

**GUIDE SPECIFICATIONS FOR
noraplan environcare™ ed
BY nora systems, Inc.**

This document is coordinated with the resilient tile and resilient sheet products in the
nora systems, Inc. product literature, including the Product Catalog,
and is available from nora systems, Inc. on www.nora.com/us.

**SECTION 09650
RESILIENT FLOORING**

PART 1 - GENERAL

1.01 SUMMARY

A. The work of this Section includes:

1. Rubber tile flooring
2. Rubber sheet flooring
3. Rubber wall base
4. Rubber stairtreads and accessories
5. Responsibilities, preparation/installation

B. Related Sections: Other specification sections which directly relate to the work of this section include, but are not limited to, the following:

1. Section 03300 - Cast-In-Place Concrete; concrete substrate; slab surface tolerances; vapor retarder for applications on or below grade; 83/90 degree riser and tread edge angle for stairtread and nosings
2. Section 06100 - Rough Carpentry; plywood substrate; surface tolerances
3. Section 10270 - Access Flooring; resilient floor covering for access panels

C. References (Industry Standards)

1. American Society for Testing and Materials (ASTM)
 - a. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
 - b. ASTM D2240 Standard Test Method for Rubber Property - Durometer Hardness
 - c. ASTM D3389 Standard Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform, Double-Head Abrader)
 - d. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
 - e. ASTM E648 Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
 - f. ASTM E662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
 - g. ASTM E2180 Standard Test Method for Determining the Activity of Incorporated Antimicrobial Agent(s) in Polymeric or Hydrophobic Materials
 - h. ASTM F150 Standard Test Method for Electrical Resistance of Conductive and Static Dissipative Resilient Flooring
 - i. ASTM F511 Standard Test Method for Quality of Cut (Joint Tightness) of Resilient Floor Tile
 - j. ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
 - k. ASTM F970 Standard Test Method for Static Load Limit
 - l. ASTM F1344 Standard Specification for Rubber Floor Tile
 - m. ASTM F1482 Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring
 - n. ASTM E1745 Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs
 - o. ASTM F1859 Standard Specification for Rubber Sheet Floor Covering Without Backing

- p. ASTM F1860 Standard Specification for Rubber Sheet Floor Covering With Backing
- q. ASTM F1861 Standard Specification for Resilient Wall Base
- r. ASTM F2055 Standard Test Method for Size and Squareness of Resilient Floor Tile by Dial Gage Method
- s. ASTM F2169 Standard Specification for Resilient Stair Treads
- t. ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using *in situ* Probes
- u. ASTM F2420 Standard Test Method for Determining Relative Humidity on the Surface of Concrete Floor Slabs Using Relative Humidity Probe Measurement and Insulated Hood
- v. ASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

2. European Norm (EN)

- a. EN 1815 Resilient and textile floor coverings. Assessment of static electrical propensity.
- b. FTM 4046 101 Static Decay

3. Electro Static Discharge (ESD)

- a. ESD S7.1 100 Resistive Characterization of Flooring Materials
- b. ESD STM 97.2 Floor Materials and Footwear - Voltage Measurement on a Person

4. 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

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's product data sheets, installation guide, and maintenance guide for each material proposed for use (available on www.nora.com/us).
- B. Samples: Submit two 3 inch by 3 inch samples of each product (except serra, degree and stairtreads), in color specified, for verification. The degree product requires two 6 inch by 6 inch samples; serra requires two 3 inch by 6 inch samples, and stairtreads require two 2 inch wide samples.
- C. MSDS (Material Safety Data Sheets) should be submitted for adhesives, heat weld rod, cold weld, liquid wax and cleaning agents. These are available at www.nora.com/us.

1.03 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, shall submit evidence of ability to meet performance requirements specified not less than 10 days prior to bid date.
 - 1. Color Matching: Provide resilient flooring products, including wall base and accessories, from one manufacturer to ensure color matching.
 - 2. Manufacturer capable of providing technical field service representation.
- B. Installer Qualifications: Installer shall be *nora* approved for the requirements of the project or INSTALL (International Standards & Training Alliance) resilient certified for the requirements of the project.

