

GUIDE SPECIFICATIONS FOR
Nature Collection – Artistry Collection

This document is coordinated with the resilient tile product in the
LSI Floors product literature and product catalogues.

SECTION 09 65 19
RESILIENT TILE FLOORING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 – Specification sections, apply to work of this section.

1.02 SECTIONS INCLUDED

- A. Resilient tile flooring
- B. Primer and adhesives
- C. Accessories
- D. Responsibilities, preparation/installation

1.03 RELATED SECTIONS: Other specification sections that directly relate to the work of this section include, but are not limited to, the following:

- A. Section 03300 - Cast-In-Place Concrete; concrete substrate; slab surface tolerances; vapor retarder for applications on or below grade
- B. Section 06100 - Rough Carpentry; plywood substrate; surface tolerances
- C. Section 10270 - Access Flooring; resilient floor covering for access panels

1.04 REFERENCES (Industry Standards):

- A. ASTM – American Society for Testing and Materials
 - 1. ASTM D2047 - Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
 - 2. ASTM D3389 - Coated Fabrics Abrasion Resistance (Rotary Platform, Double Head Abrader)
 - 3. ASTM E84 - Surface Burning Characteristics of Building Materials
 - 4. ASTM E90 - Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
 - 5. ASTM E648 - Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
 - 6. ASTM E662 - Specific Optical Density of Smoke Generated by Solid Materials
 - 7. ASTM E1745 - Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs
 - 8. ASTM F137 - Flexibility of Resilient Flooring Material
 - 9. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
 - 10. ASTM F925 - Resistance to Chemicals of Resilient Flooring
 - 11. ASTM F970 - Static Load Limit
 - 12. ASTM F1482 - Standard Practice for Installation and Preparation of Panel Type Underlayment to Receive Resilient Flooring
 - 13. ASTM F1515 - Color Fastness
 - 14. ASTM F1700 - Residual Indentation
 - 15. ASTM F1914-98 Short Term Indentation
 - 16. ASTM F2055 - Size and Squareness of Resilient Floor Tile by Dial Gage Method
 - 17. ASTM F2170 - Determining Relative Humidity in Concrete Floor Slabs Using In Situ Probes
 - 18. ASTM F2199 - Determining Dimensional Stability of Resilient Floor Tile after Exposure to Heat
 - 19. ASTM G-21 - Anti-Bacterial, Anti-Fungicidal

- B. ADA – Americans with Disabilities Act
 - 1. ASTM D2047 - Coefficient of Friction
- C. EN – European Standards
 - 1. EN ISO 140-8 - Sound Reduction
 - 2. EN ISO 717-2 Acoustical Impact
 - 3. EN 423 - Chemical Resistance
 - 4. EN 433 - Residual Indentation
 - 5. EN 434 - Dimensional Stability
 - 6. EN 435 - Flexibility
 - 7. EN 685 - Wear Group
 - 8. EN 1350-1 - Fire Rating
 - 9. EN 13893 - Slip Resistance
- D. DIN – German Institute for Standardization
 - 1. DIN 4102 - Fire Rating
 - 2. DIN 51097 – Slip Resistance, Barefoot Soap and Water Test
 - 3. DIN 51130 - Slip Resistance, Ramp Test
- E. ISO - International Organization for Standardization
 - 1. ISO 105-B02-3 - Color Fastness
- F. JIS – Japanese Industrial Standards
 - 1. JIS Z 2801 – Anti Bacterial, Anti Fungicidal

1.05 SUBMITTALS

- A. Product Data - Submit manufacturer's Installation Guide, Maintenance Guide and Material Safety Data Sheet (MSDS) for each material proposed for use (available at www.lsifloors.com)
- B. Samples - Submit two 4 inch by 4 inch samples of each product, in color specified, for verification
- C. Submit shop drawings showing planned layout including direction, pattern and colors. (Specifier Note: Architect may not require shop drawings if square tile of all the same pattern and color is used.)

