Roppe ESD Static Control Vinyl Flooring

Product Data
Section 9
Resilient Flooring

1. Product Nomenclature

Roppe ESD Static Control Vinyl Flooring

2. Manufacturer

Roppe Corporation
1602 N. Union Street
P.O. Box 1158
Fostoria, Ohio USA 44830-1158
Phone: 419.435.8546
Toll Free: 800.537.9527
Fax: 419.435.1056
Email: sales@roppe.com
Web Site: www.roppe.com
Sweets Catalog: 09 65 00/ROP

3. Product Description

3.1 Basic Application

Roppe ESD Static Control Vinyl Flooring effectively dissipates static electricity in hospital operating rooms, anesthetizing areas, radiological facilities, clean rooms, computer/data processing rooms, chemical laboratories, electronics manufacturing, telecommunications installations, pharmaceutical manufacturing, on access flooring, ammunitions facilities, and other areas where explosive elements are used and static electricity presents a hazard. Roppe ESD Static Control Vinyl Flooring tile help control static charges on the human body, which can be as high as several thousand volts, by installing the tile with a specially formulated conductive adhesive. This creates a continuous conductive pathway for static charges flowing through the tile and along the conductive adhesive to the ground. Roppe ESD Static Control Vinyl Flooring systems attack voltage generation at the source – the floor-shoe or floor-caster interface. When used in conjunction with static control footwear, the Roppe ESD Static Control Vinyl Flooring system provides greater mobility in the area. The use of wrist straps is recommended at the workstation for additional safety. It is ideal in areas requiring a solution for unwanted human body voltage (HBV) with a high level of personnel traffic. Roppe ESD Static Control Vinyl Flooring has a lifetime electrical warranty to meet the industry standards for electrical resistance and keeps body voltage generation at the minimum levels demanded in the most sensitive environments. This product contains an antimicrobial and is ideal in areas that require resistance to staining by fungi and streptomycin reticulum, a pink stain organism. The pure virgin vinyl composition provides excellent resistance to abrasion, chipping, cracking, and permanent indentations for heavy-duty performance requirements and to help conceal most substrate irregularities, and yet it is flexible for fast and economical installations. The unique chip pattern is appealing and requires no floor finish. ESD Static Control Vinyl Flooring may be “heat welded,” producing a

seamless, Unitized Installation. To complement the variety of styles, coordinating wall base and accessories are available.

3.2 Product Construction

Roppe ESD Static Control Vinyl Flooring are solid, homogeneous vinyl tiles manufactured using first-quality, virgin raw materials. Special ingredients are added to provide its excellent light stability, chemical resistance, and to ensure an aesthetically pleasing finish without the need for waxing. Roppe ESD Static Control Vinyl Flooring is uniform in color, pattern effect, and composition throughout the thickness of the tile. Roppe ESD Static Control Vinyl Flooring contains an antimicrobial that will pass the fungi and pink stain test. Roppe's Precision Squared™ cutting system ensures a precise fit.

3.3 Product Type and Dimensions

Tile Gauge: 1/8" (3.175mm) nominal

- Available Tile Sizes:
    - 12" x 12" (304.8mm x 304.8mm) nominal
    - 24" x 24" (609.6mm x 609.6mm) nominal
    - 36" x 36" (914.4mm x 914.4mm) nominal
    - All noted sizes are nominal.
    - Fractional tiles are available for use on raised/access flooring panels.

- Conductive or Static Dissipative Tile: Please specify either Conductive or Static Dissipative Tile when Ordering.
- Pre-grooved (Beveled) Edges: Available in 24" x 24" (609.6mm x 609.6mm) and 36" x 36" (914.4mm x 914.4mm) for Heat Welded Unitized Tile Installation System
- Available Color: 9 colors available: #750 Cumulus White, #751 Haze Gray, #753 Stratus Blue, #754 Storm Beige, #701 Neutron, #702 Electron, #760 Safety Yellow, #756 Thunder Blue and #757 Tornado Gray.
- Copper Foil (for common ground point): Available in 1" wide x 0.004" thick x 18" long (one per package).
- Custom Color Tile Matching: Custom color matching is available.
- Custom Designs: Computer-controlled, precision cutting service available for logos, signage, or other images incorporated into the flooring layout.

3.4 Vinyl Welding Rods:

- Available Vinyl Welding Rod Colors: #122 Natural, #161 Snow, #165 Colonial Blue, #171 Sandstone, #174 Smoke, #197 Iceberg, #198 Ivory, #756 Thunder Black, #757 Tornado Gray & #760 Safety Yellow.

- Vinyl Welding Rods Ordering Calculations:

- For 24” x 24” Tiles: The total square feet of tile divided by 400 equals the number of rolls of vinyl welding rods required.
- For 36” x 36” Tiles: The total square feet of tile divided by 600 equals the number of rolls of vinyl welding rods required.

- Vinyl Welding Rods Packaging: Vinyl Welding Rods are 0.160” (4 mm) in diameter, and packaged in 400 linear foot rolls.
- Custom Color Vinyl Welding Rods: Custom color matching is available.

3.5 Features and Benefits

- Contains 2% soybean oil, a renewable resource, which may contribute to the LEED® Green Building Certification System, and meets CHPS criteria.
- High luster surface eliminates need for floor finishes – easily buffs to a shine and resists effects of common chemicals and solder.
- Withstands heavy equipment loads without permanent indentation, even under rolling load conditions up to 2,000 psi.
- Lifetime conductivity warranty. Provides permanent conductive properties. 10-year limited wear warranty.
- Meets or exceeds all ESD standards by ASTM F-150, NFPA 99, and ESD S7.1
- All colors available at a Single Price Point.

4. Technical Data

4.1 Technical & Specification Data

4.1.1 Meets ASTM F 1700, Specification for Solid Vinyl Tile: Class I, Type A; Federal Specification SS-T-312B, Type III

(Required ASTM Characteristics and Tests)

Characteristics	Requirement	Test Method
Size, tolerance	± 0.016 in. /lin. Ft (0.4mm/305mm)	F-2055
Thickness	As Specified ± 0.005 in. (0.13mm)	F-386
Squareness	Maximum 0.010 in. (0.25mm)	F-2055
Residual Indentation	Average less than 8%, maximum single reading 10%	F-1914

Flexibility	1 in. (25.4mm) mandrel, no crack or break	F-137
Dimensional Stability	0.020 in. /lin. Ft. (0.51mm/305mm)	F-2199
Resistance to Chemicals	No more than slight change in surface	F925
dulling surface attack, or staining.		
Resistance to Light	Delta E < 8 ave., max	F-1515
Resistance to Heat	Delta E < 8 ave., max	F-1514

(Additional ASTM Characteristics and Test)

4.2 Electrical resistance: Conductive is 2.5 x 10^4 to 1 x 10^6; Static Dissipative is 1 x 10^6 to 1 x 10^8 when tested in accordance with ASTM F 150, UL779 (UL Listed No. 22L9), ANSI/ESD S7.1-2005, NFPA 99

4.3 Federal Standard Test Method 101C, Method 4046(101c), Static Decay: Conductive and Static Dissipative Passes, 5000 volts to 0 volts are < 0.01 second.

4.4 AATCC 134, Static Propensity: Passes, Conductive is < 5volts; Static Dissipative is < 20 with conductive shoes.

4.5 ASTM E 648 (NFPA 253), Critical Radiant Flux: Class 1, > 1.00 W/cm^2

4.6 ASTM E 662 (NFPA 258), Specific Optical Density of Smoke Generated by Solid Materials: Passes, < 450

4.7 UL 992, Surface Flame Propagation: Passes, < 2.0

4.8 AATCC Test Method 147: Antibacterial Activity Assessment of Textile Materials-Parallel Streak; NZ, No zone

4.9 ASTM D 570, Water Absorption of Plastics: < 0.15%

4.10 ASTM D 2047, Static Coefficient of Friction (Slip Resistance): > 0.50, < 0.70; dry, flat surface using neolite sensors.

