



SECTION 096700

Fluid Applied Flooring 1/8" Kwörtz Flooring System

This specification is provided by Düraamen Engineered Products as a service and is intended to be used as a guideline for preparing the appropriate project specific specification sections. Every heading may not be needed. Delete headings not used and renumber remaining used headings to be numerically correct.

PART I GENERAL

1.01 SUMMARY

- A. This section includes the following:
 - i. Fluid applied seamless flooring and integral formed base.
 - ii. Joint, edge and termination strips
 - iii. Prior to installation of structural floor slab, advise [General Contractor] [Construction Manager], in writing, of all requirements of concrete substrate regarding finish, level tolerance, curing and below substrate vapor barrier, see INSPECTION in Part 3
 - iv. Locate all flexible joints required. See submittals below.
 - v. Accessories necessary for complete installation.

1.02 RELATED SECTIONS

- A. Section 03300 – Cast-in-Place concrete
 - i. Concrete sub-floor to be level (maximum variation not to exceed 1/4inch in 10 feet) and to have a steel troweled finish. No curing agents or other additives which would prevent bonding should be used unless the mechanical surface preparation method completely removes the curing agent residue or sealer.
 - ii. Slabs on grade must have an efficient puncture resistant vapor barrier placed directly under the slab.
- B. Sealants: Section 07920
- C. Gypsum Drywall: Section 09250
- D. Adjacent Floor Finishes: Division 9

1.03 REFERENCES

- A. ASTM C-307, Test Method for Tensile Strength of Chemical –Resistant Mortars
- B. ASTM C-501, Test Method for Relative Resistance to Wear Unglazed Ceramic Tile by the Taber Abraser
- C. ASTM C-531, Test Method for Linear Shrinkage and Coefficient of Thermal expansion of Chemical-Resistant Mortars, Grouts and Monolithic Surfacing
- D. ASTM C-579, Test Methods for Compressive Strength of Chemical-Resistant Mortars and Monolithic Surfaces
- E. ASTM C-580, Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, grouts and Monolithic Surfaces
- F. ASTM C-884, Test Method for Thermal Compatibility between Concrete and Epoxy Resin Overlay
- G. ASTM D-570, Water Absorption of Plastics
- H. ASTM D-695, Compression Properties of Rigid Plastic
- I. MIL D-3 134 F, Impact Resistance, Section 4.7.3.
- J. MIL D-3 134 F, Indentation Resistance, Section 4.7.4.

- K. MIL D-3234 F, Resistance to Elevated Temperature, Section 4.7.5.
- L. ACI 301, Specifications for Structural Concrete for Buildings (most recent edition). Committee in Concrete 403 bulletin 59-43, Bond Strength to Concrete.

1.04 DEFINITIONS

- A. The resinous flooring system specified under this section is referenced on the drawings as 'Kwörtz Flooring'.

1.05 SYSTEM DESCRIPTION

- A. The Kwörtz flooring system shall be 1/8" textured epoxy surfacing with broadcast colored quartz to form a decorative skid-resistant surface. 100% solids fluid-applied flexible epoxy waterproofing/crack isolation membrane shall be used over entire floor substrate for waterproofing and crack isolation or as otherwise specified in the room finish schedule. Surface finish grout shall be a two component, 98% solids Polyaspartic Polyurea.

1.06 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - i. Surface preparation instructions and recommendations
 - ii. Storage and handling requirements and recommendations
 - iii. Installation methods
- C. Selection samples: Submit 6' X "cured samples of flooring system indicating color combination and no-skid properties. Approved samples will be used during installation for product match.
- D. Certified Test: Submit two copies of suppliers/manufacturers written certification that flooring system meets or exceeds required properties.
- E. Shop Drawings: Shop Drawings shall be furnished showing installation of cove base and termination details, and details at floor material transitions and where adjoining equipment. Locate and provide detailing for flexible joints required for flooring in area of installation.
- F. Installer's Project References: Submit list of successfully completed projects, including project name and location, name of architect, and type and quantity of decorative concrete floor finish systems applied.
- G. Maintenance Instructions: Submit current copies of the flooring manufacturer's printed recommendations on maintenance methods and products. Submit in accordance with Section 01730 – Operation and Maintenance Manuals.