1.06 QUALITY ASSURANCE

- A. Manufacturer - Provide resilient flooring manufactured by a firm with a minimum of 10 years' experience with resilient flooring of types equivalent to those specified. Manufacturers proposed for use, which are not named in this section, should submit evidence of ability to meet performance requirements specified in a timeline approved by specifier
 - 1. The manufacturer should have the Quality Management System approved by Lloyd's Register Quality Assurance to the Quality Management System Standard ISO 9001:2000
 - 2. Manufacturer must be capable of providing technical training and technical field service representation
- B. Installer Qualifications - Installer should be approved for the requirements of the project

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in labeled packages. Store and handle in strict compliance with manufacturer's recommendations. Protect from damage due to weather, excessive temperatures, and construction operations
- B. Deliver materials sufficiently in advance of installation to condition materials to the required temperature for 48 hours prior to installation

1.08 PROJECT CONDITIONS

- A. Maintain temperature and humidity at service levels of 65° F (20° C), ± 5° F (3° C), and 40% RH ± 10% in areas to receive resilient flooring. Specified temperature should be maintained at least 48 hours before, during, and 72 hours after installation

1.07 WARRANTY

- A. Provide current, detailed manufacturer's warranty for each flooring product as applicable.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. LSI Floors Inc., 5230 Finch Ave East, Unit 5, Toronto ON. M1S 4Z9.

2.02 MANUFACTURER QUALIFICATIONS

- A. The Manufacturer should have or provide the following:
 1. Glass bead enhanced, slip resistant, polyurethane wear layer
 2. Increased slip resistance with verifiable test results to level of R9 under DIN 51130 testing
 3. Registered embossing to increase realistic appearance on appropriate products
 4. Flooring that is free of anything known to be teratogenic, mutagenic or any other ingredients known to be carcinogenic
 5. ISO 14001 Environmental Management Systems certification
 6. Products that are compliant with CA 01350 – Standard Method For The Testing And Evaluation of Volatile Organic Chemical Emissions From Indoor Sources
 7. Meet the standard of LEED v.4 for Indoor Air Quality Emissions
 8. Supply adhesives/sealants that meet CDPH/EHLB V1.1 standard
 9. Limited Commercial Wear Warranty of 10 years minimum
 10. Construction waste take-back for the purpose of reducing jobsite waste by taking back their uninstalled waste flooring
 11. Flooring surfaces that are easily cleaned and do not require coatings and stripping, or use chemicals that may be hazardous to human health

Note: For specific product application recommendations please refer to KRS Inc. (262) 798-8900 or info@krsinc.com

2.03 MATERIALS

- A. Floor tile: Solid vinyl tile which meets the following minimum standards:
 1. ASTM – American Society for Testing and Materials
 - a) ASTM D2047 Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine / ADA compliant
 - b) ASTM E90 Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements / SCT55 / IIC45 / 4db
 - c) ASTM E648 Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source / Class 1
 - d) ASTM E662 Specific Optical Density of Smoke Generated by Solid Materials / <450
 - e) ASTM F137 Flexibility of Resilient Flooring Material / Pass
 - f) ASTM F925 Resistance to Chemicals of Resilient Flooring / Excellent
 - g) ASTM F1515 Color Fastness / Exceeds Requirements
 - h) ASTM F1914-98 Short Term Indentation / 75lbs – 0.002”
 - i) ASTM G-21 - Anti-Bacterial, Anti-Fungicidal / Excellent
 2. ADA – Americans with Disabilities Act
 - a) ASTM D2047 Coefficient of Friction / average test result is 0.87
 3. EN – European Standards
 - a) EN 423 Chemical Resistance / Excellent
 - b) EN 433 Residual Indentation / 0.05mm
 - c) EN 434 Dimensional Stability / ≤ 0.25%
 - d) EN 435 Flexibility / Pass
 - e) EN 685 Wear Group / 34: Commercial very heavy and 43: Light industrial heavy
 - f) EN 1350-1 – Fire Rating / Bfl-s1
 - g) EN 13893 - Slip Resistance / DS

4. DIN – German Institute for Standardization
 - a) DIN 4102 – Fire Rating / B1
 - b) DIN 51097 - Slip Resistance, Barefoot Soap and Water Test / Class A
5. DIN 51130 Slip Resistance, Ramp Test / R10
5. ISO - International Organization for Standardization
 - a) ISO 105-B02-3 Color Fastness / ≥ 6

Note: Exact values may vary due to the test methods and tolerance between batches. The ASTM minimum requirement should be achieved or exceeded.