4.11 ASTM F 970, Static Load Limit: 250 psi; Modified ASTM F 970, 2000 psi

4.12 ASTM E 595, Outgassing: Excellent, Test results available

4.13 FED-STD-209E, Airborne Particulate Cleanliness: Excellent, Test results available

4.14 EN 425, Castor Chair Test: Passes

4.15 ASTM D 3389, Abrasion Resistance: Excellent

4.16 FMVSS 302, Title 49, Part 571, Flammability of Interior Materials: Passes

4.17 ASTM G 21, Determining Resistance of Synthetic Polymeric Materials to Fungi: Excellent resistance – No growth.

4.18 ASTM E 1428, Performance of Antimicrobials in or on Polymeric Solids against Staining by Streptoverticillium Reticulum (A Pink Stain Organism): 0, No stain

4.19 ASTM F 1514, Heat Stability: Passes

4.20 ASTM F 925, Resistance to Chemicals: Passes

When tested in accordance with Test Method ASTM F 925 (short-term exposure), the vinyl tile shall have no more than a slight change in surface dulling, surface attack, or staining when exposed to the following chemicals:

White Vinegar (5 % Acetic Acid)

Rubbing Alcohol (70 % Isopropyl Alcohol)

White Mineral Oil (Medicinal Grade)

Sodium Hydroxide Solution (5 % NaOH)

Hydrochloric Acid Solution (5 % Hcl)

Sulfuric Acid Solution (5 % H2SO4)

Household Ammonia Solution (5 % NH4OH)

Household Bleach (5.25 % NaOCl)

Olive Oil (light)

Unleaded Gasoline (regular grade)

Phenol (5 % active phenol)

Kerosene (K1)

NOTE— The basic chemicals are representative of those likely to be found in residential, commercial, and institutional use. Many proprietary compounds contain one or more of these basic chemicals. Should the flooring for an unusual application need to be resistant to a specific chemical, this additional requirement should become part of the procurement document.

4.2 Architects' Material Specifications – ESD STATIC CONTROL VINYL FLOORING

4.2.1 Architects' Material Specifications - ROPPE ESD CONDUCTIVE STATIC CONTROL SOLID VINYL TILE
The solid, homogeneous ESD Conductive Static Control Solid Vinyl Tile shown in the finish schedule or listed herein shall be Roppe ESD CONDUCTIVE STATIC CONTROL FLOORING as manufactured by Roppe Corporation, Fostoria, Ohio. It shall be constructed of first-quality materials and shall be smooth and free from imperfections, which detract from its appearance. The ESD Static Control solid vinyl tile, Conductive, shall conform to ASTM F-1700, Class 1, Type A. The resistance of the ESD Conductive Static Control Flooring shall be less than an average of 1,000,000 ohms and shall be more than an average of 25,000 ohms as tested in accordance with NFPA 99 2-6.3.8, ASTM F-150, UL 779, and ANSI/ESD S7.1 at 10 volts or 100 volts. The tile shall be 1/8" (3.175mm) in thickness and of size _____ (specify 12" x12" {304.8mm x 304.8mm}, 24" x 24" {609.6mm x 609.6mm}, or 36" x 36" {914.4mm x 914.4mm}) and in color _____ (specify color number and name). {Note: For specifications in areas where the installation is to be heat welded, state as follows: "The tile shall be formulated and pre-grooved for Roppe Unitized Installation."}

*Roppe ROP605 or ROP604 ESD adhesive must be used with this product. Roppe vinyl welding beads, .160" in diameter, are available in matching colors.

4.2.2 Architects' Material Specifications - ROPPE ESD STATIC DISSIPATIVE CONTROL SOLID VINYL TILE
The solid, homogeneous ESD Static Dissipative Control Solid Vinyl Tile shown in the finish schedule or listed herein shall be Roppe ESD STATIC CONTROL FLOORING as manufactured by Roppe Corporation, Fostoria, Ohio. It shall be constructed of first-quality materials and shall be smooth and free from imperfections, which detract from its appearance. The ESD Static Control solid vinyl tile, Dissipative, shall conform to ASTM F-1700, Class 1, Type A. The resistance of the tile will be higher than the average of 1,000,000 ohms and less than the average of 100,000,000 ohms as tested in accordance with NFPA 99 2-6.3.8, ASTM F-150, UL 779, and ANSI/ESD S7.1.The tile shall be 1/8" (3.175mm) in thickness and of size _____ (specify 12" x12" {304.8mm x 304.8mm}, 24" x 24" {609.6mm x 609.6mm}, or 36" x 36" {914.4mm x 914.4mm}) and in color _____ (specify color number and name). {Note: For specifications in areas where the installation is to be heat welded, state as follows: "The tile shall be formulated and pre-grooved for Roppe Unitized Installation."}

*Roppe ROP605 or ROP604 ESD adhesive must be used with this product. Roppe vinyl welding beads, .160" in diameter, are available in matching colors.

5. Product Limitations/Precautions

Roppe's ESD Static Control Vinyl Flooring must be installed using Roppe ROP605 two-part ESD epoxy or ROP604 single-part ESD acrylic adhesive and in accordance with Roppe's recommendations in order for the product warranty to be in effect. **Caution:** ROP605 Two-Part Epoxy only must be used in areas subjected to rolling loads, lateral sheer stress and over non-

porous substrates including but not limited to metal, and below grade. Notice: It is the Flooring Installer's direct responsibility to inspect and loose lay the flooring in the room or area prior to installation to determine the proper layout and best overall appearance. Flooring Installer must inspect all material for manufacturing imperfections and irregularities prior to installation. All manufacturing imperfections or irregularities must be reported to the appropriate authority. **Caution**: The use of some types of paper / fabric footwear covers (booties) or similar footwear covers used in hospital or clean-room applications may inhibit the slip resistance properties of the flooring. The proper ESD footwear such as heal grounders or ESD shoes must be worn to assure proper performance. It is recommended that ESD wrist straps be worn at work stations in conjunction with foot grounders. Roppe does not recommend the use of floor finishes, sealers or waxes of any kind, as they may form an insulating layer on the tile surface and adversely affect the performance of the product. When using Static Dissipative floor finishes, the electrical properties may be affected and therefore testing results and or performance is the sole responsibility of the floor finisher and/or facility owner. If an ESD floor finish is required, contact Roppe's Technical Service for recommendations prior to applying any floor finishes. Roppe's ESD Static Control Solid Vinyl Tile may have manufacturing sheen or shade variances until initial maintenance is performed. Roppe's ESD Static Control Solid Vinyl Tile may be stained if it is allowed to remain in contact with products that may contain staining ingredients such as tires, casters, and walk-off mats. Ensure that any disinfectant, cleaning agent, dye, pesticide, or other chemical (solid, liquid, or gas) that may come in contact with the flooring will not produce permanent discoloration and/or damage to the flooring. If any of the chemicals are not on the stain resistance chart, the tile must be tested prior to installation. Roppe's ESD Static Control Solid Vinyl Tile is not to be used in or near commercial kitchens or other areas exposed to animal fats, greases, oils, solvents, strong detergents, or where there is excessive moisture. Roppe's ESD Static Control Solid Vinyl Tile must not be used in areas that may be subjected to sharp spikes, cleats, sharp wheels, or other objects that could damage the flooring. Use appropriate floor protection devices. Dragging or improperly moving furniture or equipment across the surface of the tile or dropping objects onto the surface of the tile may cause permanent damage to the flooring. The flooring is not to come in contact with direct heat, such as radiators, hot ovens, or other heated equipment. This product is for indoor use only with temperatures maintained from 65ºF (19ºC) and 85ºF (30ºC). Roppe's ESD Static Control Solid Vinyl Tile is a specialty product and should be installed in areas for control of ESD only. Color selections must be made from actual samples as exact matching of color, shade, and/or mottling may vary. Read all of the product information on installation, maintenance, and product limitations/precautions before beginning the installation. Roppe's recommended installation instructions, maintenance instructions, and product limitations/precautions must be adhered to in order for the product warranty to be valid. CAUTION: The use of some types of paper or fabric booties or similar footwear may inhibit the slip resistance properties of the flooring. The proper conductive or static dissipative footwear and wrist straps designed for static control should be worn. Follow all local, state, and federal safety standards and practices.

