# ESD Rubber Flooring

INSTALLATION

This document is intended for professional use to provide minimum requirements for substrate preparation, adhesive application, and special installation requirements for a successful installation of these products, each unique application may require additional or further steps to ensure complete satisfaction. We rely on the expertise and professionals that are installing the products to adjust based on site conditions. Refer to product website to confirm that you have the most current revision of this document as the requirements contained within are essential to maintaining the full system warranty for the product installed. Documentation available at time of installation will be referenced regarding warranty.

## REQUIRED ADHESIVES & COPPER GROUNDING STRIPS

The adhesives below are the required adhesive for the installation of this product. The first one listed is the primary installation method recommended for applications when the conditions are met as listed. Select the appropriate application method based on the conditions of the substrate. Refer to the adhesive technical data sheet for additional information and when to utilize a different adhesive.

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|---|---|
| **Copper Grounding Strips** | 1” (25.4 mm) x 18” (50 cm) x 0.004” (0.1 mm)<br>One 18” strip needed for every 2,000 sq. ft. of area of tile installed.<br>Each room smaller than 2,000 sq. ft. will need grounding individually whether connected by a doorway or not. |

| Adhesive | Substrate | Installation Method | Recommended Trowel |
|---|---|---|---|
| PSD-805 | Absorptive | Wet-Set | 1/16” x 1/16” x 1/16” Flat V Notch |
| PSD-805 | Non-Absorptive | Tacky-Wet | 1/16” x 1/32” x 1/32” U Notch |
| USD-810 | Absorptive | Wet-Set | 1/16” x 1/16” x 1/16” Flat V Notch |
| USD-810 | Non-Absorptive | Wet-Set | 1/16” x 1/32” x 1/32” U Notch |

## STORAGE & HANDLING, INSTALLATION & SERVICE ENVIRONMENT, & ACCLIMATION

- All products must be stored in an indoor, climate-controlled (60° - 85° F) space and protected from the elements.
- All products must be stored on a dry, flat, level surface. Carefully stacked aligned neatly and not on edge. Do not stack pallets and protect products from damage.

The reported technical data information for these products is based on a formulation that is designed, manufactured, and evaluated to perform at constant temperatures, not fluctuating more than 10° from normal selected service temperatures from the allowable 60° F (15° C) - 85° F (26° C) range. These products are designed for service on substrate temperatures ranging from 60° F (15° C) - 85° F (26° C) unless otherwise noted in the specific installation section. These products are designed for service within ambient relative humidity between 40% and 60%.

Acclimation of the material is achieved when the following conditions are met within the installation area.

- **Service environment** is defined as the environment in which the materials will be utilized.
- **Service temperature** is defined as the normal setting of the HVAC in the environment in which the material is installed, i.e., typically 70° - 72° F in most commercial applications.
- **Temperature** must be maintained between 60° F (15° C) - 85° (26° C), preferably at the ***desired service temperature***.
- **Relative Humidity** must be maintained between 35% - 65%, understand that Relative Humidity does not affect the installation of the material, but it can affect the functionality of the adhesives. Outside of the ranges, the stated information regarding open times, flash times, & dry times will vary.
- Facility must be fully enclosed, sealed and weather tight.
- Building HVAC must be up and running in permanent operation prior to installation (if temporary systems or systems other than the permanent HVAC systems are utilized it must be capable of maintaining the same conditions as the permanent HVAC and/or service conditions).
- Maintain all products and adhesives in installation area at the ***desired service temperatures*** for a period of 48 hours prior to installation, during the installation and for the service life of the installation.

- It is recommended to utilize a cloud-based or similar ***data logging system*** during installation to provide temperature & humidity data in the event of a warranty issue.

While we do our best to provide quality products and workmanship in our manufacturing facilities, quality installation is the responsibility of the installer. Inspect all material for proper type, color, and matching lot numbers if appropriate. We ask that we are notified of any inaccuracies or defects prior to installation as **we do not pay labor for or material costs on installed materials with visual defects.**

***Users are advised to confirm suitability of these products by their own tests and ensure that all adhesives intended for installation meet the requirements of the end user.***

***By covering a substrate, underlayment, or existing surface, you have indicated acceptance of substrate and installation environment.***

If there are concerns regarding this information or the service temperature, substrate temperature or installation environment will not meet these requirements, please contact Technical Services for recommendations prior to installation at solutions@rhctechnical.com, we will be happy to discuss and provide direction or confirmation of the project at that time.

