

DIVISION 09 - FINISHES
SECTION 096500 RESILIENT FLOORING

noraplan environcare™ ed

This document is provided to assist in the preparation of a Project or Master Specification and has been formatted in accordance with the Construction Specifications Institute (CSI)'s MasterFormat®.

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
1. Resilient tile flooring for commercial traffic.
 2. Resilient plank flooring for commercial traffic with pre-applied adhesive.
 3. Resilient sheet flooring for commercial traffic.
 4. Resilient sheet flooring for commercial traffic with pre-applied adhesive.
 5. Resilient tile flooring for special fire requirements.
 6. Resilient tile flooring for extra heavy traffic, ice skate and golf spike resistant.
 7. Resilient tile flooring for pre-installed raised access flooring, or releasable application.
 8. Resilient tile flooring for electrostatic dissipative protection.
 9. Resilient sheet flooring for electrostatic dissipative protection.
 10. Resilient stair treads (one-piece nosing, tread and riser).
 11. Resilient stair accessories.
 12. Resilient wall base, sanitary base and accessories.
 13. Substrate preparation.
- B. Related Work: The following items are not included in this Section and are specified under the designated Sections:
- | | | |
|----|----------------|---|
| 1. | Section 033000 | CAST-IN-PLACE CONCRETE for concrete substrate; slab surface tolerances; vapor retarder for applications on or below grade; requirement for 83/90 degree riser and tread edge angle for stair tread and nosings. |
| 2. | Section 055100 | METAL STAIRS AND RAILINGS; requirement for 83/90 degree riser and tread edge angle for stair tread and nosings. |
| 3. | Section 061000 | ROUGH CARPENTRY for plywood substrate and surface tolerances. |
| 4. | Section 096900 | ACCESS FLOORING for resilient floor covering for access panels. |
- C. References (Industry Standards):
1. American Association of Textile Chemists and Colorists (AATCC):
 - a. AATCC 134 Electrostatic Propensity of Carpets
 2. American National Standards Institute (ANSI):
 - a. ANSI ESD S97.2 Floor Materials and Footwear – Voltage Measurement on a Person
 3. ASTM International (ASTM):
 - a. ASTM C518 Standard Test Method for Steady State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
 - b. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension

- c. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
- d. ASTM D2240 Standard Test Method for Rubber Property – Durometer Hardness
- e. ASTM D3389 Standard Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform, Double Head Abrader)
- f. ASTM D6499 Standard Test Method for the Immunological Measurement of Antigenic Protein in Natural Rubber and its Products
- g. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
- h. ASTM E648 Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
- i. ASTM E662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
- j. ASTM E1745 Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs
- k. ASTM E2179 Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors
- l. ASTM E2180 Standard Test Method for Determining the Activity of Incorporated Antimicrobial Agent(s) in Polymeric or Hydrophobic Materials
- m. ASTM F150 Standard Test Method for Electrical Resistance of Conductive and Static Dissipative Resilient Flooring
- n. ASTM F155 Method of Test for Temper of Strip and Sheet Metals for Electronic Devices
- o. ASTM F386 Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces
- p. ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
- q. ASTM F925 Standard Test Method for Resistance to Chemicals of Resilient Flooring
- r. ASTM F970 Standard Test Method for Static Load Limit
- s. ASTM F1344 Standard Specification for Rubber Floor Tile
- t. ASTM F1482 Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring
- u. ASTM F1514 Standard Test Method for Measuring Heat Stability of Resilient Flooring by Color Change
- v. ASTM F1515 Standard Test Method for Measuring Light Stability of Resilient Flooring by Color Change
- w. ASTM F1859 Standard Specification for Rubber Sheet Floor Covering Without Backing
- x. ASTM F1860 Standard Specification for Rubber Sheet Floor Covering With Backing
- y. ASTM F1861 Standard Specification for Resilient Wall Base
- z. ASTM F2055 Standard Test Method for Size and Squareness of Resilient Floor Tile by Dial Gage Method
- aa. ASTM F2169 Standard Specification for Resilient Stair Treads
- bb. ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
- cc. ASTM F2199 Standard Test Method for Determining Dimensional Stability of Resilient Floor Tile after Exposure to Heat
- dd. ASTM F3010 Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings
- ee. ASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
- 4. European Norm (FTM):
 - a. FTM 101 C 4046 Static Decay.
- 5. International Organization for Standardization (ISO):
 - a. ISO 140 Measurement of sound insulation in buildings and of building elements
- 6. National Fire Protection Association (NFPA):
 - a. NFPA 253 Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source

b. NFPA 258 Test Method for Specific Density of Smoke Generated by Solid Materials