6. Installation

6.1 General Preparation and Conditioning

Read the literature concerning the product description, product limitations, product installation, adhesive information, product maintenance, and warranty before installing the tile. All materials including recommended adhesive are to be delivered to the installation location in its original packaging with labels intact. DO NOT stack pallets. Store products in a dry area protected from the weather on a smooth, flat, dry surface with temperatures maintained between 65ºF (19ºC) and 85ºF (30ºC). Remove all plastic wrapping and strapping from the pallets in the installation area at least 48 hours prior to installation. For proper acclimatization, remove the tile from the cartons and stack evenly on a smooth dry surface with each stack no more than 18" high. When stacking tiles prior to and during installation, place the tiles face-to-face and sanded back-to-sanded back to prevent the sanded back of the tiles from being contaminated. Protect the product from damage. The installation area, tile, adhesive, and welding rods, if required, are to be maintained between 65ºF (19ºC) and 85ºF (30ºC) for at least 48 hours before installation, during installation, and 48 hours after the installation. Maintain room temperatures between 65ºF (19ºC) and 85ºF (30ºC) thereafter. If temperatures other than Roppe's requirements become an issue, contact Roppe's Technical Service Department prior to installation. Notice: Tile should be loose laid in the room or area prior to spreading of adhesive to determine the proper layout to ensure the best overall appearance and to minimize small border cuts. Inspect all material for proper type and color. Notice: It is the Flooring Installer's direct responsibility to inspect and loose lay the flooring in the room or area prior to installation to determine the proper layout and best overall appearance. Flooring Installer must inspect all material for manufacturing imperfections and irregularities prior to installation. All manufacturing imperfections or irregularities must be reported to the appropriate authority. Conduct the proper moisture emission and pH testing on the substrate. Proceed with the installation only when the conditions are proper and correct. A bond test using Roppe ROP605 two-part ESD epoxy or ROP604 single-part ESD acrylic adhesive throughout the area approximately 50 feet apart should be performed at least one week prior to the scheduled installation to ensure the surface is suitable. After 72 hours, there should be an unusual amount of force to lift tile from the substrate with adhesive bonding to the tile and the substrate. Close the area to traffic during flooring installation. Install tiles and accessories after other finishing operations, including painting, have been completed. If the back of the tile becomes soiled prior to installation, clean with a clean soft cloth dampened with clean water or denatured alcohol, and allow to completely dry. Tile may be installed over radiant heated floors, provided the surface temperature is maintained between 65ºF (19ºC) and 85ºF (30ºC). If radiant-heated floors have cooled after installation, a gradual increase in temperature is required to prevent adhesive bond from being adversely (excluding ROP604) affected. **Notice**: You will find an arrow on the back, sanded side, of each tile. It is important that each tile be installed with the arrow in the same direction. If the tiles are not laid in the same direction, the reflection of light will cause an optical illusion, making the surface appear to be different shades. If the tiles are installed at random, disregarding the arrows on the back, it will require extensive buffing with 3M 5300 Blue Cleaner pads and occasionally 3M 7200 Brown Stripper Pads with a 175-300 RPM buffer. **Warning**: Follow all local, state, and federal standards and practices for the proper removal and disposal of flooring, adhesives, or other materials. Follow

all local, state, federal, and manufacturer's safety standards for the use of all products and equipment.

6.2 Subfloor/Substrate Inspection and Preparation

6.2.1 All subfloors/substrates must be inspected prior to installation. All substrates must be clean, smooth, permanently dry, flat, and structurally sound. The substrate must be free of moisture, dust, sealers, paint, primers, curing compounds, parting agents, residual adhesives, adhesive removers, hardeners, resinous compounds, solvents, wax, oil, grease, asphalt, gypsum compounds, alkaline salts, excessive carbonation or laitance, mold, mildew, any other extraneous coatings, films, materials and all other foreign matter which might interfere/restrict proper adhesive bonding. DO NOT use sweeping compounds, solvents, citrus adhesive removers, or acid etching to clean the substrate. DO NOT install flooring over gypsum-based or plaster based leveling or patching compounds. DO NOT install new floor covering over old floor covering, as the old floor covering may not be adequately bonded, hide possible structural defects, or cause plasticizer migration into the new flooring. In renovation or remodel work, remove all existing *adhesive residue so that 100% of the overall area of the original subfloor/substrate is exposed. Follow The Resilient Floor Covering Institute's (RFCI) "Recommended Work Practice for Removal of Existing Floor Covering and Adhesive, and all applicable industry, local, state, and federal standards. Care must be taken to analyze the conditions and correct any problems prior to installation. Follow the manufacturer's recommendations for any patching or underlayment materials, excluding gypsum based or plaster based levelers or patching compounds.

* Some previous manufactured asphaltic "cutback" contained asbestos. For removal instructions, refer to the Resilient Floor Covering Institute's publication "Recommended Work Practices for Removal of Resilient Floor Covering".

6.2.2 Concrete substrates on all Grade Levels must be tested in accordance with ASTM F 1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride or ASTM F 2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs using *in situ* Probes to quantitatively determine the amount of moisture vapor emission at least one week prior to the installation. **Caution:** ASTM F 1869 or ASTM F 2170 tests cannot predict long-term moisture conditions of concrete slabs. Moisture testing only indicates moisture conditions at the time the tests are performed. Before conducting ASTM F 1869 or ASTM F 2170 test, the installation area must be maintained between for 65°F (19℃) and 85°F (30℃) or at least 48 hours prior to testing, during testing and thereafter. In addition, the concrete's temperature range must also be identical to that of the installation area. Conduct three test for the first 1,000 sq. ft. and one additional test for each 1,000 sq. ft. or fraction thereof per grade level. The Vapor Emission Rate shall not exceed 5.0 lbs and Relative Humidity Test shall not exceed 75% when using either ROP604 Acrylic ESD Adhesive or ROP605 Two-Part ESD Epoxy. If the substrate does not meet the above noted requirements, the flooring shall not be installed until the problem has been corrected. DO NOT install flooring if there is hydrostatic pressure. Every concrete floor slab on-grade or below grade to receive resilient flooring shall have a permanent, effective moisture vapor retarder installed below the slab. A pH test must be performed to test for excessive alkalinity using a pH pencil or litmus