1.04 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 room temperature prior to installation.

1.05 PROJECT CONDITIONS

- A. Maintain temperature and humidity at service levels or 68° F (20° C), ± 5° F (3° C), and 50% RH ± 10% in areas to receive resilient flooring. Specified temperature shall be maintained at least 48 hours before, during, and 72 hours after installation.

1.06 WARRANTY

- A. Provide manufacturer's standard one-year warranty against defects in manufacturing and workmanship of all flooring products. Provide manufacturer's warranty as specified under each product as applicable, including limited wear, defect and conductivity.

1.07 EXTRA MATERIALS

- A. Furnish full size units equal to 2 percent of quantity of resilient flooring installed as extra materials. Properly label and package extra materials. Deliver to owners designated storage area.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. Provide resilient flooring by *nora systems, Inc.*, 94 Glenn Street, Lawrence, MA 01843; telephone 800-332-NORA, or 978-689-0530; fax 978-975-0110.
- B. The manufacturer shall have the Quality Management System approved by Lloyd's Register Quality Assurance to the Quality Management System Standard ISO 9001:2000.
- C. The manufacturer shall offer a construction waste take back program for the purpose of reducing jobsite waste by taking back their uninstalled waste flooring. Details of the *nora* program are available on www.nora.com/us.

Note: For specific product application recommendations please refer to your local *nora* sales representative, or www.nora.com/us.

2.02 RESILIENT TILE FLOORING FOR ELECTROSTATIC DISSIPATIVE PROTECTION

- A.

1.	Product Name:	noraplan environcare™ ed, Article 2390
2.	Material:	nora rubber compound 948 with abundant natural fillers and environmentally compatible color pigments
3.	Surface:	Smooth
4.	Color:	As selected
5.	Tile Size:	0.08 inches (2mm) thickness, 24 inches by 24 inches (610mm by 610mm)
6.	Back of Tile:	Smooth, sanded back
7.	Homogeneous:	Yes, mottled
8.	Limited Wear Warranty/ Conductivity Warranty:	5 year wear; 10 year conductivity
9.	Hardness:	ASTM D2240, Shore type A, required ≥ 75
10.	Static Load:	Per ASTM F970 Standard Test Method for Static Load Limit, residual compression, when tested with 800 lbs, ≤ 0.005"
11.	Quality of Cut:	ASTM F511 ≤ 0.005"
12.	Squareness:	ASTM F2055 ≤ 0.010"
13.	ISO 14001:	Manufacturer shall be ISO 14001 Environmental Management Systems Certified
14.	PVC Free:	Products shall contain no polyvinyl chloride
15.	Abrasion Resistance:	Taber abrasion test, ASTM D3389, H-18 wheel, 500 gram load, 1000 cycles, gram weight loss ≤ 0.4
16.	Slip Resistance:	Static coefficient of friction (James Test): ASTM D2047, ≥ 0.5
17.	Bacteria Resistance:	Products shall be resistant to bacteria, fungi, and micro-organism activity, according to ASTM E2180 and ASTM G21
18.	Halogen Free:	Products shall contain no halogens

- 19. Sound Absorption: ISO 140-8 Footfall Sound Absorption, 6 dB
- 20. Burn Resistance: Cigarette and solder burn resistance
- 21. Flammability: ASTM E648; NFPA 253; NBSIR 75 950, ≥ 0.45 watts per square centimeter, Class 1
- 22. Smoke Density: ASTM E662, NFPA 258, NBS smoke density, < 450
- 23. Asbestos Free: Products shall contain no asbestos
- 24. Non Hazardous: Flooring shall be made without any chemicals that may be hazardous or containing any teratogenic, mutagenic or any other ingredients known to be carcinogenic
- 25. Cleaning: Flooring surface shall have the ability to be cleaned and maintained without the use of any chemicals that may be hazardous or containing any teratogenic, mutagenic or any other ingredients known to be carcinogenic. Manufacturer shall make available a cleaning system that effectively cleans the flooring surface using water, cleaning pads and a suitable cleaning machine, without the use of factory and/or field-applied coatings.
- 26. Shine: Higher shine surfaces can be achieved by dry buffing without any artificial topical applied coatings
- 27. Static Generation: < 20 Volts, per ESD STM 97.2*
- 28. Decay Time: < 0.25 , FTM 101 C 4046 (sec)
- 29. Conductivity: ESD, ASTM F150, $10^6 < 10^9$
- 29. Conductivity: ESD, ASTM F150, $10^6 < 10^9$

