

## 09673 SEAMLESS QUARTZ FLOORING AND BASE

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*SPECIFIER: This section covers seamless quartz flooring for various sorts of areas and functions (which may include stair treads and landings) in typical thicknesses, 1/8 in. being the most common. However, use only 1/4 in. in kitchens.  
For exterior use, specify UV-resistant topcoat, even at shaded surfaces.  
Avoid using smooth resilient floor coverings at surfaces with more than 3.8 in/ft incline:  
Seamless quartz offers a higher coefficient of friction for slip-resistance.  
CSI 2004 MasterFormat number: 09 67 26.*  
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### PART 1 GENERAL

#### 1.1 RELATED REQUIREMENTS

- A. Coordinate seamless quartz flooring and base with work before and after. See especially:
1. Specified concrete finish and curing of concrete at floor slabs and decks 03300
  2. Vapor retarder beneath concrete slab-on-grade 07262

#### 1.2 REFERENCES

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*SPECIFIER: For new work over the sturdy vapor retarder specified in 07262, the simpler standards of ASTM F710 are adequate, namely, “. . . consult the written instructions from the floor covering mfr . . .for their acceptable test methods . . . if these instructions are in conflict, the most stringent . . . shall apply.”  
F1869 seals a dish of lab-supplied CaCl<sub>2</sub> within a 6x6 in transparent cover for 24 hr, then sends the CaCl<sub>2</sub> to a lab for measurement. This takes time. Some producers, following F710, favor this method.  
F2170 requires drilling a hole 40% of the slab thickness, waiting, and then inserting an electronic probe to get s moisture reading. This takes time. Some producers, following F710, favor this method.*  
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- A. American Society for Testing and Materials (ASTM), latest edition:
1. F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
  2. F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
  3. F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In Situ Probes.
- B. Voices of Safety International (VOSI):
1. V41.22 Test Method for Slip-Resistant Footwear, as Measured Using a Drag Type Friction Tester.

#### 1.3 QUALITY ASSURANCE

- A. Installer: Certify that installer is approved by flooring producer.

B. Pre-Installation Meeting and Test:

1. Contractor, A/E, M-DCPS representative, testing agency, producer and installer shall meet at least 28 days before start of installation.
2. Schedule slab moisture test for no more than 7 days after meeting.

1.4 SUBMITTALS

A. Early Submittal: Submit text of Contractor and installer’s Special Warranty at least 10 weeks before seamless quartz flooring and base installation is to begin. Obtain approval of text by A/E and M-DCPS before making other submittals.

B. Product Data:

1. Test values for each quality specified in PART 2.
2. Static Coefficient of friction (SCoF) test values on unwaxed seamless quartz flooring surfaces ranging from fine to coarse texture.
3. Method of ensuring proper support and adhesion of base to soft substrates such as gypsum board.
4. Method of providing UV-resistance at exterior applications.
5. Producer’s standard color chart.
6. Installation instructions.

C. Samples: Provides two 4x4 in. samples, applied to thin concrete backing, in each color and texture selected by A/E.

D. Mockup after installation has started in each area of considerable substrate roughness to determine whether underlayment coat can be omitted after assessment by A/E and M-DCPS. A/E will direct where slab roughness requires mockup.

1. Contractor has the option of constructing all epoxy-quartz flooring in 4 coats, without mockup to determine if and where underlayment may be omitted.

E. Test Report: Moisture content of concrete floor substrate at time of installation.

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*SPECIFIER: Producers sell basic materials to installers with a seller’s limited warranty – just as suppliers of block, studs and nails do. No producers of resin or aggregate warrant installed work, in fact none even publishes a warranty form.*

*Problems tend to arise from moisture in slab or from unskilled application. The special warranty requirements below address the most common defects within the control of the installer.*

*The Contractor is considered responsible for providing the flooring installer with the specified concrete and concrete finish that meets the specified and tested moisture content.*

*The A/E is free to go against industry norms in composing its Special Warranty, but the text that follows tries to strike a reasonable level of practicality and protection for M-DCPS. The installer is still responsible for buying good material, starting work only when a proper slab surface is properly dry, and for applying with skill.*

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## 1.5 SPECIAL WARRANTY

- A. By Installer: In addition to the warranty and correction of work requirements of the General Conditions, provide a written and signed Special Warranty from the flooring installer (or Subcontractor), endorsed by Contractor, to correct (repair or replace) defects in the seamless quartz flooring work as follows:
1. Correct until date of Substantial Completion of the Work and for 5 years after.
  2. Agreeing to repair or replace flooring that shows significant loss of flooring aggregate; cracking, brittleness, crumbling, change of color, excessive indentation under normal foot and cart traffic and equipment loading, loss of adhesion of flooring to concrete, or of base to concrete and block wall surfaces.
  3. Exclusions: Minor loss of sheen at wear surfaces; cracks imparted solely by substrate cracking or movement; loss of adhesion that is demonstrably from substrate moisture; damage from abuse or lack of proper maintenance.

