V1

SECTION 09 67 (09 67 23) – RESINOUS FLOORING SYSTEM

**Simiron™ Simflake Decorative Chipflake Floor Coating Specification**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

1. Resinous Systems of the Following Types:

 1. Simiron™ Epoxy Decorative Chipflake Floor Coating Specification

**1.2 RELATED SECTIONS**

1. Section 03300 – Cast-In-Place Concrete.
2. Section 033900 – Concrete Curing

**1.3 REFERENCES**

1. ASTM International (ASTM):
2. ASTM C 413 - Standard Test Method for Absorption of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing’s, and Polymer Concretes.
3. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
4. ASTM D 695 - Standard Test Method for Compressive Properties of Rigid Plastics.
5. ASTM D1475 - Standard Test Method For Density of Liquid Coatings, Inks, and Related Products.
6. ASTM D 2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
7. ASTM D 2240 - Standard Test Method for Rubber Property—Durometer Hardness.
8. ASTM D 2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
9. ASTM D2369 - Standard Test Method for Volatile Content of Coatings.
10. ASTM D 2370 - Standard Test Method for Tensile Properties of Organic Coatings.
11. ASTM D 3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
12. ASTM D 4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abrader.
13. ASTM D 4366 - Standard Test Methods for Hardness of Organic Coatings by Pendulum Damping Tests 13.
14. ASTM D5441 - Standard Test Method for Analysis of Methyl Tert-Butyl Ether (MTBE) by Gas Chromatography.
15. ASTM D 7234 - Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
16. ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
17. ASTM F 2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
18. ASTM G 154 - Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials.
19. Deutsches Institut fur Normung (DIN):
20. DIN 53460 – Testing of Plastics; Determination of the Vicat Softening Temperature of Thermoplastics.
21. International Concrete Repair Institute (ICRI):
22. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.
23. Military Specifications (MIL):
24. MIL-D-3134J - Deck Covering Materials.
25. National Floor Safety Institute (NFSI):
26. ANSI/NFSI B101.1 - Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials.

**1.4 SUBMITTALS**

1. Submit under provisions of Section 01300.
2. Product Data:
3. Manufacturer's data sheets on each product to be used, including properties, VOC content, wet static coefficient of friction, compressive strength, tensile strength, elongation and similar properties.
4. Preparation instructions and recommendations.
5. Storage and handling requirements and recommendations.
6. Typical installation methods.
7. Verification Samples: Two representative units of each system, including color and texture.
8. Shop Drawings: Include details of materials, construction and finish. Include relationship with adjacent construction.
9. Manufacturer’s Certification: Submit manufacturer’s certification that materials comply with specified requirements and are suitable for intended application.
10. Care and Maintenance Instructions: Submit manufacturer’s care and maintenance instructions, including cleaning instructions.

**1.5 QUALITY ASSURANCE**

1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.
2. Applicator’s Qualifications:
3. Applicator regularly engaged, for a minimum of 5 years, in application of resinous flooring systems of similar type to that specified.
4. Employ persons trained for application of resinous flooring systems.
5. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.
6. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect’s review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
7. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
8. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
9. Retain mock-up during construction as a standard for comparison with completed work.
10. Do not alter or remove mock-up until work is completed or removal is authorized.

**1.6 PRE-INSTALLATION CONFERENCE**

1. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.

**1.7 DELIVERY, STORAGE, AND HANDLING**

1. Delivery Requirements: Deliver materials to site in manufacturer’s original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, and batch number.
2. Storage and Handling Requirements:
3. Store and handle materials in accordance with manufacturer’s instructions.
4. Keep materials in manufacturer’s original, unopened containers and packaging until application.
5. Store materials in clean, dry area indoors between 65 and 80 degrees F (18 and 27 degrees C).
6. Store materials out of direct sunlight.
7. Keep materials from freezing.
8. Protect materials during storage, handling, and application to prevent contamination or damage.

**1.8 PROJECT CONDITIONS**

1. Apply flooring system under the following ambient conditions:
2. Ambient and Concrete Floor Temperatures: Between 60 and 85 degrees F.
3. Material Temperature: Between 60 and 85 degrees F.
4. Relative Humidity: Maximum 80 percent.
5. Dew Point: Floor temperature more than 5 degrees over dew point.
6. Do not apply flooring system under ambient conditions outside manufacturer’s limits.