2.03 RESILIENT SHEET FLOORING FOR ELECTROSTATIC DISSIPATIVE PROTECTION

- A. 1. Product Name: **noraplan environcare™ ed, Article 1390**
- 2. Material: **nora®** rubber compound 948 with abundant natural fillers and environmentally compatible color pigments
- 3. Surface: Smooth
- 4. Color: As selected
- 5. Roll Size: 0.08 inches (2mm) thickness, 49.2 feet by 48 inches (15m by 1.22m)
- 6. Back of Roll: Smooth, sanded back
- 7. Homogeneous: Yes, mottled
- 8. Limited Wear Warranty/
Conductivity Warranty: 5 year wear; 10 year conductivity
- 9. Hardness: ASTM D2240, Shore type A, ≥ 75
- 10. Static Load: Per ASTM F970 Standard Test Method for Static Load Limit, residual compression, when tested with 800 lbs results shall be ≤ 0.005 "
- 11. ISO 14001: Manufacturer shall be ISO 14001 Environmental Management Systems Certified
- 12. PVC Free: Products shall contain no polyvinyl chloride
- 13. Abrasion Resistance: Taber abrasion test, ASTM D3389, H-18 wheel, 500 gram load, 1000 cycles, gram weight loss ≤ 0.4
- 14. Slip Resistance: Static coefficient of friction (James Test), ASTM D2047, ≥ 0.5
- 15. Bacteria Resistance: Products shall be resistant to bacteria, fungi, and micro-organism activity, according to ASTM E2180 and ASTM G21
- 16. Halogen Free: Products shall contain no halogens
- 17. Sound Absorption: ISO 140-8 Footfall Sound Absorption, 6 dB
- 18. Burn Resistance: Cigarette and solder burn resistance
- 19. Flammability: ASTM E648; NFPA 253; NBSIR 75 950, ≥ 0.45 watts per square centimeter, Class 1
- 20. Smoke Density: ASTM E662, NFPA 258, NBS smoke density, < 450
- 21. Asbestos Free: Products shall contain no asbestos
- 22. Non Hazardous: Flooring shall be made without any chemicals that may be hazardous or containing any teratogenic, mutagenic or any other ingredients known to be carcinogenic
- 23. Cleaning: Flooring surface shall have the ability to be cleaned and maintained without the use of any chemicals that may be hazardous or containing any teratogenic, mutagenic or any other ingredients known to be carcinogenic. Manufacturer shall make available a cleaning system that effectively cleans the flooring surface using water, cleaning pads and a suitable cleaning machine, without the use of factory and/or field-applied coatings.
- 24. Shine: Higher shine surfaces can be achieved by dry buffing without any artificial topical applied coatings
- 25. Static Generation: < 20 Volts, per ESD STM 97.2*