- B. Primer and Adhesive for installation: Waterproof; as recommended by tile manufacturer
- C. Subfloor Filler: White premix latex type as recommended by tile manufacturer
- D. Accessories: Maintenance as recommended by tile manufacturer

2.04 MANUFACTURED UNITS (Listed alphabetically. Select one or multiple products.)

- | | | |
|-----|--|---------|
| A. | Antique Woods, Registered Embossing - 0.098 inch (2.5mm) thick x 6 inch (152.3mm) x (914.4mm) | 36 inch |
| B. | Bird's Eye Maple - 0.098 inch (2.5mm) thick x 18 inch (457mm) x 18 inch (457mm) | |
| C. | Bamboo - 0.098 inch (2.5mm) thick x 4 inch (102mm) x 36 inch (914.4mm) | |
| D. | Clovally, Registered Embossing - (CL42110, CL42112) – 0.098 inch (2.5mm) thick x 18 inch (457mm) x (457mm) | 18 inch |
| E. | Clovally, Registered Embossing - (CL42511, CL42512, CL42516) - 0.098 inch (2.5mm) thick x (610mm) x 24 inch (610mm) | 24 inch |
| F. | Concrete, <i>Registered Embossing</i> - 0.098 inch (2.5mm) thick x 24 inch (610mm) x 24 inch (610mm) | |
| G. | Cork - 0.098 inch (2.5mm) thick x 12 inch (304.8mm) x 12 inch (304.8mm) | |
| H. | Cow, squares - 0.098 inch (2.5mm) x 30 inch (762mm) x 30 inch (762mm) | |
| I. | Cow, rectangles - 0.098 inch (2.5mm) x 10 inch (254mm) x 30 inch (762mm) | |
| J. | Earth Woods - 0.098 inch (2.5mm) thick x 4 inch (102mm) x 36 inch (914.4mm) | |
| K. | Elements, squares - 0.098 inch (2.5mm) thick x 24 inch (610mm) x 24 inch (610mm) | |
| L. | Elements, rectangles - 0.098 inch (2.5mm) x 10 inch (254mm) x 30 inch (762mm) | |
| M. | Finger Print - 0.098 inch (2.5mm) thick x 24 inch (610mm) x 24 inch (610mm) | |
| N. | Granite - 0.098 inch (2.5mm) thick x 18 inch (457mm) x 18 inch (457mm) | |
| O. | Hammered Aluminum - 0.098 inch (2.5mm) thick x 24 inch (610mm) x 24 inch (610 mm) | |
| P. | Imagination - 0.098 inch (2.5mm) thick x 18 inch (457mm) x 18 inch (457mm)
(IM7001, IM7011, IM7021, IM7041, IM7045) | |
| Q. | Imagination - 0.098 inch (2.5mm) thick x 24 inch (610mm) x 24 inch (610mm)
(IM7016, IM7052) | |
| R. | Imagination – 0.098 inch (2.5mm) thick x 30 inch (762mm) x 30 inch (762mm)
(IM7012, IM7013, IM7014) | |
| S. | Inset Strips - 0.098 inch (2.5mm) thick x 0.25 inch (6.5mm) x 36 inch (914.4mm) | |
| T. | Inset Strips - 0.098 inch (2.5mm) thick x 0.5 inch (12.7mm) x 36 inch (914.4mm) | |
| U. | Natural Woods, Registered Embossing - 0.098 (2.5mm) thick x 6 inch (152.3mm) x 36 inch (914.4mm) | |
| V. | Rusted Steel - 0.098 inch (2.5mm) thick x 24 inch (610mm) x 36 inch (914mm) | |
| W. | Shale, Registered Embossing - 0.098 inch (2.5mm) thick x 12 inch (305mm) x 24 inch (610mm) | |
| X. | Solids - 0.098 inch (2.5mm) thick x 12 inch (304.8mm) x 12 inch (304.8mm) | |
| Y. | Sparkly Chips - 0.098 inch (2.5mm) thick x 24 inch (610mm) x 24 inch (610mm) | |
| Z. | Stained Concrete - 0.098 inch (2.5mm) thick x 24 inch (610mm) x 24 inch (610mm) | |
| AA. | Tadao & Ando - 0.098 inch (2.5mm) thick x 24 inch (610mm) x 36 inch (914.4mm) | |
| BB. | Tread Plate, <i>Registered Embossing</i> – 0.098 inch (2.5mm) thick x 24 inch (610mm) x 24 inch (610mm) | |
| CC. | Weathered Concrete, planks – 0.098 inch (2.5mm) x 6 inch (152.3mm) x 48 inch (1219.2mm) | |
| DD. | Weathered Concrete, rectangles – 0.098 inch (2.5mm) x 10 inch (254mm) x 30 inch (762mm) | |

PART 3 – RESPONSIBILITIES

3.01 GENERAL CONTRACTOR RESPONSIBILITIES

Note: In the absence of a general contractor, these responsibilities defer to the end user.

