Duraamen Engineered Products Inc. - Guide Specification

Self-leveling Concrete Topping over Concrete Substrates or certain Non-Porous Substrates

**SECTION 03 54 16**

**PART 1 GENERAL**

* 1. RELATED DOCUMENTS

1. Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
2. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and vice versa.
   1. SUMMARY
3. This is the recommended specification for installing Calcium Aluminate and Portland Cement based self-leveling concrete topping, Param 5500 over concrete substrates or certain non-porous substrates and subsequently sealed with clear resinous coatings so as to achieve a highly durable polished concrete surface.
   1. RELATED SECTIONS
4. Section 03 30 00, Cast-in-Place Concrete
5. Section 03 36 00, Concrete Finishes
6. Section 07 26 19, Topical Moisture Vapor Mitigation
7. Section 09 61 00, Flooring Treatment
   1. REFERENCE STANDARDS
8. The latest published edition of a reference shall be applicable to this project unless identified by a specific edition date.
9. All reference amendments adopted prior to the effective date of this Contract shall be applicable to this Project.
10. All materials, installation and workmanship shall comply with all applicable requirements and standards.
11. ASTM C109M, Compressive Strength Air-Cure Only
12. ASTM C348, Flexural Strength of Hydraulic Cement Mortars
13. ASTM C190, Method of Test for Tensile Strength of Hydraulic Cement Mortars
14. ASTM C 1583, Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension
15. ASTM C4541, Standard Test Method for Pull-Off Strength of Coatings using Portable Adhesion Testers
16. ASTM F2170, Relative Humidity in Concrete Floor Slabs Using in situ probes
17. ASTM F1869, Moisture Vapor Emission Rate for Concrete subfloor using Anhydrous Calcium Chloride
18. ASTM F710 – Standard Practice for Preparing Concrete Floors to receive Resilient flooring
    1. SUBMITTALS
19. Product Data: Submit manufacturer’s technical data sheet and installation instructions for each product used in this project. Also, include SDS in the submittals.
20. Experience Statement of the Installer
    1. QUALITY ASSURANCE
21. Installation of Duraamen Engineered Products must be completed by a trained and experienced applicator (or installer) who is properly equipped for application of high performance flooring systems and has at least 5 years’ successful experience in installing similar products. Please contact Duraamen at (866) 835 6595 to obtain a list of qualified installers close to the project location.
22. All the products used in this Section must be procured from the single manufacturer. If the products are procured from different sources, then the installer must submit in writing that the products from different sources are compatible with each other.
23. On Site Mock-Up – The selected installer must provide on-site mockup of all the products used in this section. The mockup must be at least 100sq.ft. area. It must be approved by the Project Architect and/or Client Representative before beginning the actual installation.
24. Installer to verify locations of all flexible joints required by the provisions of this Section and by the recommendations of the related material manufacturers.
25. Installer to keep daily log of the date of installation, space identification, type, color and method of application of the product being installed. The log must be available for inspection by the Architect upon request.
    1. DELIVERY, STORAGE and HANDLING
26. Deliver products in original packaging, labeled with product identification, manufacturer, batch number and shelf life.
27. Store the packaged products to protect them from elements or physical damage.
28. Do not use products that show indications of moisture damage, caking, leaks or other signs of deterioration.
    1. PROJECT CONDITIONS
29. Check each products limitations with regards to minimum and maximum substrate and ambient temperature before beginning the installation. Follow manufacturer recommendations.
30. The substrate temperature must be at least 50 above dew point prior to during or up to 24 hours after application of flooring system.
31. Illumination: Install the flooring system only where a minimum of 30 foot-candles exist when measured 3 feet from the surface.
32. Protect adjacent surfaces not scheduled to receive the flooring system covered in this section by masking, or by other suitable means, to maintain these surfaces free of the flooring material.
33. Provide adequate ventilation and fire protection at all mixing and placing operations. Prohibit smoking or use of spark or flame producing devise within 50 feet of any mixing or placing operation.
34. Provide protective gear for all workmen engaged in applying products specified in this section.

**PART 2 PRODUCTS**

2.1 PRODUCT SELECTION

1. Source of Supply – Obtain all products used in this section from one single manufacturer.

2.2 MANUFACTURER

1. Acceptable manufacturer: Duraamen Engineered Products Inc., 116 West 23rd Street, 5th Floor, New York, NY 10011 | Tel: (866) 835-6595 | email: [info@duraamen.com](mailto:info@duraamen.com) | [www.duraamen.com](http://www.duraamen.com)
2. Substitutions: Not permitted
3. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 – Product Requirements

2.3 MATERIALS – BASIS OF DESIGN

1. Primers
2. Paramol, vinyl acetate based primer/bonding agent OR
3. Perdure MVT, 100% solids moisture vapor resistant epoxy
4. Self-leveling concrete topping - Param 5500, calcium aluminate-Portland cement based self-leveling concrete topping designed to level and smooth interior concrete, terrazzo, ceramic and quarry tile, metal, wooden substrates, and non-soluble adhesive residue on concrete prior to the installation of finished flooring on all grade levels. Performance/Physical Properties at 700F -
5. Flow working time: 20 minutes
6. Final Set: Approximately 60 minutes (ASTM C191)
7. Compressive Strength: 2000psi at 4 hours, 5500psi at 28 days, ASTM C109M
8. Flexural Strength: 1100 psi at 28 days, ASTM 348
9. Tensile Strength: 570 psi at 28 days, ASTM C190
10. VOCL: 0g/L, calculated SCAQMD 1168
11. Colorants – Chose from
12. Colorfast, Integral color packs for self-leveling concrete AND/OR
13. DESO Dyes, Water/Solvent based topical colorants for concrete
14. Protective top coats
15. Perdure A03, water based acrylic sealer
16. Perdure E32, water based epoxy sealer
17. Option Body Coat in High Traffic Areas - Perdure E10, 100% solids epoxy body coat
18. Choose from Perdure U45 (matt) and Perdure U46 (gloss), water based polyurethane topcoat, Perdure U90, moisture cured polyurethane available in gloss and satin topcoat
19. ACCESSORIES
20. Perdure EJF, Epoxy joint filler
21. Perdure ECF, Epoxy crack filler