1.07 QUALITY ASSURANCE

- A. Installer Qualifications:
 - i. Successful experience in application of similar decorative flooring systems.
 - ii. Employ persons trained for application of decorative concrete flooring systems.
 - iii. The special concrete finish manufacturer shall certify applicator.
 - iv. Applicator shall be familiar with the specified requirements and the methods needed for proper performance of work of these sections. Applicator must have availability of proper equipment to perform work within scope of this project on timely basis. Applicator should have successfully performed a minimum of 3 projects of at least 2500ft² each.
 - v. Installer to verify locations of all flexible joints required by the provisions of this Section and by the recommendations of the related material manufacturers.
 - vi. Installer to keep daily log of the date of installation, room number, type, color and method of application of product being installed. Log must be available for inspection by the Architect upon request.
- B. Manufacturer's Certification:
 - i. Provide a letter of certification from concrete finish manufacturer stating that installer is certified applicator of special concrete finishes, and is familiar with proper procedures and installation requirements required by the manufacturer.

- C. Mock-ups: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - i. Finish areas designated by Architect.
 - ii. Do not proceed with remaining work until workmanship, color, and sheen are approved by the Architect.
 - iii. Refinish mock-up area as required to produce acceptable work.
- D. Pre-Installation Conference:
 - i. Conduct conference at project site to comply with requirements in Division 1 Section "Project Management and Coordination".

1.08 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Prevent damage or contamination to materials by water, freezing, foreign matter or other causes.
- B. Store materials in dry protected area at a temperature between 60°F to 80°F. Deliver and store materials on site at least 24 hours before work begins.
- C. Follow all manufacturer's specific instructions and prudent safety practices for storage and handling.

1.09 PROJECT CONDITIONS

- A. Maintain the ambient room and the floor temperatures at 60°F or above, for a period extending from 72 hours before, during and after floor installation. Concrete to receive surfacing shall have cured for at least 28 days and shall have been free of water for at least 7 days.
- B. Dew Point: Substrate temperature must be minimum of 5° above dew point prior to, during or up to 24 hours after application of flooring system.
- C. Illumination: Apply flooring system only where a minimum of 30 footcandles exist when measured 3ft from surface.
- D. Advise other trades of fixtures and fittings not to be installed until flooring is cured and protected.

1.10 PROTECTION

- A. Protect adjacent surfaces not scheduled to receive the flooring by masking, or by other means, to maintain these surfaces free of the flooring material.
- B. Provide adequate ventilation and fire protection at all mixing and placing operations. Prohibit smoking or use of spark or flame producing devices within 50 feet of any mixing or placing operation.
- C. Provide polyethylene or rubber gloves or protective creams for all workmen engaged in applying products containing epoxy, polyurethane or polyaspartic polyurea.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Acceptable Manufacturer & Distributor: Düraamen Engineered Products Inc. with its corporate office located at 924 Bergen Avenue, Unit 103, Jersey City, NJ 07306. Tel: 866.835.6595 | F: 866.629.4157 | Email: info@duraamen.com website: www.duraamen.com
- B. Substitutions: Not permitted
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.
- D. Obtain products from a single supplier.

2.02 PRODUCTS

- A. Flexible Membrane: Flexible Epoxy, Perdüre FE80
- B. Prime Coat: Two-part penetrating epoxy, Perdüre E02 or moisture vapor control epoxy primer, Perdüre MVT
- C. Aggregates:
 - i. Blended quartz sand for base
 - ii. Color coated quartz with a minimum Mohs Hardness of 6.
- D. Matrix: Matrix – epoxy/aggregate composition
- E. Grout Topcoat (s): Clear two part, 98% solids Polyaspartic Polyurea.

2.03 SYSTEM PROPERTIES

A. Physical Properties

- i. Weight: 1.00lb/ft² per 1/8" thickness
- ii. Compressive Strength, ASTM C-579: 11,500psi
- iii. Tensile strength, ASTM C-307: 2400psi
- iv. Flexural Strength, ASTM C-580: 4300psi
- v. Indentation: MIL D-3134F Sec.4.7.4 – Withstands 2000psi for 30mins without indentation
- vi. Impact Resistance: MIL D-3134F, Sec.4.7.3: 16ft/lbs: no chipping, cracking or delamination
- vii. Adhesive Strength to Concrete: ACI 403 – 300psi (100% concrete failure)
- viii. Water Absorption, ASTM D 570: 0.10
- ix. Abrasion Resistance, ASTM C501: 32mg. max.
- x. Thermal Shock Resistance, ASTM, C 884: Passes
- xi. Thermal Coefficient of Expansion, ASTM C531: 22×10^{-6} in/in/⁰F

