

DIVISION 9

FINISHES

SECTION 09 6717
EPOXY FLOORING

PART 1 - GENERAL

1.1 SUMMARY:

- A. Work of this section includes installation of low-odor, seamless, liquid applied epoxy flooring and integral base in areas indicated.

1.2 SUBMITTALS:

- A. Product data: Submit manufacturer's data and application instructions. Include statement that installed flooring will comply with non-slip properties specified.
- B. Samples: Submit 6" by 6" samples for Architect's selection showing non-slip finish and manufacturer's standard colors.
- C. Maintenance data: Submit bound brochures containing manufacturer's detailed maintenance and care instructions.

1.3 QUALITY ASSURANCE:

- A. Applicable standards; standards of the following, as referenced herein:
 - 1. ASTM International (ASTM).
 - 2. American National Standards Institute (ANSI).
- B. Installer and manufacturer qualifications:
 - 1. Installer: Trained and approved in writing by flooring system manufacturer.
 - 2. Manufacturer: Minimum five years of production and installation of specified system.
 - 3. Products: System components furnished by same manufacturer.

1.4 DELIVERY, STORAGE AND HANDLING:

- A. Deliver materials to project site in manufacturer's unopened containers with labels intact.
- B. Store materials indoors; protect from contamination.

1.5 PROJECT/SITE CONDITIONS:

- A. Environmental requirements: Work of other trades shall be complete in installation area, to eliminate dust, dirt, damage or other deleterious conditions during installation of flooring. Maintain temperature before, during and after installation until flooring is cured, at a temperature range as recommended by flooring manufacturer's product data.
- B. Provide controlled ventilation in spaces being floored. Maintain ventilation throughout curing period.
- C. Coordination: Coordinate requirements for special finishing and curing of concrete floor slabs with requirements of structural specifications.

1.6 WARRANTIES:

- A. Installer and flooring manufacturer shall jointly warranty flooring material and application for a period of three years, for its normal and intended use; should flooring need repair or replacement, Owner will incur no cost for repair or replacement. Warranty shall begin on Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 EPOXY FLOORING:

- A. Acceptable manufacturers, subject to compliance with specified requirements:
1. Basis of design: Key Resin, Key Quartz T-250 with slip-resistance finish.
 2. Dexotex, Div. of Crossfield Products Corp.
 3. General Polymers Corp.
 4. Selby, Div. of BASF Building Systems.
- B. Characteristics:
1. Type: Multi-colored graded aggregate embedded in tinted epoxy resin with clear epoxy resin finish coat.
 2. Thickness: 3/16", minimum.
 3. Colors: As selected by Architect from manufacturer's standard colors.
- C. Physical properties:
1. Flammability: Self extinguishing hen tested in accord with ASTM D635-06.
 2. Fungus and bacteria resistance (MIL F-52505, 4.4.2.11): Shall not support growth of fungus or bacteria when subjected to mildew and bacteria tests specified in TT-P-34.
 3. Adhesive strength: 420 psi when tested in accord with MIL F-24613.
 4. Hardness: 8-84 when tested in accord with ASTM D2240-05, Shore D.
 5. Water absorption: Nill when tested in accord with MIL F-24613.
 6. Thermal shock resistance: Pass ASTM C884-98(2005).
 7. Abrasion resistance: 50 mg when tested in accord with ASTM C501-84(2002).
 8. Impact resistance: Withstand 16 ft/lbs without cracking, delamination or chipping.
 9. Compressive strength: 14,000 psi minimum when tested in accord with ASTM C579-01(2006).
 10. Tensile strength: 2,400 psi minimum when tested in accord with ASTM C307-03.
 11. Flexural strength: 4,200 psi minimum when tested in accord with ASTM C580-02.
 12. Coefficient of friction: 0.70 when tested in accord with ASTM D2047-04.
 13. Thermal coefficient of expansion: 26×10^{-6} when tested in accord with ASTM C531-00(2005), in/in/degree F.

