

SAMPLE SPECIFICATION

**Part 1        General**

**1.1        SECTION INCLUDES**

- A. Labor, products, equipment and services necessary for resinous flooring Work in accordance with the Contract Drawings covering the following components:
  - .1        Primer: Petra Coatings LLC, WH7000
  - .2        Black Primer: Petra Coatings LLC, ESD Ground Plane
  - .3        Top Coat: Petra Coatings LLC, SL-45n ESD Top Coat

**1.2        RELATED SECTIONS**

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 03 01 00 - Concrete Rehabilitation.
- C. Section 03 39 00 - Concrete Curing.

**1.3        REFERENCES**

- A. ASTM C579, Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
- B. ASTM D2240, Standard Test Method for Rubber Property—Durometer Hardness.
- C. ASTM D2369, Standard Test Method for Volatile Content of Coatings.
- D. ASTM D4060, Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
- E. ASTM D4541, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
- F. For additional standards please refer to Product Data Sheets

**1.4        SUBMITTALS**

- A. Comply with Section 01 33 00 - Submittal Procedures.
- B. Product Data: Submit manufacturer's product data, including physical properties and colors available.
- C. Manufacturer's Safety Data Sheet for each product being used.
- D. Product Samples: Submit Architectural Standard samples representative of the final finish, as applied, 12" X 12" in size. The Standard shall be approved in writing by the Architect and shall be the final standard of acceptance of the finish.
- E. Maintenance Instructions: Submit manufacturer's maintenance instructions.

**1.5        QUALITY ASSURANCE**

- A. Manufacturer Qualifications:
  - .1        Acceptable Manufacturer: Petra Coatings LLC, 533 Red Bird Lane, Bowie, TX 76230
    - .1        No request for substitution shall be considered that would change the generic type of system specified. Equivalent materials of other

SAMPLE SPECIFICATION

manufacturers may be substituted only on approval of the Architect or Engineer. Requests for substitution will be considered only if submitted 10 days prior to bid date. Requests shall include the respective manufacturer's technical literature for each product giving the name, generic type, descriptive information, recommended dry film thickness (DFT), Safety Data Sheet (SDS), and certified test reports showing results to equal performance criteria of products specified herein.

- B. Applicator Qualifications:
  - .1 Pre-Qualification: Each bidder for this project shall be pre-qualified and approved in writing by the material manufacturer.
  - .2 Applicator Experience: Each bidder must have a minimum 5 years experience in the application of the type of system specified. Contractor shall submit a list of five projects of similar size, scope and complexity.
- C. Mock-Up:
  - .1 Construct one 100 sq.ft. (10 sq.m.) mock-up of each type and color of resinous flooring in location acceptable to Architect/Engineer to demonstrate quality of finished system, and to confirm acceptable electrical readings, complying with manufacturer's instructions.
  - .2 Arrange for Architect/Engineer's review and acceptance, obtain written acceptance before proceeding with Work.
  - .3 Upon acceptance, mock-up shall serve as a minimum standard of quality for the balance of the work of this Section. Mock-up shall be left in place for the duration of the work.
- D. Pre-application Meeting: Convene a pre-application meeting two (2) weeks before start of application of floor coating. Require attendance of parties directly affecting work of this section, including Contractor, Architect, applicator, and manufacturer's representative. Review surface preparation, priming, application, curing, protection, and coordination with other work.

**1.6 DELIVERY, STORAGE AND HANDLING**

- A. Delivery:
  - .1 Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, batch or lot number, and date of manufacture.
  - .2 Material should be delivered to job site and checked for completeness and shipping damage prior to job start.
- B. Storage:
  - .1 Store materials in accordance with manufacturer's written instructions.
  - .2 Keep containers sealed until ready for use. Material should be stored in a dry, enclosed, protected area from the elements.
  - .3 Do not subject material to excessive heat or freezing.
  - .4 Shelf life: Established based on manufacturer's written recommendation for each material being used.
- C. Handling: Protect materials during handling and application to prevent damage or contamination.