B. Provide slip-resistant, cleanable textured finish. Samples to be approved by the Owner and/or Architect.

C. Provide 4-6 inch integral covered base

2.04 Finishes

A. Color as selected by Architect from the manufacturer's standard patterns.

PART 3 EXECUTION

3.01 PREPARATION

A. Obtain architect's approval of mock-up before installing flooring; see QUALITY ASSURANCE in Part 1.

B. Preparation of Surface:

- i. Inspect surfaces to receive flooring and verify that condition is smooth and free from conditions that will adversely affect execution, permanence, or quality of work.
- ii. Remove all projections, all debris detrimental to flooring system, and dirt, oil contaminates, grease and surface coatings affecting bond.
- iii. Notify the Architect in writing prior to commencing work of any conditions deemed unsatisfactory for the installation; installation of flooring materials is understood as acceptance of the substrate as satisfactory.
- iv. Concrete: The General Contractor shall be responsible for hiring an independent testing to test for moisture content and moisture vapor emission rate; install no flooring over concrete until the concrete has been cured and is sufficiently dry to achieve permanent bond with flooring as determined by material manufacturer's recommended bond and moisture tests.
- v. Effectively remove laitance by steel shot blasting or other method approved by flooring manufacturer.
- vi. Concrete slab shall have an efficient puncture-resistant reinforced moisture vapor barrier 10mils thick minimum directly under the concrete slab (for slab on grade). Do not use vapor barrier manufactured with recycled material. Testing must be done to verify that the moisture vapor emission rate of the slab does not exceed that as recommended testing must conform to the requirements of ASTM F-1869-98 (Calcium Chloride Test) and ASTM F-2170-02 (Relative Humidity Probe Test). If test results show excessive levels of moisture content or vapor emission rate, apply manufacturer's recommended moisture vapor emission control material.
- vii. Treat cracks in concrete using manufacturer's recommended practice. Rout out crack and fill with rigid epoxy; coat with flexible membrane in accordance with manufacturer's recommendation to reduce cracking through flooring system. Refer to section 3.02.B.

3.02 INSTALLATION

A. Install all floor materials in strict conformance with manufacturer's instructions.

- B. Route out all cracks (larger than hairline width) and fill with Perdüre ECF or other material approved by Manufacturer of floor materials. Apply Perdüre FEO Flexible Membrane across the crack and 12 inches on either side at a spread rate of 50ft²/ga to achieve 30-35mils dry. Optional membrane reinforcement: Fiberglass scrim cloth is applied (using Perdüre E02) to top of cured membrane.
- C. Alternate to Step B for extensive cracking, for showers or as otherwise specified in the room finish schedule: Apply flexible membrane over entire floor surface as a crack reduction/waterproofing membrane at a spread rate of 50ft²/gal to achieve 30-35mils dry. Optional membrane reinforcement: Fiberglass scrim cloth reinforcement is to be applied over entire membrane or individual cracks as outlined in step B. Precaution: If area to receive flooring may be subjected to excessive thermal induced movement from sunlight exposure, consult with manufacturer before proceeding with full membrane coverage.
- D. Prime entire surface with recommended primer. If using one of the following moisture vapor control primers or treatments, apply prior to installation of crack isolation membrane and also use to fill cracks: Perdüre MVT.
- E. Apply epoxy and broadcast decorative aggregate in two applications to achieve a minimum thickness of 1/8".
- F. Apply UV light resistant epoxy grout coat(s) to provide a uniform, dense surface.
- G. Match finished work to approved samples, uniform in thickness, sheen, color, pattern and texture, and free from defects detrimental to appearance.
- H. Apply temporary protection until floor is fully cured. The General Contractor shall protect the finished floor from the time that the sub-contractor completes the work.
- I. Integral Cove Base: Where scheduled, provide integral cove base formed from flooring over tile backer board as specified under 09250 – Gypsum Drywall. Optional: provide cove trim at top of base as recommended by flooring manufacturer and trowel material up wall to form smooth, integral transition and base 4-6inches high unless otherwise indicated or scheduled.

3.5 PROTECTION

- A. Protect finished work until fully cured in accordance with manufacturer's recommendations.

END OF SECTION