## PART 2 PRODUCTS

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*SPECIFIER: Underlayment and primer can often be omitted if the quality of the concrete (even after shot blasting) is not so rough as to affect appearance, and if good adhesion of the basecoat without primer is demonstrated by mockup, It is suggested that these primer and underlayment coats be left in the specification. Performance and visible quality of the 4-coats as a mockup under field conditions and the resulting quality of the 4-coat mockup area can then be assessed and verified by the A/E.*  
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## 2.1 SEAMLESS QUARTZ FLOORING

- A. Description: 4 coat assembly, containing 100% solids epoxy and silica/quartz aggregate.
1. Underlayment: Install an epoxy underlayment (usually silica-filled) where concrete slab is so rough as to telegraph pits, ridges or other unevenness to finished surface of flooring, or if concrete texture is not optimal for adhesion of basecoat.
    - a. Mockup on actual floor in the work: Underlayment may be omitted with approval of A/E after 100 ft<sup>2</sup> or more of floor area has been installed as a mockup in the selected color and texture. Mockup shall be in 4 coats.
    - b. Mockup assessment: When cured, the adhesion, smoothness and appearance of the resulting surface shall be assessed by the A/E and decision made as whether to continue with the underlayment or primer, or both, for the rest of the installation.
  2. Primer: Epoxy primer as recommended by producer to enhance adhesion, or as needed following A/E's assessment of mockup.
  3. Basecoat: Quartz, white or colored, in epoxy matrix, placed with epoxy resin in 1 or more passes.
    - a. Colors of aggregate and resin: As selected by the A/E from the basecoat producer's stock color selection.
    - b. Aggregate size: Fine; only coarse enough to develop specified SCoF.

4. Sealer coat: Epoxy (for interior work) or UV-resistant resin (for exterior work).
  - a. Color: Clear, or match basecoat, as needed to match approved sample.
5. Overall thickness of seamless quartz flooring assembly: As specified in PART 3.
6. Texture and Slip-Resistance of Base and Sealer Coats: Provide an orange peel (preferred) or rougher texture as needed to develop a SCoF = 0.60 or greater.
  - a. At ramps or any other surface sloping more than 1/2 in. in 1 ft , SCoF shall be 0.80 or greater.

B. Required qualities of seamless quartz flooring and base, tested as an assembly:

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|----------------------------|--|--------------------------|
| 1. Compressive strength:   | 9,000 to 14,000 lb/ft <sup>2</sup> ;   | ASTM C579.               |
| 2. Flexural strength:      | 3,200 to 4,500 lb/ft <sup>2</sup> ;  | ASTM C580.               |
| 3. Tensile strength:       | 1,600 lb/ft <sup>2</sup> minimum;  | ASTM C307.               |
| 4. Abrasion resistance:    | 0.15 g maximum weight loss; 1000 g load, 1000 cycles.  | ASTM D4060, CS-17 wheel, |
| 5. Impact resistance:      | 16 ft-lbs;   | MIL D-3134F.             |
| 6. Indentation:            | 0.03 in. maximum;  | MIL D-3134F.             |
| 7. Hardness:               | 75-85;   | ASTM D2240, Shore D.     |
| 8. CoE (thermal expansion) | 0.19-0.21 x 10 <sup>-6</sup> ;   | ASTM D696.               |
| 9. Water absorption:       | 0.15% maximum;   | ASTM C413.               |
| 10. SCoF (slip resistance) | 0.60 minimum, static coefficient of friction, wet, leather; VIOS V41.22 or equal performance under one of the ASTM tests, as judged by A/E.<br>At stair treads, landings and ramps, provide 0.80 SCoF minimum. |                          |
| 11. VOCs in epoxy resin:   | Less than 1% by weight.  |                          |
| 12. Flammability:          | Self-extinguishing;  | ASTM D570 or D635.       |

C. Product / Producer:

1. Cheminert, by Dex-O-Tex.
2. Dur-A-Quartz, by Dur-A-Flex
3. Stonshield HRI, by StonHard, Inc.
4. Morritex, by Valspar.
5. Equal product in quality and performance as reviewed and approved by A/E and M-DCPS.

2.2 SEAMLESS QUARTZ BASE

- A. Construction: 2 coat seamless quartz basecoat and epoxy sealer coat, containing 100% solids epoxy and silica / quartz aggregate. Construct to the same thickness as, and monolithic with, seamless quartz flooring.

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*SPECIFIER: The 4 in. base can be increased to 6 in. at any space you specify below*

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1. Height: 4 in. against walls [except walls in the following spaces, which shall have 6 in. bases: \_\_\_\_\_, \_\_\_\_\_].
2. Cove feature: Provide a seamless cove transition from floor to base, formed to a uniform radius of 1/4 to 3/8 in.

3. Top edge: Form to a uniform curved profile having a radius equal to the thickness of the base

B. Qualities: Identical to seamless quartz flooring in composition, texture and color.

C. Product / Producer: Same as for seamless quartz flooring.

## 2.3 ACCESSORIES

A. Fill Material, for depressions, cracks and holes in concrete substrate. Epoxy-compatible cement as recommended by seamless quartz flooring producer.