**1.9 WARRANTY**

1. Submit manufacturer’s standard warranty.

**PART 2 PRODUCTS**

**2.1 MANUFACTURERS**

1. Acceptable Manufacturer: Simiron, Inc., which is located at: 32700 Industrial Drive, Madison Heights, MI 48071; Phone: 248-686-3600; Email: info@simiron.com; Web: www.simiron.com.
2. Requests for substitutions will be considered in accordance with provisions of Section 01600.

**2.2 SIMIRON SIMFLAKE SB EPOXY DECORATIVE CHIPFLAKE FLOOR COATING SPECIFICATION:**

1. Simiron Simflake SB Epoxy Decorative Chipflake Floor Coating Specification:
Primer: Simiron 1000HS 100% Solids Epoxy Primer Clear @ 4-8 mils, or approximately 200-400 sq. ft./gal.

Body Coat & Decorative Chipflake Broadcast: Simiron 1100SL Pigmented Self-Leveling 100% Solids
Epoxy Body Coat (color TBD) @100-133 sq. ft./gal, or approximately 12-16 mils, broadcast with Decorative Chipflake to refusal (color TBD)
Topcoat: Simiron 85% Solids Polyaspartic Topcoat @ 100-125 sq. ft./gal, or approximately 14-16 mils

**2.3 SYSTEM PROPERTIES**

1. Simiron Epoxy Decorative Chipflake Floor Coating Specification:
2. Adhesion to Concrete, >400 psi, ASTM D4541, (100% concrete failure)
3. Compressive Strength, psi, ASTM D695, 11,600 psi
4. Tensile Strength, psi, ASTM D2370, 9,600 psi
5. Flexural Strength, ASTM C580, 12,800 psi
6. Flammability: Self-extinguishing over concrete
7. Hardness, Shore D: ASTM D2040 75
8. Taber Abrasion: ASTM D4060 30 mg loss

**2.4 PRODUCT PROPERTIES**

1. Primer: Simiron 1000HS 100% Solids Epoxy Primer Clear
2. Adhesion ASTM D4541 >400 psi concrete failure
3. Compressive Strength ASTM D695 9,000 psi
4. Flexural Strength ASTM D790 6,000 psi
5. Hardness, Shore D ASTM D2240 75/65
6. Tensile Strength ASTM D638 3,000 psi
7. Base Coat & Decorative Chipflake Broadcast: Simiron 1100SL 100% Solids Pigmented Epoxy Base Coat (color TBD) with Simiron Decorate Flake (color TBD) Broadcast to Refusal
8. Percent Solids, by weight (by volume), ASTM D1475, A + B: 100%.
9. Volatile Organic Compound-VOC, ASTM D3960, Mixed A + B: 0.0 lb./gal (0 g/L).
10. Adhesion to Concrete, ASTM D4541: >400 psi (100% Concrete Failure).
11. Compressive Strength, ASTM D695: 11,600 psi.
12. Flexural Strength, ASTM D790: 12,800 psi.
13. Tensile Strength, ASTM D638: 9,600 psi
14. Shore D Hardness, ASTM D2240: 75
15. Topcoat: Simiron 85% Solids Polyaspartic Topcoat
16. Percent Solids, by weight (by volume), ASTM D1475, A + B: 85%.
17. Volatile Organic Compound-VOC, ASTM D3960, Mixed A + B: 0.0 lb./gal (0 g/L).
18. Adhesion to Concrete, ASTM D4541: >400 psi (100% Concrete Failure).
19. Elongation, ASTM D638: 5-10%
20. Flexibility 1/8” Mandrel, ASTM D522: Passes, No Cracking
21. Hardness, Shore D ASTM D2240: 75/80
22. Taber Abrasion, ASTM D4060: 30 mg loss
23. Tensile Strength, ASTM D638: 4,000 psi
24. Gloss @60° Angle, ASTM D523: 92%
25. Gloss Retention 60° After 1,000 hours in QUV: 85%

**PART 3 EXECUTION**

**3.1 EXAMINATION**

1. Examine concrete surfaces to receive flooring system. Verify concrete is structurally sound.
2. Moisture Testing of Concrete: Perform at least one of the following two tests to determine moisture in concrete. Type of test and frequency as recommended by manufacturer and installer.
3. In-situ Probe Test:
	* 1. Measure relative humidity in concrete in accordance with ASTM F 2170-19a.
		2. Application of flooring system shall start only if test results are below 75 percent relative concrete humidity.
		3. If test results are above limits, notify Architect and flooring manufacturer in writing.
4. Calcium Chloride Test:
5. Measure moisture vapor transmission rate (MVT) in accordance with ASTM F 1869-16a
6. Application of flooring system shall start only if test results are below 3 lbs. per the test protocol.
7. If test results are above limits, notify Architect and flooring manufacturer in writing.
8. Do not begin preparation or installation until satisfactory moisture test results are achieved. Provide flooring manufacturer's recommended moisture vapor control coating.