26. Decay Time: < 0.25, FTM 101 C 4046 (sec)
27. Conductivity: ESD, ASTM F150, $10^6 < 10^9$

PART 3 – RESPONSIBILITES

3.01 GENERAL CONTRACTOR RESPONSIBILITIES

- A. A building or flooring area that is water tight and fully enclosed from the elements, including roof, windows and doors, that is complete and finished prior to the flooring installation is required.
- B. 1. A concrete substrate that fully conforms to the requirements of ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring is required.
2. A wooden substrate that is not directly in contact with concrete or soil subfloors on or below grade, even if built on sleepers is required. All suspended wood floors shall have an adequate underfloor ventilation system, and a permanently effective vapor retarder shall be placed on the ground beneath the air space.
- C. A concrete substrate that shall be structurally sound and that is finished shrinking, cracking, curling or moving is required.
- D. For all concrete substrates on or below grade, a permanent effective vapor retarder with a low permeance (less than 0.1) having a minimum thickness of 10 mils, or 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) shall be placed directly underneath the concrete above the granular fill, and shall be installed as per the manufacturer's written instructions. A letter shall be provided to the end user confirming the correct products have been used and that it is fully warranted.
- E. A non-burnished concrete surface free from any paint, wax, oil, grease, 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, adhesive removers or anything that may prevent the adhesive smoothing compound bonding. If surface is not free of the previous contaminates, then the general contractor should provide the mechanical means to remove them. This could be Blastrac, diamond grinding or similar with a vacuum attachment.
- F. Valid test and acceptable test results to the end user, documenting the location of all tests and the moisture content of the concrete subfloor prior to flooring installation when tested as per ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes, using a Wagner Rapid RH probe is required. Results shall be acceptable for the adhesive specified <80% RH for nora® 410, 414, PU310 and PU316 or <75% RH for all other adhesives, or go to 3.01 H.
- G. As an alternative, ASTM F2420 - Standard Test Method for Determining Relative Humidity on the Surface of Concrete Floor Slabs Using Relative Humidity Probe Measurement and Insulated Hood may be used. However, it should be noted that with this method, results shall be <70% relative humidity for all adhesive systems.
- H. Only if it is not possible to provide a concrete substrate with acceptable moisture levels, then an effective surface moisture suppression system shall be used (see Section: 3.02 G/H). Please note that any additional costs associated with this method is the responsibility of the general contractor, including any requirement to prime and apply smoothing or leveling compound.
- I. A secure storage area that is maintained permanently or temporarily at service temperature and humidity, 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.
- J. An installation area that is maintained permanently or temporarily at service temperature and humidity, 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.
- K. Areas with direct exposure to sunlight shall be protected with the use of Low E glass doors, windows and one sided glass facades.

- L. Areas of the flooring that are subject to direct sunlight through doors or windows shall have the doors or windows 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.
- M. If required, protect completed work from damage and construction operations using Masonite hardwood/plywood or similar, and inspect immediately before final acceptance of project.
- N. Clean flooring surfaces only after adhesive has fully cured, no sooner than 72 hours after installation, unless agreed with nora representative. Clean surfaces using methods recommended by manufacturer's maintenance guide.

3.02 FLOORING CONTRACTOR RESPONSIBILITIES

- A. Installer shall be approved by nora systems, Inc. for the requirements of the project or INSTALL (International Standards & Training Alliance) resilient, approved or certified for the requirements of the project.
- B. An effective project manager, to manage the installers, and ensure that all of the required procedures are followed, documented and that the installation guides are followed is required.
- C. Acclimate the flooring in the provided secure storage area that is maintained permanently or temporarily at service temperature and humidity, or 68°F ± 5° F and 50% relative humidity, for at least 48 hours prior to and during the application of the flooring.
- D. For wooden subfloors American Plywood Association (APA) underlayment grade plywood shall be used at a suitable thickness to overlay the wooden substrate as per 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, nora systems, Inc. cannot accept any liability of joints telegraphing through the finished floor.
- E. Perform an adhesive bond test in each major area (1 per 1,000 sq. ft.). A detailed method statement is available from nora systems, Inc., upon request. Examine after 72 hours to determine whether the bond is good to the substrate, if the preparation is sufficient, or to look for signs of moisture. Do not proceed with the installation until all the results of the bond test are acceptable.
- F. Clean out and fill or repair any saw cuts and cracks following the written instructions from the manufacturer of the surface moisture suppression system (if used), or the smoothing compound manufacturer. For any expansion joints, use a suitable expansion joint cover.
- G. When required, use a suitable surface moisture suppression system that is fully warranted by the suppression system manufacturer to perform under the given conditions (moisture content, presence or lack of vapor retarder, surface profile and presence of any known contaminants within the concrete) for at least the same warranty time period as the flooring supplied. Provide written confirmation that the subfloor was prepared correctly prior to the installation of suppression system.
- H. Provide written confirmation that any surface moisture suppression system used has been applied as instructed by the suppression system manufacturer, including the required mils thickness, and confirm the amount of gallons used per square footage and that the workmanship is fully warranted. Perform and provide written confirmation of the results of any testing required by the suppression mitigation system manufacturer.
- I. If required, use a suitable fully warranted smoothing compound that shall have a minimum compressive strength of 3000 psi (per ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring) at the time the flooring will be used (heavy traffic). Follow the manufacturer's written installation instructions, including removal of old adhesives (do not use chemical adhesive removers, use the RFCI wet scraping method), curing compounds, or any potential bond breakers and confirm any necessary surface profile. Follow any requirement to prime the subfloor prior to smoothing using the recommended minimum and maximum thickness.
- J. If a smoothing compound is used, provide written confirmation that the smoothing compound has been mixed and applied to the required smoothness and or levelness of the general contractor / end user, or ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring, following the manufacturer's written instructions, and that the workmanship is fully warranted.