paper and deionized water. A scaly, sandy, or powdery surface is an indication of some form of contaminant, usually excessive alkalis or an alkali-silica residue. A pH reading higher than 8 is an indication of a potential problem and the concrete must be neutralized by rinsing with clear water. Apply clear water with a mop and allow to dry. Re-rinse with clear water, allow to dry and retest to ensure pH level is within acceptable range of 5 to 8 on the pH scale. Continue to neutralize until the pH level is acceptable. The testing of concrete for alkalinity indicates the degree of alkalinity only at the time the test is conducted, and cannot be used to predict long-term conditions. Moisture and alkali salts in the concrete can cause the following problems after installation: adhesive deterioration, bumps, ridges, bubbles, discoloration, mold, mildew, bacteria growth, efflorescence, tile shifting, tile releasing, tile peaking, or sheet seam curling. DO NOT install over burnished (slick troweled) concrete to avoid adhesive and underlayment patch or self-leveling bonding problems due to the non-porosity of the concrete finish. Corrective measures such as bead blasting (shot blasting) or scarifying must be performed prior to installation. The concrete slab must be of good quality, standard density concrete with low water/cement ratios consistent with placing and finishing requirements, having a maximum slump of 4”, a minimum compressive strength of 3500 psi, and following the recommendations of ACI Standard 302.1R-96 for class 2 or call 4 floors and the Portland Cement Association’s recommendations for slabs on ground. Joints such as expansion joints, contraction joints, isolation joints, saw cuts, control joints, grooves or other moving joints shall not be filled with patching compound or covered with resilient flooring. Expansion joint covers designed for use with resilient flooring should be used. Any non-moving surface cracks, depressions, and other irregularities shall be filled and smoothed with a high quality grade Portland cement-based, water resistant, non-shrinking, non-staining, mildew resistant, alkali resistant underlayment having a minimum compressive strength of 3500 psi after 28 days. Some underlayments may fail under excessive weight; an epoxy caulking compound may be required for certain repairs. Mechanically cleaning the substrate by shot-blasting, scarifying, or sanding shall be performed to achieve a flat, smooth, clean surface to prevent irregularities, roughness, or other defects from telegraphing through the new resilient flooring. The surface of the concrete shall be flat to within the equivalent of 3/16” in 10 feet, as described in ACI 117R. The surface shall be cleaned of all loose material by scraping, brushing, vacuuming, or other methods, or a combination thereof, immediately before commencing installation of resilient flooring. Follow the proper safety practices during the preparation and installation. Follow the recommendations of the American Concrete Institute (ACI 302.1R, *Guide for Concrete Floor and Slab Construction;* ACI 360.R, *Design of Slabs on Grade;* ACI 223*, Standard Practice for the Use of Shrinkage-Compensating Concrete);* The American Society for Testing and Materials (ASTM F 710, *Standard Practice for Preparing Concrete Floors and Other Monolithic Floors to Receive Resilient Flooring*), and the American National Standards Institute (ANSI A157.1, *Recommended Practice for Concrete Floor and Slab Construction*) for the preparation of concrete to receive resilient flooring. Refer to 6.2.1.

6.2.3 Wood subfloors to be used as subfloors/substrates are to follow the procedures recommended in 6.2.1 and 6.2.2. Wood subfloors should be of double layer construction with a minimum thickness of 1”. Crawl spaces underneath wood subfloors shall be in compliance with local building code ventilation practices and have clearance of at least 18” of cross-ventilated

space between the ground level and joists. Wood joists should be spaced on no more than 16" centers. Place a moisture retarder; having a maximum rating of 1.0 perm, on the top of the ground under the wood subfloor overlapped at least 8". APA, The Engineered Wood Association, Underlayment Grade plywood, minimum 3/8" thick, with a fully sanded face is to be used. Use APA approved exterior grade plywood if finished floors are subjected to moisture. OSB, lauan, maranti, solid-core mahogany, waferboard, particleboard, chipboard, flakeboard, tempered hardboard, glass mesh mortar units or cementitious tile backer boards, sheathing-grade plywood, preservative-treated plywood, or fire-retardant treated plywood are not recommended as some manufacturers may use resins or other adhesives in the manufacturing of the product that may cause discoloration or staining of the flooring. Wood subfloor movement, flexing or instability will cause the flooring installed to release, buckle or become distorted. Do not proceed with the installation until corrective measures have been made. The warranties, performance, installation, and use are the responsibility of the manufacturer and/or contractor. DO NOT use plastic or resin filler to patch cracks. DO NOT use cement or rosin coated nails or staples or solvent-based construction adhesive to adhere the plywood. Installation on a sleeper, a wood subfloor system constructed over the top of concrete, is not recommended. Installation directly over Sturd-I-Floor panels is not recommended. All wood subfloors, single construction plywood floors, single and/or double tongue-and-groove strip floors, and wood plank floors must be prepared to receive resilient flooring in accordance with federal and industry standards. Follow the recommendations of the APA, The Engineered Wood Association, *Design/Construction Guide, Residential and Commercial*, and ASTM F 1482*, Standard Guide to Wood Underlayment Products Available for Use Under Resilient Flooring*, for the installation and proper construction of the panels to receive resilient flooring. It is the contractor's responsibility to determine if the subfloor is acceptable to receive the flooring.

6.2.4 Cementitious Terrazzo and ceramic floors to be used as subfloors/substrates are to follow the procedures recommended for concrete in 6.2.1 & 6.2.2. Ceramic tile must be solidly adhered and all loose tiles must be removed and repaired or replaced. Ensure all glazed, sealed, smooth, and/or shiny surfaces are properly sanded and cleaned. Fill all grout lines and other irregularities with a manufacturer's recommended Portland cement-based underlayment with a minimum compressive strength of 3500 psi. The subfloor must be structurally sound. Inspect and ensure there is an adequate bond of the old flooring to the original substrate. Do not install over epoxy based terrazzo. Cementitious terrazzo must first be sanded to remove all finishes, and then cleaned. Conduct a bond test with adhesive to ensue a successful bond can be achieved before installing. Roppe will not warrant the product if there is a bond failure caused by problems relating to the old flooring.

6.2.5 Metal floors to be used as subfloors/substrates must be thoroughly cleaned of any residue, oil, paint, primer, sealer, rust, and oxidation and properly sanded/grinded to provide a smooth, level, clean substrate to receive flooring. The flooring must be installed within 12 hours after sanding/grinding to prevent the metal from re-oxidizing. The metal subfloor shall be structurally sound. Deflection of the metal can cause a bond failure between the adhesive and the metal substrate. It is the contractor's responsibility to decide the feasibility of the application,

and Roppe Corporation will not be held liable for failures caused by flexing or deterioration of metal substrates. On an extremely smooth, non-porous, metal substrate, a longer “tack up” may be required in order to prevent the adhesive from oozing between the seams. Refer to 6.2.1. Caution: The installation of flooring material will not prevent deterioration of metal substrates from occurring.

6.3 Adhesive Application

6.3.1 Roppe ROP605 Two-Part ESD Epoxy and ROP604 ESD Acrylic Adhesive

6.3.2 Roppe ROP605 Two-Part ESD Epoxy: ROP605 is recommended for the installation of Roppe’s ESD Static Control Solid Vinyl tile. ROP605 is a non-flammable, high performance epoxy adhesive for indoor installations over porous and non-porous substrates on grade, below grade, or above grade, and available in both quarts and gallon containers. **Caution:** ROP605 Two-Part Epoxy only must be used in areas subjected to rolling loads, lateral sheer stress and over non-porous substrates including but not limited to metal. When used on non-porous substrates, the adhesive must be allowed to “tack up”, but do not allow adhesive to dry. Spread coverage using the 1/32” deep x 1/16” open x 1/32” square notch trowel provided is approximately 125 -185 square feet on smooth, steel troweled concrete or a non-porous substrate. Over porous or rough substrates, a 1/16” x 1/16” x 1/16” flat “V” notch trowel is required. The spread rate for this trowel is approximately 100-125 square feet. Coverage will vary according to the type of surface, surface texture, spreading angle, and adhesive temperature. Although the epoxy components are non-freezing, the adhesive must be allowed to stabilize to ambient temperature before mixing. Shelf life is one year @ 70ºF (21ºC) from adhesive manufacturing date in an unopened container. It is extremely important that adhesive inventory is check to ensure within manufacturing date guidelines. Wet adhesive on the surface of the tiles or surrounding area must be removed immediately with a clean cloth dampened with warm soapy water or denatured alcohol. DO NOT allow adhesive to cure on the surface of the tile. A bond failure will occur if the epoxy is not properly mixed. Label information is in English and Spanish. Read all of the product and safety information concerning the adhesive and any other chemicals or cleaning agents prior to installation.