- A. Supply a safe, climate controlled building and subfloor
- B. A concrete subfloor that meets the requirements of ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring is required
- C. For all concrete substrates on or below grade, a permanent effective vapor retarder with a low permeance (less than 0.1) and that meets the requirements of the latest edition of ASTM E1745 Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs, should be placed directly underneath the concrete above the granular fill, and installed as per the manufacturer's written instructions. Alternatively a surface applied moisture mitigation system should be used as described in 3.01 H
- D. A clean non-burnished concrete surface free from any paint, wax, oil, grease, and film forming curing compounds, silicate penetrating curing compounds, sealing, hardening or parting compounds is required. The surface should not have any alkaline salts, laitance, mold, mildew, residual adhesive, chemical adhesive removers or anything that may prevent appropriate products bonding to it
- E. Valid tests and acceptable test results should be provided to the end user and flooring contractor, including documenting with photographs, the location of all tests, recorded % relative humidity levels and temperature of both the concrete subfloor and ambient conditions prior to flooring installation. Testing should be performed at the correct, controlled ambient service temperature and humidity following the protocol of ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes, using a Wagner Rapid RH probes only. When tested at the correct ambient temperature and humidity the maximum allowable should be 85% RH
 - a. Only if it is not possible to provide a concrete substrate with acceptable moisture levels then a surface applied moisture mitigation system should be used. Please note that all additional costs associated with this concrete condition are the responsibility of the general contractor / end user, including any additional requirements for concrete preparation, priming, leveler, patching or labor
 - b. Prevent all traffic for a minimum of 12 hours and rolling loads for 72 hours to allow the adhesive to cure. If required, after 12 hours protect the flooring from damage during construction operations using Masonite, plywood or a similar product, ensuring first that the flooring surface is free of all debris. Lay panels so that the edges form a butt joint and tape the joint to prevent both movement and debris entrapment underneath them. Inspect immediately before covering and after removal for final acceptance
 - c. Have the flooring cleaned no sooner than 72 hours after the installation

3.02 FLOORING CONTRACTOR RESPONSIBILITIES

- A. An effective installation manager, to manage the project, installers, and ensure that all of the required procedures are followed
- B. Acclimate the flooring in the secure storage area provided by the general contractor that is maintained permanently or temporarily at ambient service temperature and humidity (except walk in freezers or similar), or 68°F ± 5° F and 50% relative humidity, for at least 48 hours prior to application.
- C. For wooden subfloors American Plywood Association (APA) underlayment grade plywood should be used as detailed in ASTM F1482 Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring. Please note, as plywood will expand and contract due to changes in moisture content and temperature, LSI floors Inc. cannot accept any liability of the plywood joints telegraphing through the finished floor
- D. Perform mat bond tests in each major area (1 per ~1,000 sq. ft.) This should consist of the proposed subfloor preparation, mitigation and leveling or smoothing products. Do not proceed with installation until all the results of the bond test are acceptable
- E. Review and comply with all relevant Material Safety Data Sheets (MSDS) regulations

- F. Clean out and fill or repair any dormant saw cuts and cracks with an appropriate product following the manufacturers written usage instructions. For any expansion (moving) joints, use an industry standard expansion joint assembly

- G. When required, use a leveler following the manufacturers written instructions. The surface should be free of dust, solvents, paint, wax, varnish, oil, grease, asphalt, old adhesives, and other extraneous materials that may interfere with the bond. These should be completely removed by mechanical means only. Dustless diamond grinding or bead blasting are the preferred method to remove contaminates and bond breakers, as it also helps to level the concrete
- H. Prime the subfloor prior to using a suitable leveler. Note: a 1/8 inch minimum thickness is required for the leveler to be considered porous as required when using acrylic adhesives
- I. Vacuum floors immediately prior to installing the flooring to remove all loose particles. If required, only use water based sweeping compounds. Do not use any wax or oil based compounds that leave behind a residue that may interfere with the adhesive bond
- J. Install resilient flooring, including but not limited to the following, in accordance with the LSI Installation Guide
 - i. Do not install resilient flooring over building expansion joints
 - ii. Do not install defective or damaged resilient flooring
 - iii. Layout resilient flooring to provide approximately equal size at perimeter. Adjust layout as necessary to reduce the amount of resilient flooring that is cut to less than half full width
 - iv. Lay resilient flooring with arrows in the same direction
 - v. Install resilient flooring without voids at joints. Lay tiles together without stress
 - vi. Cut/scribe resilient flooring neatly at perimeter and obstructions
 - vii. Install reducer strips at exposed edges

END OF SECTION

Represented by:



Flooring Solutions Beyond the Expected