**3.2 PREPARATION**

1. Clean surfaces thoroughly prior to installation.
2. Protection of In-Place Conditions: Protect adjacent surfaces and adjoining walls from contact with flooring system materials.
3. Surface Preparation:
4. Prepare concrete surface in accordance with manufacturer’s instructions.
5. Allow concrete to cure a minimum of 28 days before applying flooring system, test moisture and relative humidity content in accordance with ASTM standards.
6. Concrete should be a minimum of 3,500 psi compressive strength.
7. Remove or neutralize all chemically contaminated concrete, laitance, or weak layers of concrete (including broom finished concrete texture). Remove dirt, dust, debris, oil, grease, curing agents, bond breakers, paint, coatings, sealers, silicones, and other surface contaminants which could adversely affect application of flooring system. All previous coatings must be removed completely prior to the installation of the Simiron Epoxy Decorative Flake Floor Coating Specification:
8. Steel shot blast or diamond grind concrete to a minimum surface profile of ICRI 310.2R, CSP-3.
9. Moving cracks and joints may reflect through the finished flooring system if not properly addressed. 3.3

**3.3 INSTALLATION**

1. The system shall be applied in three distinct steps as listed below:
2. Surface Preparation
3. Simiron 1000HS 10% Solids Epoxy Primer Application
4. Simiron 1100SL Pigmented 100% Solids Epoxy Body Coat & Decorative Chipflake Decorative Flake Application
5. Simiron 85% Polyaspartic Coating
6. Ensure concrete is prepared in accordance with manufacturer’s instruction detailed above in Section 3.2.
7. Simiron 1000HS 10% Solids Epoxy Primer Application
8. Mix material components together in accordance with manufacturer’s instructions.
9. Mix only enough material that can be applied within working time.
10. Mix the Part A and Part B liquids using a power drill and mixing paddle for 3 minutes.
11. Pour the mixed material on the floor in a bead or ribbon pattern and apply using a flat EPDM squeegee or metal spring blade, and back-roll using a 3/8” shed-resistant roller cover. If a tight squeegee coat is desired, the applicator may choose not to backroll the primer.
12. Dry time will vary based on temperature. Refer to the product data sheet for dry times.
13. Body Coat & Chipflake Application: Simiron 1100SL Pigmented Self-Leveling 100% Solids Epoxy Body Coat & Decorative Chipflake.
14. Mix material components together in accordance with manufacturer’s instructions.
15. Mix only enough material that can be applied within working time.
16. Mix the Part A and Part B liquids using a power drill and mixing paddle for 3 minutes.
17. Pour the mixed material on the floor in a bead or ribbon pattern and apply using a 1/8” notched squeegee with and back-roll using a 3/8” shed-resistant roller cover.
18. Apply the Simiron 1100SL Pigmented 100% Solids Epoxy Body Coat @100-133 sq. ft./gal, or approximately 12-16 mils, then broadcast with Decorative Chipflake to refusal.
19. Dry time will vary based on temperature. Refer to the product data sheet for dry times.
20. After coating has dried, scrape and vacuum loose chipflake from the floor prior to application of topcoat.
21. Topcoat Application: 85% Solids Polyaspartic Topcoat.
22. Mix material components together in accordance with manufacturer’s instructions.
23. Mix only enough material that can be applied within working time.
24. Mix the Part A and Part B liquids for 3 minutes using a power drill and mixing paddle.
25. Pour the mixed material on the floor in a bead or ribbon pattern and apply using a flat squeegee with and back-roll using a 3/8” shed-resistant roller cover. Applicator may also use dip and roll technique from roller pan.
26. Dry time will vary based on temperature. Refer to the product data sheet for dry time and recoat time window. Make sure floor coating system is completely dry prior to opening to traffic. Allow 7 days to reach full physical and chemical resistant properties.

**3.4 FIELD QUALITY CONTROL**

1. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.

**3.5 CLEANING AND PROTECTION**

1. Allow flooring system to dry in accordance with manufacturer’s instructions before opening to traffic.
2. Allow flooring system to dry a minimum of 1 week before cleaning by mechanical means.
3. Protect completed flooring system from damage during construction.

END OF SECTION

4/2021/SIMIRON SIMFLAKE DECORATIVE CHIPFLAKE FLOOR COATING SYSTEM SPECIFICATION