- K. 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.
- L. Install resilient flooring, including the following, in accordance with manufacturer's installation guides.
 - 1. Do not mix manufacturing batches of a color within the same area.
 - 2. Do not install resilient flooring over building expansion joints.
 - 3. Do not install defective or damaged resilient flooring.
 - 4. Layout resilient flooring to provide equal size at perimeter. Adjust layout as necessary to reduce the amount of resilient flooring which is cut to less than half full width.
 - 5. Lay resilient flooring with arrows in the same direction (excluding borders).
 - 6. Install resilient flooring without voids at seams. Lay seams together without stress.
 - 7. Cut/scribe resilient flooring neatly at perimeter and obstructions.
 - 8. Extend resilient flooring into reveals, closets, and similar openings.
 - 9. Remove excess adhesive immediately.
 - 10. Install reducer strips at exposed edges.
- M. Install **nora** wallbase in accordance with manufacturer's installation guide. Install in longest practical lengths.
- N. Install resilient stairtreads and accessories in accordance with manufacturer's installation guide.
- O. **noraplan**® SEAMLESS FLOORING INSTALLATION (when required). Rout seams and weld together with coordinated colored heat welding rod or with coordinated colored cold weld compound in accordance with resilient flooring manufacturer's installation guide.
- P. **norament**® SEAMLESS FLOORING INSTALLATION (when required). Rout seams and weld together with coordinated colored cold weld compound in accordance with resilient flooring manufacturer's installation guides.
- Q. FLASH COVING OF SHEET GOOD (when required). Extend flooring up the wall in a flash-coved method, with resilient flooring manufacturer's recommendations, to a height as required. Provide cove stick and suitable capping strip. All internal and external vertical seams shall be cold welded with coordinated colored cold weld compound. The sanitary base shall be installed using **nora**® basefix and following the appropriate installation guide.
- R. SANITARY BASE (when required). If specified, all seams between sanitary base and flooring and all vertical and mitered seams shall be cold welded together with coordinated colored cold weld compound in accordance with resilient flooring manufacturer's installation guide.
- S. Touch-up and repair any minor damage to eliminate all evidence of repair. Remove and replace work which cannot be satisfactorily repaired.

3.03 MANUFACTURER RESPONSIBILITIES

- A. Provide a one-year warranty against defects in manufacturing of all products supplied. Provide limited wear warranty for the flooring supplied, as detailed per product.
- B. Adherence to the Quality Management System approved by Lloyd's Register Quality Assurance to the Quality Management System Standard ISO 9001:2000.
- C. Provide flooring that shall contain no polyvinyl chloride.
- D. ISO 14001 Environmental Management Systems certification.
- E. Training for the installers, at **nora**® Technical Academy. Contact the **nora**® Technical Department for details.
- F. Provide flooring that shall contain no halogens.

- G. Provide flooring surfaces that shall be easily cleaned and not require coatings and stripping, or use chemicals that may be hazardous to human health.
- H. Provide flooring that shall contain no asbestos.
- I. Provide products that shall be free of teratogenic, mutagenic or anything known to be carcinogenic.

END OF SECTION

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