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, installation guide and maintenance guide for each material and accessory proposed for use.
- B. Samples: Submit three representative samples of each product specified for verification.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Provide resilient flooring manufactured by a firm with a minimum of 10 years' experience with resilient flooring of type equivalent to those specified.
 - 1. Manufacturer's quality management system must have ISO 9001:2000 approval.
 - 2. Provide resilient flooring products, including wall base, accessories and subfloor preparation products from one manufacturer to ensure color matching and compatibility.
 - 3. Manufacturer shall be capable of providing technical training and technical field service representation.
- B. Installer Qualifications: Acceptable to manufacturer of resilient flooring or INSTALL (International Standards & Training Alliance) resilient certified for the requirements of the project.
- C. Sustainable Design Requirements:
 - 1. ISO 14001 Environmental Management Systems certification.
 - 2. Construction waste take back program for the purpose of reducing jobsite waste by taking back uninstalled waste flooring. Details of the nora[®] program are available at www.nora.com/us.
 - 3. Flooring surfaces that are easily cleaned and do not require coatings and stripping, or use chemicals that may be hazardous to human health.
 - 4. Supply all required products that are CA 01350 compliant.
 - 5. Flooring that is free of materials known to be teratogenic, mutagenic or carcinogenic.
 - 6. Flooring that contains no polyvinyl chloride or plasticizers.
 - 7. Flooring that contains no halogens.
 - 8. Flooring that contains no asbestos.

1.5 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.

1.6 PROJECT CONDITIONS

- A. Maintain temperature and humidity at service levels or the ambient temperature must remain steady ($\pm 10^{\circ}\text{F}$) and be between 59°F and 80°F for at least 48-hours prior, during and 72-hours after installation. .) The ambient relative humidity is recommended to be $50\% \text{ RH} \pm 10\%$; however, dew point must be avoided.

1.7 WARRANTY

- A. Provide manufacturer's standard limited warranty for wear, defect and conductivity.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

- A. Basis-of-Design: nora systems, Inc., 9 Northeastern Blvd., Salem, NH 03079; telephone 800-332-NORA or 603-894-1021; fax 603-894-6615.

2.2 RESILIENT TILE FLOORING FOR ELECTROSTATIC DISSIPATIVE PROTECTION

A. Rubber Floor Tile (ESD):

- | | |
|---|---|
| 1. Product Name: | noraplan environcare™ ed, Article 2390 |
| 2. ASTM Specification:
ASTM F1344 Standard Specification for Rubber Floor Tile | Type I and Grade 1 |
| 3. Limited Wear Warranty: | 5 years |
| 4. Material: | nora® vulcanized rubber compound 948 with environmentally compatible color pigments that are free of toxic heavy metals like lead, cadmium or mercury |
| 5. Composition: | Homogeneous rubber compound with a random scattered design |
| 6. Color: | 14 standard colors |
| 7. Surface: | Smooth |
| 8. Back of Tile/Sheet/Nosing: | Double-sanded smooth |
| 9. Material Size (ASTM F2055):
± 0.018 (± 0.45mm) is required | ~24 inches by 24 inches (610mm by 610mm) |
| 10. Squareness (ASTM F2055):
± 0.018 inches (± 0.45mm) is required | Meets requirements |
| 11. Thickness (ASTM F386):
± 0.005 inches (± 0.127mm) is required | ~0.08 inches (2.0mm) |
| 12. Dimensional Stability (ASTM F2199):
≤ 0.15% in both directions is required | Meets requirements |
| 13. Flammability (E648/NFPA 253):
≥ 0.45 watts/sq. cm for Class 1 is required | NBSIR 75 950, 1.00 |
| 14. Smoke Density (ASTM E662/NFPA 258):
< 450 is required | NBS, 81 (flaming) and 122 (non-flaming) |
| 15. CAN/ULC-S102.2: | Surface Burning, FSC1 of 185 and SD of 1600 |
| 16. Burn Resistance: | Resistant to cigarette and solder burns |
| 17. Slip Resistance (ASTM D2047):
≥ 0.5 is required | Static coefficient of friction, Neolite dry 0.92, Neolite wet 0.89 (not recommended for ramps) |
| 18. Bacteria Resistance (ASTM E2180/ASTM G21): | Resistant to bacteria, fungi, and micro-organism activity |
| 19. VOC's: | This flooring is GREENGUARD Gold Certified for Low VOC Emissions and CA 01350 compliant |
| 20. Latex Allergies (ASTM D6499): | Inhibition Elisa, results are below detection level |
| 21. Sound Absorption (ISO 140): | Δ Lw 6dB (compare only Δ values) |
| 22. Hardness (ASTM D2240):
≥ 85 is required | Shore type "A", 92 |
| 23. Static Load (ASTM F970):
≤ 0.005 inches with 250 lbs. is required | Residual compression of 0.003 inches with 800 lbs. |
| 24. Rolling Load Limit: | ≤ 450 lbs. / sq. inch, with no forklift traffic |
| 25. Abrasion Resistance (ASTM D3389):
≤ 0.035 oz. (1.0g) is required | 1.1 lbs. (500g) load on H-18 wheel with 1000 cycles, 0.002 oz. (0.07g) weight loss |
| 26. Elongation (ASTM D412):
≥ 300 lbs. per sq. inch is required | Modulus @ 10% is 1,196.7 lbs. per sq. inch |