Roppe ROP605 Two-Part ESD Epoxy Calculated VOC’s according to California SCAQMD Rule #1168: Part A: 9 grams per liter of coating. Roppe ROP605 Part B: 20 grams per liter of coating. Part A & B Calculated VOC’s when mixed: 14.3 grams per liter of coating.

6.3.3 ROP604 Acrylic ESD Adhesive: ROP604 Acrylic ESD Adhesive is recommended for the installation of Roppe’s ESD Static Control Solid Vinyl tile. ROP604 is a non-flammable; one-part acrylic base adhesive for indoor installations over approved concrete and wood subfloors only, on grade or above grade, and is available in both quarts and gallon containers. **Caution:** ROP605 Two-Part Epoxy only must be used in areas subjected to rolling loads, lateral sheer stress and over non-porous substrates including but not limited to metal, and below grade. ROP604 must be applied using a 1/16” x 1/16” x 1/16” square notch trowel over either porous or rough substrates. The spread rate for this trowel size is approximately 125-185 square feet. Coverage will vary according to the type of surface, surface texture, spreading angle, and

adhesive temperature. The adhesive is freeze/thaw stable to 5 cycles at 0ºF (-18ºC); however, it is recommended to protect all adhesive products from freezing. If frozen, DO NOT stir until material has completely thawed. Shelf life is one year @ 70ºF (21ºC) from adhesive manufacturing date in an unopened container. It is extremely important that adhesive inventory is check to ensure within manufacturing date guidelines. Wet adhesive on the surface of the tiles or surrounding area must be removed immediately with a clean cloth dampened with warm soapy water or denatured alcohol. DO NOT allow adhesive to cure on the surface of the tile. A bond failure will occur if the epoxy is not properly mixed. Label information is in English and Spanish. Read all of the product and safety information concerning the adhesive and any other chemicals or cleaning agents prior to installation.

Roppe ROP604 Acrylic ESD Adhesive Calculated VOC's according to California Rule #1168: 37 grams per liter of coating.

6.4 Adhesive Application and Product Installation

6.4.1 Roppe ESD Static Control Vinyl Flooring installation using Roppe ROP605 Two-Part ESD Epoxy:

Read all installation literature before proceeding. Prior to adhesive application, dry lay the flooring to ensure desired aesthetics. **Caution:** ROP605 Two-Part Epoxy only must be used in areas subjected to rolling loads, lateral sheer stress and over non-porous substrates including but not limited to metal, and below grade. When stacking tiles prior to and during installation, place the tiles face-to-face and sanded back-to-sanded back to prevent the sanded back of the tiles from becoming contaminated and to protect the face from damage. Follow safety precautions on the adhesive labels and Material Safety Data Sheet's. Must have adequate ventilation. DO NOT mix partial units of this adhesive, because the ratio of Part A to Part B is not 1:1. Roppe ROP605 Two-Part ESD Epoxy Adhesive is packaged in two separate containers marked Part A (epoxy resin) and Part B (polyamide resin, hardener). Remove the lids and add all of **Part B into Part A**. Then Turn Part "B" upside down and fully drain adhesive into Part A. Mix the combined parts using a rotary motion while at the same time lifting from the bottom. A slow speed, 200 RPM maximum, drill with an attached mixing paddle may also be used. **Mix 3 minutes**. After mixing, there must be no streaking of adhesive, which must by one consistent solid color. **Caution**: Higher mixing speeds and/or longer mixing time will reduce the open time and can cause premature curing of the adhesive; however, if not mixed long enough, the adhesive will not properly cure. DO NOT allow the mixed epoxy adhesive to stand in the container. **Immediately** after mixing, pour the contents onto the substrate. **Immediately** spread the adhesive evenly with the 1/32" deep x 1/16" open x 1/32" square notch trowel provided for smooth substrates while being careful to leave no puddles of adhesive. Note: Over extremely porous or rough concrete, a 1/16"x 1/16" x 1/16" Square notch trowel may be required. Caution: If to much adhesive is applied, oozing and telegraphing may occur along with adhesive displacement when the tile is rolled or subjected to rolling loads or lateral sheer stress, resulting in loose areas and adhesive telegraphing. Spreading large areas of adhesive in excess of 175 square feet could possibly allow the adhesive to cure or setup before the tile is installed which

would result in a bond failure. Allow the adhesive to “tack up” which takes approximately 15 minutes at 70ºF (21ºC) and 50% humidity. **Caution**: “Tack up” time, open time, and curing characteristics will vary upon the type of substrate, temperature of the substrate, ambient temperature, humidity, proper mixing of the adhesive and proper conditioning of the adhesive. Observe the adhesive to ensure the adhesive has not surpassed its open time and started to cure. **Notice**: You will find an arrow on the back, sanded side, of each tile. It is important that each tile be installed with the arrow in the same direction installing the sanded side with the arrow into the adhesive. If the tiles are not laid in the same direction, the reflection of light will cause an optical illusion, making the surface appear to be different shades. If the tiles are installed at random, disregarding the arrows on the back, it will require extensive buffing with 3M 5300 Blue Buffer Pads using a 175-300 RPM buffer followed with Red and White pads for polishing. When laying the flooring, use a kneeling board, or for best results, work off the flooring whenever possible to avoid shifting of the tile, adhesive displacement and telegraphing, and to not also track the epoxy adhesive onto the surface of the tile. If the adhesive is bleeding or oozing at the seams, either too much adhesive is being applied or the adhesive is too wet. Immediately remove the excessive wet adhesive with a clean cloth dampened with warm soapy water or denatured alcohol before the epoxy cures. After cleaning with denatured alcohol, rinse with a clean soft cloth dampened with clean water. DO NOT allow the epoxy to cure on the surface of the tile; it will be extremely difficult to remove. **Note**: If heat welding, the vinyl welding rods will not adhere to adhesive left remaining in the pre-grooved seam. Periodically, lift the tile to check for proper adhesive transfer. There should be at least a 90% transfer of adhesive on the back of the tile. Also, observe the adhesive to ensure the adhesive has not surpassed its open time and started to cure. Borders and other specialty cut tiles must be scribed and cut fit snugly, not tightly, against the wall, threshold, transition strip, fixtures, or other obstacles. DO NOT wait until all the main aisle flooring has been installed to begin laying the borders. Roll and cross roll each section of tile laid with a 100-pound 3-section roller within 30 minutes after the tile section has been installed. Use a hand roller in areas that cannot be reached with the larger roller. Conduct a visual inspection during the rolling process to ensure there has been no shifting of the tiles and that there is no adhesive on the surface of the tile. DO NOT wait until the entire installation is completed before rolling as the adhesive may have surpassed its open time. Inspect each section laid after rolling to check for raised edges. Roll and cross roll a second time approximately 30 minutes after the initial rolling. If necessary, roll and cross roll again. There is to be no foot traffic on the floor for at least 48 hours and no wheeled conveyances for at least 3 days. Protect flooring against damage.