## SUBSTRATE PREPARATION

All substrates must be prepared according to the following information (**ASTM F710** & **ASTM F1482** have been used as a baseline, keep in mind our requirements are more detailed than these documents), as well as applicable ACI and RFCI guidelines. Substrates must be clean, smooth, permanently dry, flat, and structurally sound.

At the time of installation substrates must be free of visible water or moisture, dust, paint, sweeping compounds, post placement curing compound residues, residual adhesives, chemical adhesive removers, concrete hardeners or densifiers residues, solvents, wax, oil, grease, asphalt, visible alkaline salts or excessive efflorescence, mold, mildew and any other extraneous coating, film, material, or foreign matter. If not, consideration should be taken regarding the effects of these conditions and how they can affect the installation.

It is recommended that all substrates have a ***flatness tolerance*** of 1/8” in 6’ or 3/16” in 10’. Substrates that do not meet this requirement shall have a cementitious patch or self-leveling underlayment installed to flatten the installation area.

All substrates must have all existing adhesives, materials, contaminants, or bond-breakers mechanically removed via scraping, sanding, grinding, or buffing with a 25 grit DiamaBrush Prep Plus tool prior to adhesive installation. In extreme situations, shot blasting may be required. Mechanical preparation must expose at least 90% of the original substrate. Following cleaning and removal, all substrates must be vacuumed with a HEPA approved vacuum and flat vacuum attachment to remove all surface dust. Sweeping without vacuuming will not be acceptable.

***Do not use solvent/citrus based or other chemical adhesive removers or oil-based sweeping compounds prior to installation.***

Regarding substrate preparation when mechanical sanding, grinding, shot blasting, and vacuuming always follow the Resilient Floor Covering Institute’s (RFCI) “Recommended Work Practice for Removal of Existing Floor Covering and Adhesives,” and all applicable local, state, federal and OSHA requirements regarding Asbestos and Silica containment regulations.

### NON-APPROVED SUBSTRATES

ESD flooring is not approved for installation over any type of loose lay underlayment for sound or moisture control, regardless of the recommendations from those products manufacturers.

Concrete substrates that have been abated or prepared with chemical adhesive removers, solvents, or chemical cleaners.

### SPECIALTY SUBSTRATES

In some applications of ESD flooring, there is a requirement for RF Shielding in the room. These are in the form of foils or thinner sheets that are applied underneath the flooring. These are acceptable for the installation of ESD flooring by following the instructions of the shielding product manufacturer. Typically, these are in two main configurations.

- Thinner RF Shielding comes in various thicknesses, typically 1/64” or 1 mm nominally. Ideally these are installed and cementitious patching compounds, self-levelers, or plywood underlayments are installed on top of them prior to the installation of flooring. However, direct bonding to these products can be done as well but you should always follow the manufacturers recommendations along with the architectural specifications.

- Thicker RF Shielding is typically 20 mm or thicker. Ideally these are installed, and flooring is installed directly to RF Shielding product.

| Adhesive | RH % Limit | MVER Limit | PH Range |
|---|---|---|---|
| PSD-805 | 90% | 6 lbs. | ≥ 7 - ≤ 9 |
| USD-810 | 90% | 6 lbs. | ≥ 7 - ≤ 10 |

## CONCRETE SUBSTRATES

- All concrete substrates, whether on-grade and/or below grade should have an intact and effective moisture vapor barrier which meets the current requirements of **ASTM E1745**.
- On-grade and/or below grade slabs not containing an intact and effective moisture vapor barrier meeting the current requirements of **ASTM E1745** should have a 100% solids moisture control system applied prior to application of patches, underlayments, adhesive and the installation of flooring products for the product warranty to remain in effect.
- All concrete substrates that have an ICRI Concrete Surface Profile (CSP) over 4 shall be smoothed with a self-leveling underlayment or a patch to prevent imperfections from telegraphing through flooring materials.
- Do not install over ***expansion joints***, ***isolation joints***, or other ***moving joints*** in the substrate. These joints must be honored and not filled with products that are not intended for that purpose.
- ***Construction joints, saw cut joints, voids,*** and/or ***cracks*** that are not moving may be covered. These should be prepared appropriately to ensure they do not telegraph through the flooring. Should the slab move and cause the preparation to move, the flooring will telegraph the preparation product. Any resulting visual changes or damage to the flooring resulting from this movement is not covered by the product warranty.
- All concrete substrates must be evaluated per **ASTM F2170** RH testing.
- All concrete substrates previously covered with resilient flooring must be evaluated per **ASTM F1869** MVER testing along with **ASTM F2170** RH testing. Results from MVER testing take precedence over RH testing.