2.2 ACCESSORY MATERIALS:

- A. Accessory materials: Provide primers and other accessories as required.
- B. Joint sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated.

PART 3 - EXECUTION

3.1 EXAMINATION:

- A. Perform bond and moisture tests on subfloors in accord with ASTM F2170-02 and epoxy flooring manufacturer's product data to determine if surfaces are acceptable to receive specified epoxy flooring products. Correct conditions detrimental to epoxy flooring installation prior to starting installation.
- B. Concrete surfaces to receive flooring shall have a smooth light steel trowel finish, within tolerances specified in Concrete section and cured with compounds acceptable as substrate for flooring system in accord with epoxy flooring system manufacturer's product data.
- C. Concrete surfaces to receive flooring shall be free of dust, dirt, laitance, grease and other materials deleterious to proper bonding of flooring to substrates.

3.2 PREPARATION:

- A. Prior to application of prime coat, clean surfaces to receive flooring. Remove debris, dirt and foreign substances.
- B. Patch cracks and other imperfections in substrates in accord with epoxy flooring system manufacturer's product data.
- C. Maintain slopes to drains in repair areas. Determine any deviations to the uniformly sloped concrete substrates by either of the following methods:
 - 1. Flood floor and mark residual puddles greater than 1/16" deep.
 - 2. Use a 10'-0" metal straightedge and mark variations greater than 1/16".
 - 3. Submit, in writing, a proposal for correcting any unsatisfactory conditions found from the above method(s) to the Architect.
 - 4. Ensure that no ponding occurs in finished flooring system.

3.3 INSTALLATION:

- A. Apply flooring material in accord with manufacturer's product data. Rate of application shall not be less than recommended by manufacturer's product data.
- B. Extend flooring material up wall surface to form integral covered base. Bond directly to wall surfaces. Bases in wet areas shall be free of seams which could allow water to enter substrate.
- C. Cure flooring for period recommended by manufacturer's product data before allowing traffic on surface.
- D. Completed flooring shall be uniform in color, texture and aggregate distribution. Surface shall be in place and uniform and free of bubbles, foreign material, defect or irregularity. Trim edges and where material abuts adjacent construction. Edges at doors shall occur under closed door.
- E. At terminations and doorways, sawcut concrete and chisel out to provide proper termination of flooring material; no feathered edges allowed.
- F. If slope between high points is found to be inadequate, correct slope to achieve proper runoff.

- G. Site tolerances:
 - 1. Finished floor shall be level and true to line in an undivided space: $\pm 1/4"$; maximum $\pm 1/16"$ in a running foot.
 - 2. No water shall stand between high point and low point (floor drain) on finished product.

3.4 CLEANING AND PROTECTION:

- A. During installation of a floor, do not allow foreign materials to enter floor drains. Leave drain covers and cleanouts loose, clean and accessible. Do not smear walls, columns, machinery or furniture with epoxy or other materials. Clean up aggregate and resins that are residuals to topping system.

End of Section

SECTION 09 9000
PAINTING AND COATING

PART 1 - GENERAL

1.1 SUMMARY:

- A. Work of this section includes:
1. Painting, staining or otherwise finishing of all surfaces, except as otherwise indicated.
 2. Touching up of shop-applied prime coats.
 3. Preparation of surfaces to receive finishes.
- B. Related work specified elsewhere:
1. Shop-applied primer coats.
 2. Joint sealants.
 3. Special finishes.
 4. Piping identification.
 5. Prefinished items.