B. Joint Sealant Materials: Silicone that is compatible with all components of seamless quartz flooring assembly and close to it in color.

## PART 3 EXECUTION

### 3.1 MOISTURE TEST

A. Determine whether the concrete slab is adequately dry for flooring installation. Between 14 and 21 days before the date of starting work, perform moisture tests on each area in which seamless quartz flooring will be placed over concrete. Moisture tests shall be performed in accordance with product manufacture's written instructions, but at a minimum, no less frequent than indicated below:

1. At slabs on grade: One test for each 1000 ft<sup>2</sup> area.
2. At elevated slabs: One test for each floor level.

B. Test for allowable moisture content using one of the following methods following ASTM F710, as recommended by the producer of the seamless quartz flooring:

1. Anhydrous calcium chloride test, as weighed by laboratory; ASTM F1869.
2. Electrical conductivity test in hole drilled in concrete; ASTM F2170, using a probe such as the GE Protimeter.

C. Moisture vapor emission rate (MVER = lb. emitted in 24 h from a 1000 ft<sup>2</sup> area.):

1. Convert the results of the ASTM F1869 or F2170 test to a MVER measurement.
2. Before installing seamless quartz flooring in any area, the MVER figure (expressed in pounds) shall be less than 3.5 lb, or as required by product manufacturer's written instructions, whichever is more stringent.

### 3.2 EXAMINATION AND NOTIFICATION

A. Do not proceed with the work of this section until conditions detrimental to the proper and timely completion of the work have been corrected in an acceptable manner.

B. Concrete shall be smooth and level, with maximum surface variation no greater than 1/8 in. from a 10 ft straightedge placed in direction of flow. Direct the grinding of high spots and filling of low spots thus detected as specified in Preparation following.

- C. At kitchen areas, notify M-DCPS Food and Nutrition Dept. at least 48 hours before starting surface preparation and installation of seamless quartz flooring so that foodstuffs and movable equipment can be removed.

### 3.3 PREPARATION

- A. Perform moisture tests and examination as specified. Do not start seamless quartz flooring work until the MVER test figure specified above have been achieved.
- B. Remove fixed and movable equipment before installing flooring.
- C. Grind down ridges and other irregularities. Fill depressions, cracks, and holes with specified fill material.
- D. Cleaning and Bonding Preparation before Installation: Shot-blast concrete and filled surfaces to obtain optimal bond of flooring to concrete.
  - 1. Use shot-blasting equipment that continuously confines and collects shot and debris to produce dust-free cleaning and scarifying for maximum adhesion of flooring..
  - 2. Remove grease, oil, dirt, dust and other contaminants.
  - 3. Remove sufficient material to provide a sound surface free of laitance, glaze, efflorescence, and any bond-inhibiting curing compounds or form release agents.
  - 4. Repair, using specified fill material, damaged and deteriorated concrete exposed by shot blasting to bring to sound condition.

### 3.4 PROJECT CONDITIONS

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*SPECIFIER: Modify the following to suit existing project conditions.*  
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- A. Install seamless quartz flooring and initially cure for 48 hr at ambient temperatures between 50 to 85 °F under dry, ventilated (but not windy), dust-free conditions. Keep work area free of traffic and other trades during installation and for at least 48 hours after.
- B. At new concrete, allow slabs to damp-cure for at least 28 days without the use of curing agents, plastic film or sealers.
  - 1. If the seamless quartz flooring producer’s requirements are stricter than the 28-day minimum figure stated above, increase curing time to meet producer’s time figure.

### 3.5 THICKNESS AND SLIP-RESISTANCE OF SEAMLESS QUARTZ FLOORING

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*SPECIFIER: Edit the following to include any other areas that are to receive 1/4 in. thick flooring.*  
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- A. Overall thickness of seamless quartz flooring assembly: 1/8 in. in all areas except kitchen [and \_\_\_\_\_] floors and bases, which shall be 1/4 in. thick.
- B. Texture and Slip-Resistant Texture of seamless quartz flooring assembly: Provide an orange peel (preferred) or rougher texture as needed to develop a SCoF = 0.60 or greater.

1. At ramps or any other surface sloping more than 1/2 in. in 1 ft , SCoF shall be 0.80 or greater.

### 3.6 INSTALLATION OF SEAMLESS QUARTZ FLOORING

- A. Apply seamless quartz flooring with integral cove base using an installer approved by the producer of the flooring materials.
- B. Apply following Contract Documents, the flooring producer's current published instructions, and approved shop drawings, except as more stringently specified herein.
- C. Repair of concrete: Patch or repair cracks and level uneven areas in seamless quartz flooring using specified materials and following producer's recommendations.
- D. Clean, using cleaning materials and procedures recommended by flooring producer.
- E. Reinstall fixed and movable equipment that was moved before flooring installation after new flooring is complete.

### 3.7 PROTECTION

- A. Protect installed floor from damage and undue wear during overall construction operation. Use protective materials recommended by producer that will not harm the new flooring.

END OF SECTION