For results exceeding the limitations of the adhesives, the application of a high-quality moisture mitigation system should be employed. **We do not provide warranty for any product or procedure for remediation of high moisture content.** There are several companies that manufacture products suitable for moisture remediation.

We suggest you refer to **ASTM F710** Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring and **ASTM F3010** "Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings". Although this testing information and these recommendations are widely accepted within the resilient floor covering industry, there is currently no known exact amount of moisture vapor emission rate or exact % of RH to know exactly when a floor covering, adhesive, or coating system will fail.

- All concrete substrates must be evaluated per **ASTM F3191** to confirm ***porosity (absorption rate)***, this is utilized to determine the method of adhesive application or how the adhesive will act upon the concrete and determine application method of the adhesive.
- All concrete substrates must be evaluated for ***dew point*** prior to installation, the substrate temperature shall be at least 5° F above the dew point.
- All concrete substrates should be evaluated per **ASTM F3441** to determine ***pH*** range of the concrete at time of installation.
- Concrete substrates containing ***radiant heating systems*** are suitable for this product.
    - Reduce the setting of the system to 65° F for the acclimation period. 48 hours after installation the temperature can be gradually increased to a maximum setting of 85° F.

We suggest performing an **ASTM F3311 Mat Bond Evaluation of Performance and Compatibility for Resilient Flooring System Components Prior to Installation** to alleviate any concerns regarding the condition of the substrate and if it is ready to receive resilient flooring.

## WOOD SUBSTRATES

Wood substrates must meet local and national building codes and be prepared in accordance with **ASTM F1482** Standard Practice for Installation and Preparation of Panel Type Underlayments to receive Resilient Flooring. Prior to installation, moisture retardant sheeting with a maximum rating of 1.0 perm must be in place beneath the wood subfloor. It shall be overlapped at a minimum of 8" and the crawl space shall be well-ventilated.

- Wood substrates shall be rigid and free of any movement.
- It shall be structurally sound and designed as a resilient flooring underlayment, smooth enough to prevent telegraphing through the flooring product.
- At a minimum, existing stripwood plank or any board types that are unacceptable, must be covered with appropriate underlayment grade plywood.

- For stripwood subfloors with a face width of 3” or less and is tongue-and-groove and with a smooth surface, use minimum 1/4" thick approved panel to cover and reduce the potential of board telegraphing.
- For stripwood subfloors with a face width of greater than 3” or not tongue-and-groove, or with a rough surface, use minimum 1/2" thick approved panel to cover and reduce the potential of board telegraphing.

- Countersink nail heads and fill depressions, joints, cracks, gouges, and chipped edges with a good quality Portland cement-based patching compound designed for this purpose.

**OSB (Oriented Strand Board), particle board, chipboard, lauan, or composite underlayments must not be used under resilient flooring.**

### EXISTING FLOORING SUBSTRATES

With ***Terrazzo*** *or* ***Ceramic existing flooring***, ensure existing flooring is a single layer of material and that all materials are clean, dry, sound, solid, well adhered, and free of factory and/or site-applied finishes, waxes and/or contaminants. Remove and repair all loose tiles and utilize a suitable primer and cementitious patch to fill grout lines and other depressions.

***Metal substrates*** must be mechanically sanded/ground/abraded and cleaned of any residue, oil, rust and/or oxidation. substrate must be smooth, flat, and sound prior to installation. When installing in areas that may be subject to topical water or moisture and/or high humidity, an anti-corrosive coating must be applied to protect metal substrate. Be sure to follow installation procedures and trowel sizes for non-porous/non-absorptive substrates.

