

## 09651 RESILIENT SHEET FLOORING

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*SPECIFIER: Do not use resilient sheet flooring in food service areas or where oils, grease or high heat can cause slipping or deteriorate the surface.*

*No RSF has been found that has a sufficiently high static coefficient of friction to recommend its use on any inclined surface. (Few producers publish SCoF figures.)*

*At present, only PVC is used to make RSF. For environmental reasons the designer may want to consider ceramic tile, linoleum, sheet carpet, and olefin-backed carpet tile. For the same reasons – and for slip resistance and resistance to food acids – A/Es may want to consider quarry tile and seamless quartz flooring.*

*CSI 2004 MasterFormat number: 09 65 19.*

*An optional keynote to the Drawings follows major product titles, for A/Es using National CAD Standard.*

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### PART 1 GENERAL

#### 1.1 RELATED REQUIREMENTS

- A. Coordinate resilient sheet flooring with work before and after. See especially:
- |   |       |
|---|-------|
| 1. Finish on concrete floors  | 03300 |
| 2. Plumbing floor cover plates with recess for flooring                 | 15431 |
| 3. Electrical and telephone floor cover plates with recess for flooring | 16132 |
- B. Definition of “homogeneous sheet” and “through-pattern sheet”:: Flooring sheets that are homogenous their full depth so that a reasonably uniform pattern is visible at each depth to which the sheet is abraded.

#### 1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM). Test methods and standards for:
1. D2047-04 Static Coefficient of Friction of Polish-Coated Flooring Surfaces, as Measured by the James Machine
  2. E84-05 Surface Burning Characteristics of Building Materials.
  3. E648-04 Radiant Flux of Floor-Coverings - Radiant Heat Energy Source.
  4. F510-04 Resistance to Abrasion of Resilient Floor Coverings Using Abrader.
  5. F710-04 Preparing Concrete Floors to Receive Resilient Flooring.
  6. F970-06 Static Load Limit.
  7. F1303-04 Sheet Vinyl Floor Covering with Backing.
  8. F1861-02 Resilient Wall Base.
  9. F1869-98 Measuring Moisture Vapor Emission Rate of Concrete Using Anhydrous Calcium Chloride, Method F.

#### 1.3 PERFORMANCE REQUIREMENTS

- A. Slip Resistant. Following ADA requirements, resilient sheet flooring shall have these minimum static coefficients of friction (SCoF) values following ASTM D2047 (James machine, using dry leather) for use in spaces within the facility:
1. Ramps or floors with a slope of 1 in 20 or steeper (ADA: “inclined floors”, “such as ramps”): Do not use resilient sheet flooring.

2. Spaces that are means of egress (ADA: “accessible routes”, “such as interior corridors”) but not ramped: SCoF = 0.60 or greater
  3. Spaces that are neither ramps nor means of egress (ADA: “leveled floors”, “such as cafeterias”): SCoF = 0.50 or greater.
- B. Abrasion Resistant. The weight loss of each tile shall average no more than 0.60 g when 10 tiles are abraded with aluminum oxide grit and a S-39 leather wheel for 2000 cycles following ASTM F510.
- C. Through-Pattern. The colors and pattern appearing on the tile surface shall extend through the entire thickness of the tile in a reasonably uniform manner, as tested by abrading to

#### 1.4 SUBMITTALS

.Follow 01330

- A. Text of Special Warranties (early). Submit for review and approval of A/E and Board. Obtain approval before making the following submittals.
- B. Product Data. Describe properties of each tile and base, including specified tests, including SCoF and resistance to abrasion tests performed by MDCPS Testing Lab, that have been passed. Describe tile and base adhesives, and transition strips.
- C. Samples. Each tile type in each color selected by A/E.
- D. Maintenance Manuals and Signed Warranties (at closeout); 2 copies: State routine care procedures and instructions for removing stains and scratches.

