) thick hardboard, plywood, or particle board where area is in foot or vehicle traffic pattern, rolling or fixed scaffolding and overhead work occurs.
- D. Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer.

3.6 TOLERANCE

- A. From Line of Plane: Maximum 3 mm (1/8 inch) in total distance of flooring and base.
- B. From Radius of Cove: Maximum of 3 mm (1/8 inch) plus or 1.6 mm (1/16-inch) minus.

- - - E N D - - -