We highly recommend the removal of ***all other flooring types*** to the original substrate prior to the application of new resilient flooring products. However, we know there are certain times this cannot be or should not be avoided. Please refer to additional documentation regarding existing flooring substrates and how to address them for installation of new flooring.

## INSTALLATION

**ESD Rubber does not have a directionality to it from the manufacturing process**. There are some possibilities due to the surface texture that light will reflect differently and appear shaded. If there are concerns regarding shade or color variation, do not install material, and consult a sales representative and/or manufacturer’s technical staff.

ESD Rubber Tiles are recommended to be installed in a traditional point-to-point method. There are no directional arrows on the back of the tiles, but consistency in the direction of the sanding lines will help to prevent any shading or light reflectance issues.

***Material is lot controlled and material from different lot control numbers should not be combined unless shade variation is deemed acceptable.***

### COPPER STRIP INSTALLATION

As part of the system to dissipate static electricity, the flooring must be grounded with a copper grounding strip.

- Prior to installation, consult project electrician or electrical engineer regarding the grounding locations for placement of the copper strips to ensure proper grounding.
- We require one (1) 18” copper grounding strip to be placed within every 2,000 square feet of installed material.
- We require one (1) 18” copper grounding strip to be placed within every room that has ESD flooring installed. This may require extra copper grounding strips depending upon the layout of the ESD flooring being installed. For example, 2,000 square feet split over 4 rooms would require 4 copper grounding strips or one in each room.
- Prior to installing ESD flooring, place a minimum of 9” of the copper grounding strip into the freshly applied adhesive and trowel adhesive over the strip to ensure it is fully embedded within the adhesive.
- The remaining portion of the strip can be attached to the grounding point or connected to additional materials that will be attached to the grounding point.

All cracks, joints and voids must be bridged with a copper grounding strip to maintain ESD properties. Center copper grounding strip over crack, joint or void and embed copper grounding strip inside the adhesive. This will require additional copper grounding strips than provided to achieve this.

Electrical grounding systems should be connected and tested by a licensed and qualified electrician or electrical engineer. We have provided a few diagrams of common grounding details at the end of this document for additional information.

### FLASH-COVED INSTALLATION

- Prior to installation of the perimeter tiles measure desired flash-cove height and install the appropriate Cove Cap for the area.

- Install the appropriate Cove Stick or Fillet strip for the desired radius from the floor to wall for the self-cove.
- While bending material to desired radius, measure and cut coved area to meet the cove cap while ensuring full contact with the cove stick. The use of a heat gun or flooring torch can assist in this area of the installation but always use caution not to scorch the material.
- We do recommend utilizing the Butterfly Method for creating outside corners and cutting all fill pieces and corners prior to application of the adhesive. Utilize a hand roller to ensure contact into the adhesive after placement.

## FLOORING INSTALLATION

Ensure substrate is clean, dry, flat, and sound prior to installation. Ensure the layout is squared appropriately within the area. Determine lay out for the area if not provided by dry laying the material with the area. Cut borders and other specialty pieces to fit snugly against or around walls, thresholds, transition strips, fixtures and other protrusions or accessories.

- Apply adhesive according to the label directions, observe the proper trowel and Flash and Working times on label. These times will vary based on the conditions of the installation environment and installer is responsible to adjust based on the observations and conditions.
- **Wet-Set Application Method** is utilized on Porous or Absorptive Substrates only. Adhesive is ready for installation of flooring, usually within 5-10 minutes of application. Follow the working time listed and adjust for conditions. Placing flooring into adhesive past the working time will result in a weak bond.
- **Tacky-Wet Application Method** is utilized on Non-Porous or Non-Absorptive Substrates only. Adhesive is ready for installation of flooring, usually within 15-20 minutes of application. Can be tested by observing the valleys of the trial ridges and they will be dry, and the ridges will be tacky to the touch but collapse with wet adhesive underneath with moderate pressure from the finger.
- When installing into adhesive using a wet-set method, avoid walking or working on material until adhesive has cured for light foot traffic.
- Avoid sliding flooring into place as this will force adhesive into the seam.
- Working on material that is installed into wet adhesive could cause adhesive to displace. When working off material is not possible, use a kneeling board or equivalent to disperse weight evenly and prevent adhesive displacement.
- Pay close attention to working time to avoid adhesion issues. This may require installing material in smaller sections. Replace trowels at recommended intervals to maintain proper trowel ridge and spread rate.
- Periodically lift material to ensure proper adhesive transfer and ensure adhesive has not surpassed the open time, there should be transfer of adhesive to the tile
- Roll material with a 3 section, 100 lb. roller within 30 minutes of installation, crossing in a perpendicular direction after initial roll. Use a hand roller in areas that cannot be reached with larger roller.
- Visually inspect installation to ensure that material has not shifted, and that adhesive has not been squeezed out of joints or compressed onto surface.
- Clean excessive adhesive or adhesive residue from the surface of the material per adhesive recommendations.