SAMPLE SPECIFICATION

- D. Condition materials for use accordingly to manufacturer's written instructions prior to application.
- E. Record material lot number and quantity delivered to jobsite/storage.

**1.7 SITE CONDITIONS**

- A. Do not install the Work of this Section outside of the following environmental ranges with Manufacturers' written acceptance:

*SPECIFIER'S NOTE:*

*Note: Low Ambient Temperature may result in slower cure.*

*Dew Point: Beware of condensation!*

*The substrate must be at least 5°F (3°C) above the Dew Point to reduce the risk of condensation, which may lead to adhesion failure or "blushing" on the floor finish. Be aware that the substrate temperature may be lower than the ambient temperature.*

- .1 Material Temperature: Precondition material for at least 24 hours between 65° to 75°F (18° to 24°C)
  - .2 Ambient Temperature: Minimum/Maximum 55°/85°F (13°/30°C)
  - .3 Substrate Temperature: Minimum/Maximum 55°/85°F (13°/30°C). Substrate temperature must be at least 5°F (3°C) above measured Dew Point.
  - .4 Mixing and Application attempted at Material, Ambient and/or Substrate Temperature conditions less than 65°F (18°C) will result in a decrease in product workability and slower cure rates.
  - .5 Relative Ambient Humidity: Minimum ambient humidity 30%, maximum ambient humidity 75% (during application and curing)
  - .6 Measure and confirm Substrate Moisture Content, Ambient Relative Humidity, Ambient and Surface Temperature and Dew Point.
- B. Substrate moisture:
    - .1 Moisture content of concrete substrate must be ≤ 85% RH, tests may be conducted per ASTM F2170 and values must be ≤ 85%.
    - .2 If moisture content of concrete substrate is > 85% RH consider moisture mitigation systems or moisture tolerant primer.
  - C. Utilities, including electric, water, HVAC and permanent lighting to be supplied by General Contractor
  - D. Maintain constant ambient room temperature of plus or minus 15°F (plus or minus 7°C) with a minimum temperature of 50°F (10°C) and maximum temperature of 85°F (30°C). Maintain constant ambient room temperature for 48 hours before, during and after installation, or until cured. Do not apply while ambient and temperatures are rising.
  - E. Erect suitable barriers and post legible signs at points of entry to prevent traffic and trades from entering the work area during application and cure period of the floor.
  - F. Protection of finished floor from damage by subsequent trades shall be the responsibility of the General Contractor.
  - G. Insure adequate ventilation and air flow.

SAMPLE SPECIFICATION

**1.8 WARRANTY**

- A. Manufacturer's warranty covering the resinous flooring against defects in materials for one year from date of installation.

**Part 2 Products**

**2.1 MANUFACTURER**

- A. Approved Manufacturer shall be Petra Coatings, LLC, 533 Red Bird Lane, Bowie, TX 76230, Phone 940-872-8832, Fax 940-872-8833, www.PetraCoatings.com

**2.2 SYSTEM**

*SPECIFIER'S NOTE:*

*Petra SL-45n System consists of Petra WH7000 Primer, and Petra Conductive Ground Plane (only for conductive floors), and Petra SL-45n Top Coat. The system is designed to impart electrostatic control properties to a variety of substrates in conjunction with ESD footwear, including existing non-conductive substrates. The system provides low body voltage values (BVG) when used with the appropriate ESD standards. Maintains electrical conductivity throughout the entire thickness of the system. Conforms to ANSI S20.20; Flooring/footwear combination resistance of  $< 3.5 \times 10^7$  ohms when tested in accordance with ANSI STM 97.1. When using Petra Conductive Ground Plane it is possible to achieve lower resistance measurements ( $2.5 \times 10^4$  to  $1.0 \times 10^6$  ohms). Petra SL-45n Epoxy is typically installed as a stand-alone system over a standard 100% solids epoxy concrete primer (Petra WH7000), or moisture tolerant epoxy primer. When installed on existing epoxy coatings, an isolation layer of Petra WH7000 is required. When installed over a moisture tolerant epoxy primer, testing should be done to ensure proper compatibility and proper bonding.*