**PART 3 EXECUTION**

3.1 Surface Preparation

1. Concrete Substrates: Prepare substrate in accordance with manufacturer’s instructions.
2. Refer to ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring before proceeding.
3. Concrete substrates must be sound, clean and free of all dirt, oil, grease, laitance, curing compounds and any substance that may act as a bond breaker. If necessary, mechanically clean and remove contaminants by chipping, shot-blasting, grinding or scarifying. Removal with solvents, strippers and acid etching are not acceptable.
4. Concrete Substrate shall be inspected in accordance with ASTM F2170 and corrected for moisture vapor emission and relative humidity. Follow manufacturer recommendations for treating substrates that exceed maximum allowed moisture vapor emission and relative humidity. The General Contractor shall be responsible for hiring an independent testing service to test for moisture vapor emission rate. Install no flooring over concrete until the concrete has been cured and is sufficiently dry to achieve permanence with flooring as determined by material manufacturer’s recommended bond and moisture tests.
5. All cracks in the subfloor must be repaired or treated to minimize crack telegraphing through the concrete topping. Moving cracks, expansion joints and isolation joints must be honored through the applied flooring system. Use Perdure EJF and/or Perdure ECF as per manufacturer’s installation instructions.
6. Concrete slab shall have an efficient puncture-resistant moisture vapor barrier 10 mil thick minimum placed directly under the concrete slab (for slab on grade).
7. Non-Porous Substrates: Epoxy, Terrazzo, Ceramic and Quarry tiles must be abraded to achieve a CSP of 3 or 4. The surface must be thoroughly cleaned before the installing the system.
8. Adhesive Residue: Thin, translucent adhesive residue must be insoluble in water, tack free and well bonded to the substrate. The Cutback adhesive must be prepared using the wet scrape method as outlined in the Resilient Floor Covering Institute booklet “Recommended Work Practices for the Removal of Resilient Floor Coverings”. Remove all patching materials below the adhesive and avoid applications where heat or excessive moisture will soften or degrade the adhesive. If unsure about the suitability of the adhesive, remove the adhesive using shot blast method or PCD grinding pads.

3.2 Installation

1. Priming
2. After surface preparation, prime the substrate with Paramol as per the instructions given in the product technical data sheet
3. If the results from the Calcium Chloride and Relative Humidity tests exceed the stipulated limits, then use Perdure MVT (or MVT+) as per the product technical data sheet.
4. Placing Self-leveling concrete topping
5. Mix and pour Param 5500 to the desired thickness as per instructions in the product technical data sheet
6. Param 5500 can be integrally colored with Colorfast Color Packs if chosen the by the Project Architect / Client
7. Follow manufacturer written instructions regarding the minimum and maximum thickness for Param 5500.
8. Sealing
9. Allow Param 5500 to cure for at least 24 to 36 hours and sand the surface with 80 or 100 grit sanding screen under a floor buffing machine.
10. If topical coloring option is chosen, apply DESO Dyes as per the product technical data sheet. Allow the DESO Dye to dry for 1 to 2 hours before proceeding to the next step.
11. Apply water based acrylic sealer, Perdure A03 over the entire Param 5500 as per the instructions in the product technical data sheet. To avoid roller marks, it is recommended to spray and back roll Perdure A03. Allow it to dry for at least 3 to 4 hours before proceeding the next step.
12. Apply water based epoxy Perdure E32 as per the instructions in the product technical data sheet. Allow this to cure at least 24 hours before proceeding to the next step.
13. In high traffic areas, application of 100% solids epoxy Perdure E10 is recommended. Apply Perdure E10 as per instructions in the product technical data sheet. Allow Perdure E10 to cure for at least 24 hours and tack free before proceeding to the next step.
14. Apply polyurethane top coats, Perdure U45, U46 or U90 (gloss or satin) as per the approved mockups. Follow product technical data sheets for application instructions.
15. Curing & Protection
16. Allow the top coat to cure for at least 24 to 36 hours (at 700F) before allowing foot traffic.
17. Perform detailed cleaning at floor termination, to leave cleanable surface for subsequent work of other sections.
18. Protect finished work until the topcoat is fully cured.
19. This flooring system is intended for foot traffic, moderate, rubber-wheeled traffic and similar uses. If the floor is subjected to steel or hard plastic-wheeled traffic, or dragging heavy metal equipment of loaded pallets with protruding nails over the floor, will cause gouging and indentations.

3.3 Maintenance

1. This flooring system requires routine cleaning and maintenance. Please follow the link below for detailed maintenance instructions.

<https://www.duraamen.com/site_media/media/product_files/Technical-Bulletin-3.pdf>

**END OF SECTION**