#### 1.5 SPECIAL WARRANTIES

Follow 01910

- A. By Producer: In addition to the warranty and the correction of work requirements of the General Conditions, provide a written and signed Special Warranty from the resilient sheet flooring producer (or Subcontractor), endorsed by Contractor to correct defects in resilient sheet flooring work as follows:
  1. Correct until date of Substantial Completion of the Work and for 2 years after..
  2. Agreeing to correct by replacing with new material tile having these manufacturing defects such as flooring that changes color, chalks, shrinks, crumbles, or exhibits brittleness or excessive indentation.
  3. Excluding: Damage from abuse or lack of proper maintenance.
- B. 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 resilient sheet flooring and base installer (or Subcontractor), endorsed by Contractor to correct defects in resilient sheet flooring work as follows:
  1. Correcting until date of Substantial Completion of the Work and for 2 years after.
  2. Agreeing to correct by replacing, using new material, work showing defects such as loss of adhesion of flooring to concrete, or of base to floor and wall surfaces; adhesive squeeze-up; or any opening-up of the initial tight fit of flooring joints.
  3. Excluding Manufacturing defects in flooring; cracks imparted by substrate movement; loss of adhesion from excessive substrate moisture.

2.1 RESILIENT SHEET FLOORING

[09651.rsf]

- A. Description. Vinyl or other suitable polymeric resins, with fillers and pigments, formed into homogeneous sheet in a marbled or speckled pattern.
  - 1. Size: 6.0 to 6.5 ft wide x at least 70 ft long.
  - 2. Thickness: 0.080 in. overall, with at least 0.020 in. polymeric resin wear layer.
  - 3. Static Load Limit: At least 500 lb/in<sup>2</sup>; ASTM F970.
  - 4. Static Coefficient of Friction (SCoF):
    - a. For use in spaces that are means of egress, such as corridors, but not ramps: At least 0.60.
    - b. For use in spaces that are not means of egress: At least 0.50.
  - 5. Radiant panel fire test: Critical radiant flux of at least 0.45 W/cm<sup>2</sup>; ASTM E648.
  - 6. Smoke density test: Optical density <450 in flaming mode; ASTM E662.
- B. Standard: ASTM F1303, Type I, Grade 1, Class A or B.
- C. Product / Producer, SCoF = 0.60 or greater for use in spaces that are means of egress, except ramps. May also be used in other spaces that are fully horizontal.
  - 1. Safeguard 31101, 31404, 31402, or 33608, by Armstrong. (6.5 ft wide)
  - 2. Assurance II, by Mannington. (6.0 ft wide)
  - 3. Equal product in quality and performance as reviewed by A/E and approved by A/E and Board.
- D. Product / Producer, SCoF = 0.50 or greater for use in other spaces that are not ramps of means of egress.
  - 1. Safeguard 31101, 31404, 31402, or 33608, by Armstrong. (6.5 ft wide)
  - 2. Melodia, by Johnsonite / Tarkett. (6.0 ft wide)
  - 3. Lifelines II, Relay, or Assurance II, by Mannington. (6.0 ft wide)
  - 4. Eclipse, by Marley / Tarkett. (2.0 m wide)
  - 5. Equal product in quality and performance as reviewed by A/E and approved by A/E and Board.

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*SPECIFIER: Slip-resistant RSF is like standard RSF but with abrasive granules embedded in the wear surface. This more expensive variety should never be specified unless there is extreme danger of slipping. The granules can actually cause problems underfoot if they cause people to trip.*

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2.2 SLIP-RESISTANT RESILIENT SHEET WORKSPACE FLOORING [09651.rsf-sr]

- A. Description. Vinyl or other suitable polymeric resins, with fillers and pigments, formed into homogeneous sheet in a marbled or speckled pattern, textured or having embedded fine granules to make the surface slip-resistant
  - 1. Size: 6.0 to 6.5 ft wide x at least 70 ft long.
  - 2. Thickness: 0.080 in. overall, with at least 0.020 in. polymeric resin wear layer.
  - 3. Static Load Limit: At least 500 lb/in<sup>2</sup>; ASTM F970.
  - 4. Static Coefficient of Friction (SCoF): At least 0.60.
  - 5. Radiant panel fire test: Critical radiant flux of at least 0.45 W/cm<sup>2</sup>; ASTM E648.

6. Smoke density test: Optical density <450 in flaming mode; ASTM E662.

B. Standard: ASTM F1303, Type I, Grade 1, Class A or B.

C. Product / Producer.

1. Safeguard Design 31101, by Armstrong. (6.5 ft wide)
2. Assurance II, by Mannington. (6.0 ft wide)
3. Equal product in quality and performance as reviewed by A/E and approved by A/E and Board.