*SPECIFIER'S NOTE: The system thickness is adjustable to 28-50 mils depending on condition of use, thinner application will yield an orange peel finish, thicker applications will yield smoother finishes.*

- A. Petra SL-45n ESD System is designed to impart electrostatic control properties to a variety of substrates in conjunction with ESD footwear, including existing non-conductive substrates. Typically applied between 20 – 40 mils thick. System to consist of the following components:
  - .1 100% solids Epoxy Primer: Petra WH7000 (8 Mil)
  - .2 Ground Plane: Petra Conductive (when required) Ground Plane (5 mil)
  - .3 ESD Top Coat: Petra SL-45n ESD Top Coat (20-40 Mil)

**2.3 MATERIALS**

- A. Primer: Petra WH7000 a two part, epoxy resin for priming and build coats:
  - .1 Pull-off Strength (ASTM D4541):  $> 400$  psi (2.7 MPa) with 100% concrete failure.
  - .2 Shore D Hardness (ASTM D2240): 76 at 7 days.
  - .3 Solid Content:  $\sim 100\%$  (by volume) /  $\sim 100\%$  (by weight).
  - .4 VOC Content (ASTM D2369):  $\leq 20$  g/L.
  - .5 Permeability (ASTM E96):  $9.0$  g/m<sup>2</sup> (24 hours / +75°F).
  - .6 Water Absorption (ASTM D570):  $0.14$  g/h - m<sup>2</sup>.
  - .7 Viscosity (approximately) of Components A + B: 775 (SP2/100).

SAMPLE SPECIFICATION

- B. Black Primer: Petra Conductive Ground Plane is a two-component water based epoxy coating with high electrostatic conductivity. It is designed for use in combination with Petra ESD Top Coats. Petra Conductive Ground Plane has the following properties:
  - .1 Pull-off Strength (ASTM D4541): > 350 psi (2.76 MPa) with 100% concrete failure.
  - .2 Solid Content: Approx. 45%
  - .3 VOC Content (ASTM D2369): ≤ 10 g/L.
- C. Top Coat: Petra SL-45n ESD Top Coat is a two component 100% solids ESD epoxy coating system designed with Nano-Technology for use in combination with or without Petra Conductive Ground Plane, with the following properties:
  - .1 Pull-off Strength (ASTM D4541): > 350 psi (2.4 MPa) with 100% concrete failure.
  - .2 VOC Content (ASTM D2369): ≤ 20 g/L.
  - .3 Tabor Abrasion Resistance (ASTM D4060): 0.01 - 0.02 grams (CS-17 Wheel, 1000 gm load, 1000 cycles).
  - .4 Gloss (60°): 80 – 90
  - .5 Viscosity: 300 - 650 cps. at 73° F (23° C).
  - .6 Flexibility (ASTM D522): 1/4 in. (.62 cm.) passes test
- D. Cove base: Epoxy mortar cove based.

**Part 3 Execution**

**3.1 EXAMINATION**

- A. Examine surfaces to receive flooring system. Notify Architect/General Contractor/Owner/Owner's representative if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected. Do not apply to substrate treatments for moisture, repair, or leveling not of the same Manufacturer.
- B. Surface must be clean, sound and dry. Remove dust, laitance, grease, curing compounds bond inhibiting impregnations, waxes and any other contaminants. All projections, rough spots, etc. should be dressed off to achieve a level surface prior to the application.
- C. Concrete substrate to have a minimum compressive strength of 3,500 psi (24 MPa) at 28 days and a minimum of 215 psi (1.5 MPa) in tension at time of application.
- D. Substrate moisture:
  - .1 Measure and confirm Substrate Moisture Content, Ambient Relative Humidity, Ambient and Surface Temperature and Dew Point.
  - .2 Confirm and record above values at least once every 3 hours during installation, or more frequently whenever conditions change (e.g. Ambient Temperature rise/fall, Relative Humidity increase/decrease, etc.).
- E. Ensure concrete substrate conforms to the minimum requirements of the flooring manufacturer.
- F. Flooring system shall not be applied to sand-cement setting beds. Sand-cement beds shall be removed to structural concrete substrate and re-leveled/sloped as necessary to achieve grade and/or adequate drainage.