6.4.2 Roppe Static Control ESD Vinyl Tile installation using Roppe ROP604 Acrylic ESD Adhesive:

ROP604 Acrylic ESD Adhesive is recommended for the installation of Roppe’s Static Control ESD Solid Vinyl tile. ROP604 is a non-flammable; one-part acrylic base adhesive for indoor installations over approved concrete and wood substrates only, on grade, or above grade, and available in both quarts and gallon containers. **Caution:** ROP605 Two-Part Epoxy only must be used in areas subjected to rolling loads, lateral sheer stress and over non-porous substrates including but not limited to metal, and below grade. ROP604 must be applied using a 1/16” x

1/16” x 1/16” square notch trowel over either porous or rough substrates. The spread rate for this trowel size is approximately 125-185 square feet. Coverage will vary according to the type of surface, surface texture, spreading angle, and adhesive temperature. The adhesive is freeze/thaw stable to 5 cycles at 0ºF (-18ºC); however, it is recommended to protect all adhesive products from freezing. If frozen, DO NOT stir until material has completely thawed. Shelf life is one year @ 70ºF (21ºC) from adhesive manufacturing date in an unopened container. It is extremely important that adhesive inventory is check to ensure within manufacturing date guidelines. Wet adhesive on the surface of the tiles or surrounding area must be removed immediately with a clean cloth dampened with warm soapy water or denatured alcohol. DO NOT allow adhesive to cure on the surface of the tile. Caution: If to much adhesive is applied, oozing and telegraphing may occur along with adhesive displacement when the tile is both rolled & subjected to traffic, resulting in loose areas and adhesive telegraphing. Spreading large areas of adhesive in excess of 175 square feet could possibly allow the adhesive to cure or setup before the tile is installed which would result in a bond failure. Allow the adhesive to “tack up” which takes approximately 15 minutes at 70ºF (21ºC) and 50% humidity. **Caution**: “Tack up” time, open time, and curing characteristics will vary upon the type of substrate, temperature of the substrate, ambient temperature, humidity, proper mixing of the adhesive and proper conditioning of the adhesive. Observe the adhesive to ensure the adhesive has not surpassed its open time and started to cure. **Notice**: You will find an arrow on the back, sanded side, of each tile. It is important that each tile be installed with the arrow in the same direction installing the sanded side with the arrow into the adhesive. If the tiles are not laid in the same direction, the reflection of light will cause an optical illusion, making the surface appear to be different shades. If the tiles are installed at random, disregarding the arrows on the back, it will require extensive buffing with 3M 5300 Blue Buffer Pads using a 175-300 RPM buffer followed with Red and White pads for polishing. When laying the flooring, use a kneeling board, or for best results, work off the flooring whenever possible to avoid shifting of the tile. the adhesive is bleeding or oozing at the seams, either too much adhesive is being applied or the adhesive is too wet. Immediately remove the excessive wet adhesive with a clean cloth dampened with warm soapy water or denatured alcohol before the adhesive cures. After cleaning with denatured alcohol, rinse with a clean soft cloth dampened with clean water. DO NOT allow adhesive to cure on the surface of the tile; it will be extremely difficult to remove. **Note**: If heat welding, the vinyl welding rods will not adhere to adhesive left remaining in the pre-grooved seam. Periodically, lift the tile to check for proper adhesive transfer. There should be at least a 90% transfer of adhesive on the back of the tile. Also, observe the adhesive to ensure the adhesive has not surpassed its open time and started to cure. Borders and other specialty cut tiles must be scribed and cut fit snugly, not tightly, against the wall, threshold, transition strip, fixtures, or other obstacles. DO NOT wait until all the main aisle flooring has been installed to begin laying the borders. Roll and cross roll each section of tile laid with a 100-pound 3-section roller within 30 minutes after the tile section has been installed. Use a hand roller in areas that cannot be reached with the larger roller. Conduct a visual inspection during the rolling process to ensure there has been no shifting of the tiles and that there is no adhesive on the surface of the tile. DO NOT wait until the entire installation is completed before rolling as the adhesive may have surpassed its open time. Inspect each section laid after rolling to check for raised edges. Roll and cross roll a second time approximately 30 minutes after the initial rolling. If necessary,

roll and cross roll again. There is to be no foot traffic on the floor for at least 48 hours and no wheeled conveyances for at least 3 days. Protect flooring against damage.

6.5 Grounding & Grounding Diagram
6.5.1 Grounding: To ground the conductive and static dissipative flooring to a known ground, use the 1" wide x 0.004" thick x 18" long copper foil strips, supplied by Roppe and place approximately 9" of the strip into Roppe ROP605 two-part ESD epoxy or ROP604 single-part ESD acrylic adhesive while the adhesive is wet in order to achieve a 100% transfer to the copper foil backing, under the tile nearest the ground point (center copper foil in the center of the tile). Roppe ROP605 two-part ESD epoxy or ROP604 single-part ESD acrylic adhesive must also be applied to the top section of the copper foil strips in order to complete the conductivity and to bond the tile to directly to the copper foil strips. Allow the other half, approximately 9", of the length of the strip to "pigtail" up the wall to permit an electrician to mechanically connect the copper foil to the ground point. If using a specifically supplied ESD facility grounding system, a ground bus bar would be placed near the floor where any ESD ground can be connected. If bus bars are not used, the ESD ground wire is normally #10 or #12 stranded copper wire, supplied by the electrical contractor, is placed inside the wall from a ground bus and a hole is cut into the drywall for the wire to exit at the floor/wall junction where the copper foil has been placed. Grounding to the green wire ground in the wiring system may also be used; Refer to the Grounding Diagram in section 6.5.2. Use longer copper foil strips if necessary. Place the copper strips approximately every 2000 square feet along the perimeter of the floor or where the ground points are located and or at least one per room. The ground connection may also be made directly to an exposed steel support column. The connection must be mechanically secured to the column. The point of contact on the column must be clean and dry, and free of any paint or other substance that would prevent adequate metal contact. Protect or enclose all connections as required by safety codes. Bridge expansion joints, saw-cuts etc with a copper strip from a tile on one side of the expansion joint, saw-cut etc to a tile on the other side of the expansion joint, saw cut etc to ensure continuity. Resistance testing should be conducted in accordance to the test method, voltage, and conditions specified.

6.5.2 Grounding Methods Diagram: See two (2) diagrams at end of document.

7. Product Maintenance/Precautions

7.1 Initial Maintenance

Do not scrub, buff or mop the tile for at least 48 hours after installation to allow the adhesive and heat welds to properly cure. **Do not** flood the tile when cleaning and do not allow the cleaning solution or topical moisture to work its way beneath the tile which can result in an adhesive and/or tile failure. Remove any covering that may have been used to protect the floor. **The tile must be properly cleaned before it is released for normal use**. First, Sweep and vacuum to remove dirt and other particulates, then damp mop the flooring with a mild, neutral pH cleaner such as Spartan Chemicals' Damp Mop (800-537-8990), TASKI Profi, Johnson's Stride, or Butchers' Hot Springs or similar mild, neutral pH cleaners. DO NOT use highly alkaline or acidic

cleaners. DO NOT use sweeping or cleaning agents containing oils or solvents. Rinse the flooring immediately after mopping with clean warm water and remove rinse water with a wet/dry vacuum and allow to dry completely before exposing to traffic. To remove excessive dirt, scuffs, or light scratches, after the installation, wet buff using a low speed rotary buffer, 175-300 RPM with a 3M 5300 Blue Cleaner Pad. Dry buff with a 3M 5100 Red Buffer Pad followed with a 3M 4100 White Super Polish Pad to achieve the required glossy appearance. Higher luster or sheen can be achieved by using more RPM when polishing with the White pad. Always check for compatibility and performance prior to cleaning by utilizing uninstalled material or test in an inconspicuous area before proceeding to determine if the desired results can be achieved without distorting, scratching or having an adverse effect on the tile. DO NOT heel the buffing machine. **DO NOT** flood the floor. *Caution*: When wet, the flooring will become slippery; therefore, use the appropriate warning signs on the floor to eliminate foot or vehicular traffic

7.1.2 Dry Buffing

DO NOT dry buff until floor has been wet cleaned. Sweep, dust mop, or vacuum the floor to remove dirt and other particulate before dry buffing. Dry buff with a low speed rotary buffer, 175 – 300 RPM using a 3M 5300 Blue Cleaner Pad followed with a 3M 5100 Red Buffer Pad to remove any directional sheen or light shading. To finish, use a 3M 4100 White Super Polish Pad to achieve the desired glossy appearance. Higher luster or sheen can be achieved by using more RPM when polishing with the White pad. Always check for compatibility and performance prior to cleaning by utilizing uninstalled material or test in an inconspicuous area before proceeding to determine if the desired results can be achieved without distorting, scratching or having an adverse effect on the tile. DO NOT heel the buffing machine.