1.2 SUBMITTALS:

- A. Product data:
1. Submit complete list of products proposed for use at least 30 days prior to commencement of painting work.
 2. Indicate manufacturer, brand name, quality, type, and sheen for each type of paint and for each surface to be finished. Indicate VOC rating and compliance with applicable regulations.
 3. Indicate manufacturer's instructions regarding mixing, surface preparation and application. Include application rates, film thickness and required primers.
 4. Intent of Contractor to use products specified does not relieve him from responsibility of submitting product list.
- B. Color samples: Submit two sets of color samples from paint manufacturers proposed for use, for color selections by Architect.
- C. Card stock brush-outs: Following issue of color schedule prepare two sets of color coat brush-outs for each paint and stain color and sheen scheduled, applying actual finish color coat to standard sample card stock, minimum 80 sq. in. size.
- D. Substrate brush-outs:
1. In addition to color coat brush-outs, submit one actual brush-out sample application for each paint and stain type, stain color and sheen as applicable to all substrates.
 2. Apply complete finish system in the number of coats specified, to the actual substrate material or simulated material indicated; allow 1" offset of each successive coat along one edge to illustrate successive applications.
 - a. Concrete unit masonry: One face of a concrete block of the type and texture actually used on the project.
 - b. Concrete, drywall and stucco: Apply over gypsum board, 1'-0" by 1'-0" size, edges taped and sanded.
 - c. Metals: Apply over hardboard, 1'-0" by 1'-0" size.

- d. Painted wood: Wood stock typical of type, color and cut actually used on the project, minimum 6" wide by 1'-0" long.
- e. Stained or transparent finished wood: Wood stock typical of type, species, grade, color and cut actually used on project, minimum 6" wide by 1'-0" long.

1.3 QUALITY ASSURANCE:

- A. Applicable standards, as referenced herein: Environmental Protection Agency (EPA), volatile organic compounds (VOC) standards as required by local codes and regulations.

1.4 DELIVERY, STORAGE AND HANDLING:

- A. Delivery: Deliver materials to project site ready-mixed in original containers with labels intact; labels bearing manufacturer's name, paint type, color and recommended installation and reducing procedures.
- B. Storage and handling:
 - 1. Store materials in location acceptable to Architect.
 - 2. Maintain neat, clean conditions in storage area; remove rags and waste materials at end of each day's work.
 - 3. Close containers at end of day's work. Leave no materials open.

1.5 PROJECT/SITE CONDITIONS:

- A. Environmental requirements:
 - 1. Comply with manufacturer's product data as to environmental conditions under which materials may be applied.
 - 2. Apply no materials in spaces where dust is being generated.
 - 3. Comply with applicable VOC regulations.
- B. Protection: Cover finished work of other trades and surfaces not being painted concurrently and prefinished items.
- C. Safety precautions:
 - 1. Provide temporary fire protection equipment in materials storage area.
 - 2. Prohibit smoking in storage area.

PART 2 - PRODUCTS

2.1 PAINTING MATERIALS:

- A. Acceptable manufacturers: Except as otherwise noted, products specified as a standard of quality are manufactured by Porter Paint Co. Products of the following manufacturers similar in type and quality are acceptable for use, subject to approval of product list:
 - 1. Scheduled herein: PPG Architectural Finishes, Inc./Porter Paint Co.
 - 2. Scheduled for color match: Duron Paints.
 - 3. Benjamin Moore Co.
 - 4. ICI Paints.
- B. Where products other than those of the manufacturer listed as the standard of quality are specified in Painting Schedule, such products have been selected to achieve specific results and substitutions will be allowed only in accord with substitution procedures section.

- C. Miscellaneous materials:
 - 1. Paint thinners and tints shall be products of same manufacturer as paints or approved by him for use with his products.
 - 2. Shellac, turpentine, patching compounds and similar materials required for execution of work shall be pure, best quality products.
- D. Paint colors will be as selected by Architect with final approvals based on brush-out submittals.