SAMPLE SPECIFICATION

- G. Flooring system shall not be applied to asphaltic or bitumen membranes, soft wood, aluminum, copper or fiberglass reinforced polyester/vinyl ester composites.
- H. Application to glazed or vitrified brick and tile, structural wood, steel shall only be permitted with Manufacturer's written recommendation.

**3.2 SURFACE PREPARATION**

- A. Prepare surface to receive flooring systems in accordance with manufacturer's written instructions.
- B. Remove dirt, oil, grease, wax, laitance, curing compounds, water-soluble concrete hardeners, and other surface contaminants. Remove sealers, finishes, and paints. Remove unsound concrete by appropriate mechanical means.
- C. Concrete: Shall be cleaned and prepared to achieve laitance-free and contaminant-free, open textured surface by shot blasting or equivalent mechanical means (CSP level as per ICRI guidelines and manufacturer's written recommendation).
- D. Chemical Surface Preparation: Chemical surface preparation (acid etching) is unacceptable and will void Manufacturer's warranty.
- E. Control joints and cracks: Provide repair and treatment of control joints and surface cracks utilizing manufacturer's standard materials and installation details.

**3.3 APPLICATION**

- A. Mix and apply material with strict adherence to manufacturer's written installation procedures and coverage rates.
- B. Follow Manufacturer's written recommendations on terminations and connections to walls, drains, doorways, columns and floor-to-floor transitions.
- C. Do not apply while ambient and substrate temperatures are rising.
- D. Apply resinous flooring with care to ensure that no laps, voids, or other marks or irregularities are visible, and with an appearance of uniform color, sheen and texture, all within limitations of materials and areas concerned.
- E. Match colors and textures of approved samples.
- F. Install cove base [...] high with [...] radius in accordance with manufacturer's written instructions.

**3.4 CLEAN UP**

- A. Disposal of this product, solution and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.
- B. Empty containers should be taken to an approved waste handling site for recycling or disposal.

**3.5 PROTECTION**

*SPECIFIER'S NOTE:* Under certain conditions, cure times, recoat times and return to service time may be shortened due to environmental conditions. Consult Manufacturer's Product Data Sheets, and review job site conditions to determine if shorter times can be achieved.

- A. Freshly applied material should be protected from dampness, condensation and water for at least 72 hrs.

SAMPLE SPECIFICATION

- B. Beware of air flow and changes in air flow. Introduction of dust, debris, and particles, etc. may result in surface imperfections and other defects.
- C. Follow manufacturer's written recommendation with respect to cure, wait time and return to service.

**END OF SECTION**

All information provided by Petra Coatings LLC ("Petra") concerning Petra products, including but not limited to, any recommendations and advice relating to the application and use of Petra products, is given in good faith based on Petra's current experience and knowledge of its products when properly stored, handled and applied under normal conditions in accordance with Petra's instructions. In practice, the differences in materials, substrates, storage and handling conditions, actual site conditions and other factors outside of Petra's control are such that Petra assumes no liability for the provision of such information, advice, recommendations or instructions related to its products, nor shall any legal relationship be created by or arise from the provision of such information, advice, recommendations or instructions related to its products. The user of the Petra product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with the full application of the product(s).

Petra reserves the right to change the properties of its products without notice. All sales of Petra product(s) are subject to its current terms and conditions of sale that are available at [www.PetraCoatings.com](http://www.PetraCoatings.com) or by calling 940-872-8832.

Prior to each use of any Petra product, the user must always read and follow the warnings and instructions on the product's most current Technical Data Sheet, product label and Safety Data Sheet that are available at [www.PetraCoatings.com](http://www.PetraCoatings.com) or 1-940-872-8832. Nothing contained in any Petra materials relieves the user of the obligation to read and follow the warnings and instruction for each Petra product as set forth in the current Technical Data Sheet, product label and Safety Data Sheet prior to product use.