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*SPECIFIER: Sound-attenuating RSF has almost never been used in MDCPS schools, but is included here for a condition in which impact noise (as from heel traffic) from a room above a quiet area would be highly disturbing.*

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## 2.3 SOUND-ATTENUATING RESILIENT SHEET FLOORING [09651.rsf-sa]

A. Description. Vinyl or other suitable polymeric resins, with fillers and pigments, formed into homogeneous sheet in a marbled or speckled pattern, with foamed plastic backing, for use only on elevated slabs (not on grade) that are not means of egress.

1. Size: 6.0 to 6.5 ft wide x at least 70 ft long.
2. Thickness: 0.100 in. overall, with at least 0.020 in. polymeric resin wear layer, reinforcing layer, and foam backing.
3. Static Load Limit: At least 500 lb/in<sup>2</sup>; ASTM F970.
4. Static Coefficient of Friction (SCoF): At least 0.50.
5. Radiant panel fire test: Critical radiant flux of at least 0.45 W/cm<sup>2</sup>; ASTM E648.
6. Smoke density test: Optical density <450 in flaming mode; ASTM E662.

B. Standard: ASTM F1303, Type I, Grade 1, Class C.

C. Product / Producer, SCoF = 0.50 or greater, for use in spaces that are not ramps or means of egress.

1. Granit Acoustifloor, by Johnsonite / Tarkett.
2. Equal product in quality and performance as reviewed by A/E and approved by A/E and Board.

## 2.4 RESILIENT BASE [09652.rb]

A. Description. Rubber (not vinyl),. Provide in long rolls and cut as needed.

1. Height: 4 in. unless 6 in. is shown on the Drawings.
2. Profile: Cove bottom, unless a plain bottom is specifically shown on Drawings.
3. Outside and inside corners: Permanently form corners with no joint within 4 in. of corner. Do not use premolded corner pieces.
4. Color: As selected for each resilient sheet flooring color by A/E from the base producer's full palette of colors.
5. Base adhesive: Waterproof, non-toxic, low-VOC, light colored, formulated for maximum adhesion of rubber base.

B. Standard: ASTM F1861, Type TS, Group 1, Style B except where Style A is noted.

- C. Product / Producer. Burke Mercer, Flexco, Johnsonite, R.C.A., or Roppe.

## 2.5 ACCESSORIES

- A. Leveling Compound: Polymer-fortified cement-based compound with pH <9.0.
- B. Resilient Sheet Flooring Adhesive: Waterproof, antimicrobial, non-toxic, low-VOC, as will permit repair or removal of flooring without destroying sheets, of brand as recommended by flooring producer.
- C. Rubber Transition and Edge Strips: Not vinyl, gently tapered profile, at least 2 in. wide, matching tile thickness, as produced by Roppe.

## PART 3 EXECUTION

### 3.1 EXAMINATION AND PREPARATION

- A. Verify that field conditions are acceptable and
  1. That concrete has been repaired to show no low spots and that it is ready to receive resilient sheet flooring work.
  2. That concrete floors are dry to maximum moisture content as recommended by tile producer, and that they exhibit no carbonization or dusting.
- B. Clean substrate. Fill minor low spots and other defects with leveling compound.

### 3.2 INSTALLATION

- A. Install resilient sheet flooring and base following producer's current published recommendations and instructions, except as more stringently specified herein.
- B. Installing resilient sheet flooring.
  1. Install resilient sheet flooring with joints welded tight. Scribe flooring to produce tight joints at penetrating items, then seal. Press sheets down for full adhesion.
  2. Where floor finishes are different on opposite sides of door, terminate flooring under centerline of door.
  3. Install edge strips where flooring terminates and at unprotected or exposed edges. Secure resilient strips with adhesive.
- C. Installing resilient base.
  1. Adhere base tight to wall and floor surfaces.
  2. Fit joints tightly and make vertical. Miter internal corners. At external corners, V-cut back of base strip to 2/3 of its thickness and fold.
- D. Cleaning and Protection. Remove excess adhesive from surfaces of flooring and base without damage. Cover floor to protect from damage. ///