PART 3 - EXECUTION

3.1 PREPARATION:

- A. Surfaces to receive finishes shall be dry and free of debris, oils, dust or other deleterious materials.
- B. Where finish materials abut or are abutted by dissimilar materials, caulk joints in accord with Joint Sealants section.
- C. Lumber, plywood and veneered wood surfaces:
 - 1. Apply shellac, maximum two pounds cut to knots, pitch and resinous sapwood prior to application of first paint or stain coat.
 - 2. For surfaces to receive opaque finish, fill nail holes, cracks, joints and defects with spackling compound. Apply after first coat of paint.
 - 3. For surfaces to receive transparent finish, fill nail holes, cracks and defects with wood filler matching finish color.
 - 4. Sand surfaces smooth except where rough sawn surfaces are indicated. Final step shall remove scuffs, handling marks and effects of moisture exposure. Dust to remove debris.
 - a. Sand plane surfaces using sanding block; touch sand moldings in manner preventing removal of sharp edges or obscuring profile.
 - b. Moldings cut with machine finish or minimum 16 knife cuts per inch shall not require further sanding except to correct irregularities.
 - c. Sand surfaces within normal visual range, including surfaces within 10'-0" of floor level, using not less than 80 grit abrasive exterior or 100 grit abrasive interior, except increase to 120 to 180 grit abrasive for transparent finished interior surfaces.
 - d. Install prefinished or presurfaced items following finishing or sanding of adjacent surfaces. Replace prefinished items damaged by finishing of adjacent work.
- D. Concrete:
 - 1. Fill cracks, holes and irregularities with cement grout.
 - 2. Remove laitance, oil, grease, dirt and debris from surfaces. Allow concrete to cure prior to paint application.
- E. Galvanized metals:
 - 1. Test for passivator or stabilizer using copper sulfate solution (20 grams of copper sulfate in one liter of water). If passivator or stabilizer is present, remove by brush blasting, sanding or chemical etching.
 - 2. Wash with xylol to remove grease, oil and contaminants. Wipe dry with clean cloth.
- F. Aluminum:
 - 1. Sand or scrape to remove oxides.

2. Wash with xylol to remove grease, oil and contaminants. Wipe dry with clean cloth.
- G. Ferrous metals:
1. Wire-brush or sandpaper to remove rust and mill scale.
 2. Solvent-clean with xylol to remove grease, oil and contaminants. Wipe dry with clean cloth.
- H. Ferrous and galvanized metals and aluminum to receive epoxy finish:
1. Ferrous metals: Brush sandblast, power tool clean, or hand tool clean to remove rust and mill scale.
 2. Ferrous and galvanized metals and aluminum:
 - a. Remove dirt and dust with stiff bristle brush or compressed air.
 - b. Solvent clean with xylol or mineral spirits to remove grease, oil and contaminants. Wipe dry with clean cloth.

3.2 APPLICATION:

- A. Apply paint only when moisture content of surfaces is within limits recommended in product data. Apply paint materials using clean brushes, rollers or spraying equipment.
- B. Apply materials at rate not exceeding that recommended in product data for surface being painted, less ten percent for losses.
- C. Comply with product data for drying time between coats.
- D. Sand and dust between coats to remove defects visible from a distance of 5'-0".
- E. Finish coats shall be smooth, free of brush marks, streaks, laps or pile-up of paint, skipped or missed areas.
- F. Do not apply additional coats until completed coat has been observed by Architect. Only these coats of paint will be considered in determining number of coats applied.
- G. Make edges of paint adjoining other materials or colors clean and sharp without overlapping.
- H. Primer coats may be omitted for surfaces specified to receive factory-applied primer, if primer is compatible with finish coats. If primer coats are not compatible, substitute a bond coat as recommended by paint manufacturer for specified primer coat.
- I. Where two-coat finish is specified, prime coat shall be tinted to approximate finish color.
- J. Where portion of finish on drywall partition is damaged or unacceptable, refinish entire surface of partition.
- K. Seal tops and bottoms of interior doors with prime coat only; side edges same as faces.
- L. Finish all edges of exterior doors same as faces.