7.2 Routine Maintenance

7.2.1 General Information

Insufficient cleaning will reduce the wear life of the flooring & reduce or eliminate the ESD properties. Therefore, the floor must be properly maintained. The amount of maintenance required is directly related to the amount and type of traffic and type of particulate deposited on the floor. There are several alternative maintenance systems available by contacting: TASKI Professional Building Care (800-862-3600), Spartan Chemicals (800-537-8990), Johnson Professional Wax (800-558-2332), or The Butcher Company (888-291-7510). The floor care product manufacturers will assist you in determining the best maintenance program. **Caution**: Some germicides, disinfectants, cleaning agents, floor maintenance products, and pesticides may stain or damage the surface of solid vinyl tile; therefore, test the products to ensure they will not stain or damage the tile. Periodic cleaning with a 3M 5300 Blue Cleaner Pad may be required to prevent buildup of germicidal cleaners or other cleaning solutions which may form an insulating barrier that can affect the conductivity of the floor. **Caution**: Dirt and other particulate allowed to remain on the flooring will reduce the wear life and will increase the electrical resistance of the flooring. Spills of any type must be removed immediately to help prevent staining or permanent damage. Contact Roppe's® Customer Service to obtain information

concerning stain resistance to various chemicals and products. DO NOT use sweeping or cleaning agents containing oils or solvents. DO NOT use kerosene, gasoline, naphtha, or other solvents on vinyl flooring. Reserve all mops, brushes, buckets, steel wool discs, and other materials for the EXCLUSIVE use of the maintenance of Roppe's Conductive and Static Dissipative Vinyl Tile. If maintenance equipment and materials are used in other areas, they may become contaminated with waxes, oils, or other contaminants that could hinder the performance of the flooring. Floor finishes and waxes are **not** recommended as they may leave an insulating film on the floor. We have tested floor finishes produced exclusively for use on ESD tile. These products are: *Discharge* by Butchers, *Ure-Stat* by Walter G. Legge, *Statguard* by Charleswater, and *Statfree* by Desco. **Caution:** Roppe Corporation however, does **not** warranty the performance of the floor finish, sealers or waxes of any kind, nor will be held liable if the conductivity or dissipative properties of the flooring is either reduced or eliminated or if the flooring is adversely affected in any way. When using floor finishes, sealers or waxes, the electrical properties may be affected and therefore testing results and or performance is the sole responsibility of the floor finisher and/or facility owner. **Caution**: When wet, vinyl flooring will become slippery; therefore, use the appropriate warning signs on the floor to eliminate foot or vehicular traffic. **DO NOT** flood the floor.

7.2.2 Routine Chemical/Liquid Cleaning

Sweep, dust mop, or vacuum the flooring to remove dirt and other particulate. Damp mop or scrub with a commercial low speed scrubber, 175 – 300 RPM, using a mild, neutral (pH 7 to 8) cleaner such as Spartan Chemicals' Damp Mop (800-537-8990), TASKI Profi, Johnson Stride, Butchers Hot Springs or similar neutral pH cleaners to clean the flooring. For normal wet cleaning use a 3M 5100 Red Buffer Pad for scrubbing. To remove excessive dirt, scuffs, or light scratches, wet buff using a 3M 5300 Blue Cleaner Pad. Follow the manufacturer's recommendations for dilution and use. **DO NOT** flood the floor. Allow the cleaning solution to stand for approximately 10 to 15 minutes; however, DO NOT allow the solution to dry. Wet vacuum or mop up the residue. Rinse with clean, cool water, remove the water, and allow the flooring dry thoroughly.

7.2.3 Routine Dry Buffing

After wet cleaning, dry buffing can be performed on a routine basis to maintain the surface luster. Sweep, dust mop, or vacuum the floor to remove dirt and other particulate before dry buffing. Dry buff with a low speed rotary buffer, 175 – 650 RPM, using a 3M 5100 Red Buffer Pad followed with a 3M 4100 White Super Polish Pad to achieve the desired glossy appearance. DO NOT heel the buffing machine. Use the wet cleaning procedure described in "Wet Cleaning" to remove the build up and for restorative maintenance. **DO NOT** flood the floor

8. Availability and Cost

8.1 Products are available through Roppe distributors. Contact Roppe Customer Service at 1.800.537.9527 or visit www.roppe.com for a distributor near you.

8.2 Samples may be obtained by may be obtained by calling Roppe Customer Service at 1.800.537.9527, or by visiting www.roppe.com

9. Technical Assistance

Technical service information and assistance may be obtained by calling Roppe Customer Service at 1.800.537.9527, or by visiting www.roppe.com.

10. Limited Warranty

Roppe Corporation manufactures and markets its floor products under the trade name Roppe. Roppe ESD Static Control Vinyl Flooring is warranted for a period of one (1) year from date of installation to be free of defects in material and workmanship. Roppe has a ten (10) Year Limited Wear Warranty on Roppe ESD Static Control Vinyl Flooring for non-transit use, based by product design and installation purpose, if installed, maintained, and used strictly in accordance with Roppe's written instructions and installed with the recommended Roppe adhesive. Roppe's ESD Static Control Vinyl Flooring is also warranted to retain its conductive property within the specified resistance ranges for the lifetime of the product, if the tile is installed with the recommended Roppe adhesive and installed, maintained, and used strictly in accordance with Roppe's written instructions. Refer to Roppe Product Specification Sheet before proceeding with installation. For any applications not listed, do not proceed with installation regardless of the circumstance. Instructions may be obtained from a Roppe distributor or by writing Roppe Corporation, Attention: Sales Service Manager, P.O. Box 1158, Fostoria, OH, 44830. Notice of any defect must be made in writing to Roppe within thirty (30) days after buyer learns of the defect. No merchandise is to be returned prior to Roppe's inspection and written approval. Buyer's sole and exclusive remedy against Roppe and Dealer for claims arising hereunder for any and all losses and damages resulting from any cause shall be a pro rata credit based on the period remaining in this Limited Warranty toward the purchase of new Roppe ESD Static Control Vinyl Flooring. Replacement credit shall be equal to the proportion of Limited Warranty time remaining multiplied by the current price of Roppe ESD Static Control Vinyl Flooring. In no event shall Roppe be liable for incidental or consequential damages, even if some other provision of this Limited Warranty is unenforceable. Buyer waives all other claims and remedies of any nature. Roppe ESD Static Control Vinyl Flooring is not designed for use in or near commercial kitchens or for outdoors use. Roppe shall have no liability whatsoever to Buyer in the event the goods become defective if such defect is caused in whole or part by cuts, tears, vandalism, fire, willful destruction, damage from high heels, spiked footwear, improper installation, improper maintenance, subfloor and/or substrate irregularities, accidents, natural causes, or acts of God. Roppe will not be liable for labor costs or lost profits resulting from the use of or inability to use the product. Roppe will not be liable for labor costs for material that is installed with obvious defects. Products designated as "seconds", "mill run", "non-conforming", not being of first quality, are sold as-is and Roppe makes no warranties whatsoever, expressed or implied, with respect thereto, including warranties of merchantability or fitness for a particular use. These warranties are expressly in lieu of any other warranties expressed or implied. By retaining Roppe's merchandise for more than five (5) days after receipt of such merchandise, Buyer agrees that it accepts the terms of this Limited Warranty

and that there are no warranties or rights beyond those contained herein. All claims must be made in writing and sent to Roppe Corporation, Attn: Claims Manager, P.O. Box 1158, Fostoria, Ohio, 44830. All claims for surface defects or variations in color or pattern must be delivered to Roppe in writing before the product is installed. Roppe will not accept the return of any product without prior written approval of the Roppe Claims Department.