27. Oil & Grease Resistance:	Yes
28. Heat Resistance (ASTM F1514): Avg. $\Delta E \leq 8.0$ is required	Easily achieved with all batches and regular maintenance
29. Light Resistance: Avg. $\Delta E \leq 8.0$ is required	Easily achieved with all batches and regular maintenance
30. Static Generation (ANSI ESD S97.2):	< 20 Volts
31. Decay Time (FTM 101 C 4046):	< 0.25, (sec)
32. Conductivity (ASTM F150):	$10^6 < 10^9$ (ohms)
33. Thermal Transmission (ASTM C518):	R-value 0.01
34. Cleaning:	Cleaned and maintained effectively using water, nora [®] cleaning pads and a suitable cleaning machine, without the use of any factory and/or field-applied coatings. Also without using any chemicals that may be hazardous or containing any teratogenic, mutagenic or any other ingredients known to be carcinogenic.
35. Shine:	Higher shine achieved by buffing without any artificial topical applied coatings
36. Stain Removal:	Samples of the product must be provided for stain removal testing by the owner. Sample size must be 24 inches by 24 inches, pre-cleaned by manufacture per published recommendations. Samples must have no coatings, sealers, floor finish or other manually or mechanically applied finish on the surface of the product. Stain testing must consist of application of common healthcare related disinfectants and chemicals to include, but not limited to, Betadine, Methylene Blue, Silver Nitrate and alcohol based hand sanitizer. Duration of test period must be no less than one week. Removal of chemicals must be in accordance with manufacturers published cleaning and maintenance recommendations.
37. Substrate Preparation:	Per ASTM F710 and the nora [®] Installation Guide

2.3 RESILIENT SHEET FLOORING FOR ELECTROSTATIC DISSIPATIVE PROTECTION

A. Rubber Sheet Flooring:

1. Product Name:	noraplan environcare™ ed, Article 1390
2. ASTM Specification: ASTM F1859 Standard Specification for Rubber Sheet Floor Covering Without Backing	Type I
3. Limited Wear Warranty:	5 years
4. Material:	nora [®] vulcanized rubber compound 948 with environmentally compatible color pigments that are free of toxic heavy metals like lead, cadmium or mercury
5. Composition:	Homogeneous rubber compound with a random scattered design
6. Color:	14 standard colors
7. Surface:	Smooth
8. Back of Tile/Sheet/Nosing:	Double-sanded smooth
9. Material Size (ASTM F2055):	~49.2 feet by 48 inches (15m by 1.22m), $\geq$ amount specified