- M. Backprime exterior and interior finish carpentry and millwork with material specified for prime coat, without runs on face. Finish cut edges prior to installation.
- N. Paint inside of ductwork flat black for entire area visible through ceiling openings. Paint underside of ductwork and other above-ceiling items flat black for entire area visible through ceiling openings.
- O. Paint exposed piping and ductwork in painted spaces same as adjacent wall surfaces.
- P. Unless otherwise indicated, paint all construction on roof top, including prefinished mechanical and electrical equipment.
- Q. Unless otherwise indicated, paint all ground mounted mechanical, plumbing and electrical equipment, including prefinished equipment.
- R. Paint exposed grilles and registers in public spaces.
- S. Paint walls, exposed structure, handrails and exposed ductwork and piping in stairwells.
- T. Remove and protect hardware, accessories, device plates, lighting fixtures, factory-finished work and similar items, or provide in-place protection. Upon completion of each space, replace removed items.

3.3 PAINTING SCHEDULE:

- A. Surfaces not requiring painting:
 - 1. Prefinished surfaces and items, except where specifically indicated otherwise.
 - 2. Concealed ductwork, conduit and piping.
- B. Exterior surfaces; number of coats specified are minimum:
 - 1. Ferrous, galvanized metals and aluminum at Pavilion indicated to receive urethane finish, gloss:
 - a. First coat: No. 94-109 PPG MULTIPRIME EFD Epoxy Fast Dry Inhibitive Primer.
 - b. Second coat: No. 95-812 PPG PITTHANE ULTRA Gloss Urethane Enamel.
 - 2. Ferrous metals and aluminum, acrylic enamel:
 - a. First coat: 6-208/212 PPG Speedhide Alkyd Rust Inhibitive Steel Primers.
 - b. Second coat: 90-374 Series Gloss PPG Pitt Tech Interior/Exterior DTM Waterborne Acrylic Enamel.
 - c. Third coat: 90-374 Series Gloss PPG Pitt Tech Interior/Exterior DTM Waterborne Acrylic Enamel.
 - 3. Galvanized metals, acrylic enamel:
 - a. First coat: 90-708 Series PPG Pitt Tech Interior/ Exterior DTM Waterborne Acrylic Primer/Finish.
 - b. Second coat: 90-374 Series Gloss PPG Pitt Tech Interior/ Exterior DTM Waterborne Acrylic Enamel.
 - c. Third coat: 90-374 Series Gloss PPG Pitt Tech Interior/ Exterior DTM Waterborne Acrylic Enamel.

- C. Interior surfaces; number of coats specified are minimum:
1. Concrete unit masonry, acrylic gloss enamel:
 - a. First coat: Porter Paints/PPG; 6223 QUIK-FIL 600 Interior/Exterior Latex Block Filler (28 g/L VOC); 4.8 to 14 Dry Mils.
 - b. Second coat: Porter Paints/PPG; 2909 PORTER GUARD DTM Acrylic Gloss Enamel (104 g/L VOC); 1.0 to 1.3 Dry Mils.
 - c. Third coat: Porter Paints/PPG; 2909 PORTER GUARD DTM Acrylic Gloss Enamel (104 g/L VOC); 1.0 to 1.3 Dry Mils.
 2. Plywood for painted finish, alkyd gloss enamel:
 - a. First coat: 17-956 PPG Seal Grip Interior Enamel Undercoater & Primer.
 - b. Second coat: 6-282 Series PPG Speedhide Alkyd Gloss Enamel.
 - c. Third coat: 6-282 Series PPG Speedhide Alkyd Gloss Enamel.
 3. Ferrous and galvanized metals and aluminum at wet/high abuse areas, epoxy polyamide:
 - a. First coat: 97-145 Series PPG PITT-GUARD DTR Epoxy Mastic Coating.
 - b. Second coat: 95-1 Series PPG Aquapon 35 Polyamide-Epoxy Gloss Coating.
 - c. Third coat: 95-1 Series PPG Aquapon 35 Polyamide-Epoxy Gloss Coating.

End of Section