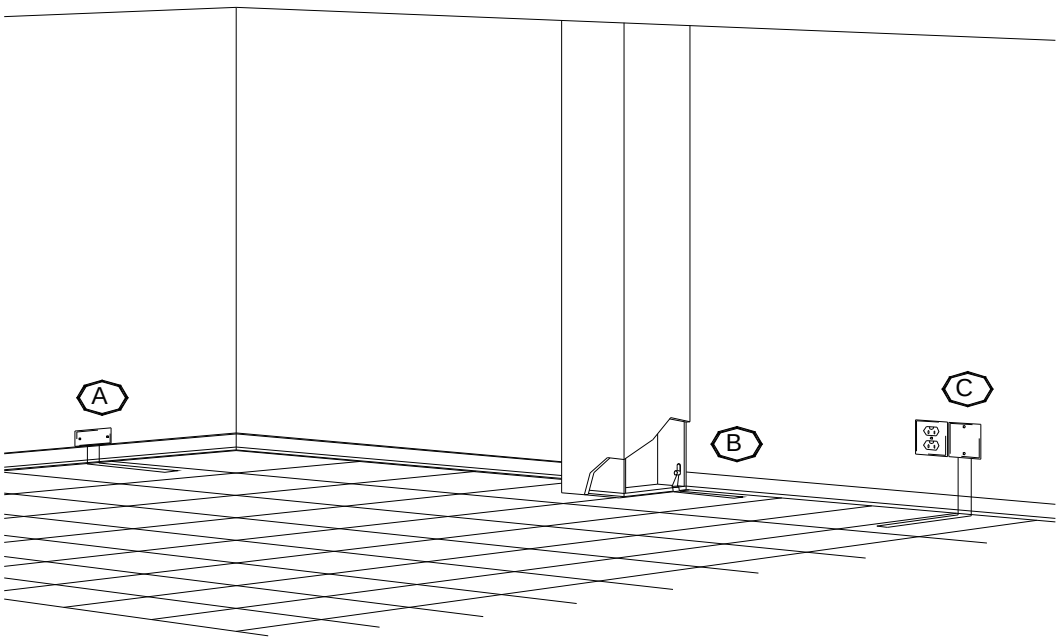
* Limited Wear Warranty Terms (Products Type: ESD Static Control Solid Vinyl Tile)

If excessive wear is suspected, the original purchaser must notify Roppe Corporation in writing and permit an inspection of the flooring. If Roppe Corporation determines excessive wear, and the flooring has been properly installed and maintained, Roppe Corporation will replace the flooring based on the following terms:

A. Terms
   a. Within One-Year: If excessive wear is determined by Roppe within one (1) year of installation, Roppe will furnish new material of the same or similar style and color sufficient to repair or replace the defective material. Roppe will also pay reasonable labor cost once submitted in writing and approved.

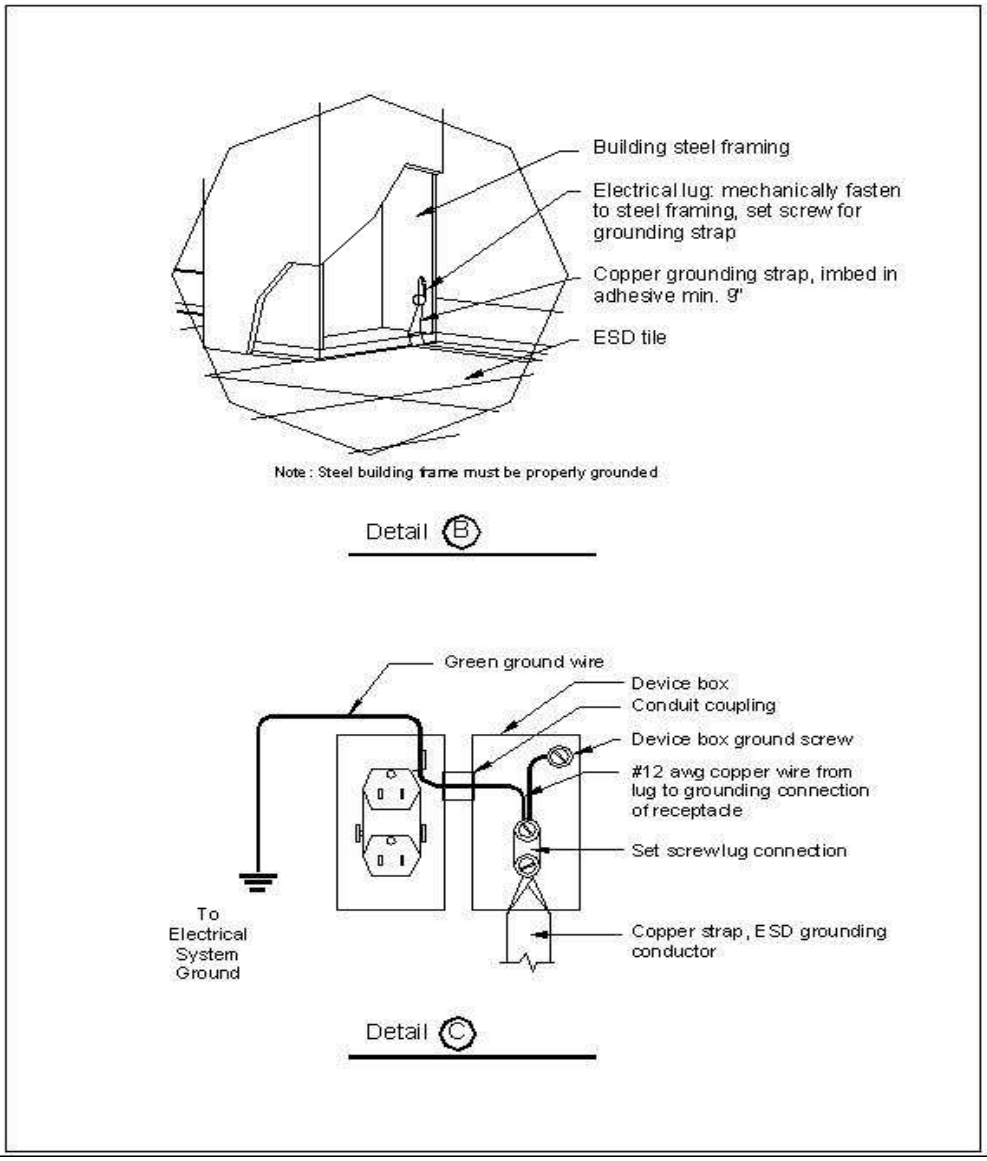
   b. Within Two-Years: If excessive wear is determined by Roppe within two (2) years of installation, Roppe will furnish new material of the same or similar style and color sufficient to repair or replace the defective material. Roppe will also pay fifty-percent (50%) of reasonable labor cost once submitted in writing and approved.

   c. After Two-Years & Within Ten-Years: If excessive wear is determined by Roppe after two (2) years and within ten (10) years of installation, Roppe will furnish new material of the same or similar style and color sufficient to repair or replace the defective material. Roppe will not pay labor cost for material installed after two (2) years and within ten (10) years of installation.



Common accepted ESD Tile system grounding methods

A. Specific ESD grounding system built into the facility design.
B Building column: Steel columns or grounded building framing system provides an acceptable ground for ESD flooring. Grounding lug fastened to steel framing per NEC requirements
C. Connect the copper strap to the green ground wire jumpered from a receptacle box.



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