10. Thickness (ASTM F386): ± 0.006 inches (± 0.15mm) is required	~0.08 inches (2.0mm)
11. Dimensional Stability (ASTM F2199): ≤ 0.15% in both directions is required	Meets requirements
12. Flammability (E648/NFPA 253): ≥ 0.45 watts/sq. cm for Class 1 is required	NBSIR 75 950, 1.00
13. Smoke Density (ASTM E662/NFPA 258): < 450 is required	NBS, 81 (flaming) and 122 (non-flaming)
14. CAN/ULC-S102.2:	Surface Burning, FSC1 of 185 and SD of 1600
15. Burn Resistance:	Resistant to cigarette and solder burns
16. Slip Resistance (ASTM D2047): ≥ 0.5 is required	Static coefficient of friction, Neolite dry 0.92, Neolite wet 0.89 (not recommended for ramps)
17. Bacteria Resistance (ASTM E2180/ASTM G21):	Resistant to bacteria, fungi, and micro-organism activity
18. VOC's:	This flooring is GREENGUARD Gold Certified for Low VOC Emissions and CA 01350 compliant
19. Latex Allergies (ASTM D6499):	Inhibition Elisa, results are below detection level
20. Sound Absorption (ISO 140):	Δ Lw 6dB (compare only Δ values)
21. Hardness (ASTM D2240): ≥ 85 is required	Shore type "A", 92 achieved
22. Static Load (ASTM F970): ≤ 0.005 inches with 250 lbs. is required	Residual compression of 0.003 inches with 800 lbs.
23. Rolling Load Limit:	≤ 450 lbs. / sq. inch, with no forklift traffic
24. Abrasion Resistance (ASTM D3389): ≤ 0.035 oz. (1.0g) is required	1.1 lbs. (500g) load on H-18 wheel with 1000 cycles, 0.002 oz. (0.07g) weight
25. Elongation (ASTM D412): ≥ 300 lbs. per sq. inch is required	Modulus @ 10% is 1,196.7 lbs. per sq. inch
26. Oil & Grease Resistance:	Yes
27. Heat Resistance (ASTM F1514): Avg. ΔE ≤ 8.0 is required	Easily achieved with all batches and regular maintenance
28. Light Resistance: Avg. ΔE ≤ 8.0 is required	Easily achieved with all batches and regular maintenance
29. Static Generation (ANSI ESD S97.2):	< 20 Volts
30. Decay Time (FTM 101 C 4046):	< 0.25, (sec)
31. Conductivity (ASTM F150):	10 ⁶ < 10 ⁹ (ohms)
32. Thermal Transmission (ASTM C518):	R-value 0.01
33. Cleaning:	Cleaned and maintained effectively using water, nora [®] cleaning pads and a suitable cleaning machine, without the use of any factory and/or field-applied coatings. Also without using any chemicals that may be hazardous or containing any teratogenic, mutagenic or any other ingredients known to be carcinogenic.
34. Shine:	Higher shine achieved by buffing without any artificial topical applied coatings
35. Stain Removal:	Samples of the product must be provided for stain removal testing by the owner. Sample size must be 24 inches by 24 inches, pre-cleaned by manufacture per published recom-

mendations. Samples must have no coatings, sealers, floor finish or other manually or mechanically applied finish on the surface of the product. Stain testing must consist of application of common healthcare related disinfectants and chemicals to include, but not limited to, Betadine, Methylene Blue, Silver Nitrate and alcohol based hand sanitizer. Duration of test period must be no less than one week. Removal of chemicals must be in accordance with manufacturers published cleaning and maintenance recommendations.

36. Substrate Preparation:

Per ASTM F710 and the nora® Installation Guide

PART 3 - EXECUTION

3.1 GENERAL CONTRACTOR RESPONSIBILITIES

- A. Supply a safe, climate controlled building and subfloor as detailed in the nora Installation Guide (available at www.nora.com/us).
- B. A subfloor that meets the requirements of ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring is required, or as detailed in the nora Installation Guide or nora® nTx Installation Guide as appropriate.
- C. A secure storage area 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% ± 10% relative humidity, for at least 48-hours prior to and during the application of the flooring, so the flooring contractor can acclimate the flooring materials is required.
- D. An installation area that is weather tight and maintained either permanently or temporarily at ambient service temperature and humidity (except walk in freezers or similar), or 68°F ± 5° F and 50% ± 10% relative humidity, for at least 48-hours prior to, during and 72-hours after the application of the flooring is required.
- E. Areas with direct prolonged exposure to sunlight should be protected with the use of Low E glass doors and windows or facades.
- F. Areas of the flooring that are subject to direct sunlight through doors or windows should have them covered using blinds, curtains, cardboard or similar for the time of the installation and 72-hours after the installation to allow the adhesive to cure. Note: These areas should be installed using wet adhesives only.
- G. 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.
- H. Have the flooring cleaned no sooner than 72-hours (unless given written permission from the nora® Technical Department) after the installation using either the nora pro clean® system or a standard method as detailed in the appropriate nora® Maintenance Guide.

3.2 FLOORING CONTRACTOR RESPONSIBILITIES

- A. Provide trained installers that have at least one of the following:
 - 1. Approved by nora systems, Inc. for all of the requirements of the project or INSTALL (International Standards & Training Alliance) certified for the requirements of the project.
 - 2. An effective installation manager, to manage the project, installers, and ensure that all of the required procedures are followed as detailed in the nora Installation Guide (available at www.nora.com/us).
- B. Follow all requirements in the appropriate nora Installation Guide or nora nTx Installation Guide.

END OF SECTION