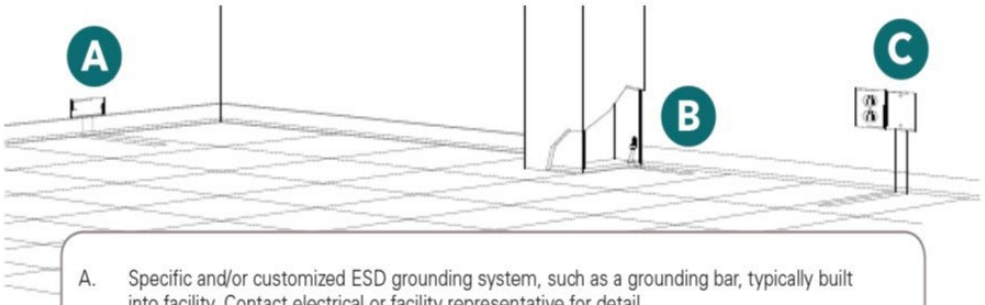
## HEAT WELDING THE INSTALLATION

- Ensure adhesive has cured appropriately (minimum of 24 hours unless utilizing a dry-set installation) prior to beginning heat welding.
- To create the groove for heat welding, set the depth of the groover (either hand or electric) to remove roughly 66% or 2/3rds of the total thickness of the tile while ensuring the removal of material is equal between the two pieces being welded. Test the groove depth on scrap material to ensure proper depth is achieved to ensure proper bonding of the heat weld bead.
- Prior to welding, test welding on scrap material to ensure temperature settings and welding speeds are correct to achieve a successful bond.
- Allow welding bead time to cool prior to trimming, we recommend a minimum of 1-hour.
- To trim welding beads, use a clean, sharp quarter-moon spatula knife and a clean trim plate or a Crain Mozart trimmer.
- After a minimum of 1-hour, trim seam again with a quarter-moon spatula knife to create a smooth, level seam surface. If seam imperfections are observed, use a hot air gun to smooth out imperfections.

After heat welded seam has completely cooled it may be necessary to utilize the heat gun to glaze the welding bead to bring out the desired color. Once the seam is glazed and cools again, the color will remain. The purpose of cooling prior to trimming minimizes the concave or dipping effect of the welding bead.

## ESD GROUNDING DIAGRAMS

### Acceptable ESD Grounding Systems & Methods



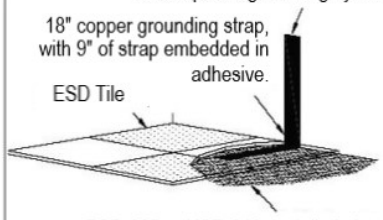

A. Specific and/or customized ESD grounding system, such as a grounding bar, typically built into facility. Contact electrical or facility representative for detail.

B. Steel building column or grounded building framing system. Grounding lug fastened to steel framing per NEC requirements (see Method B Detail below).

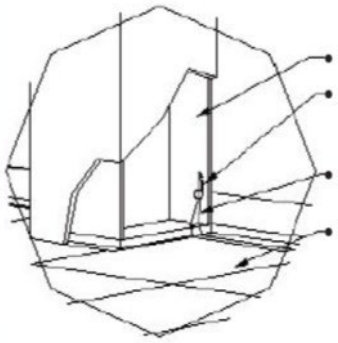
C. Standard copper connection, typically routed to an electrical system ground connection from a receptacle box (see Method C Detail below).

### Copper Grounding Strap Installation

Connect remaining copper grounding strap to acceptable grounding system.

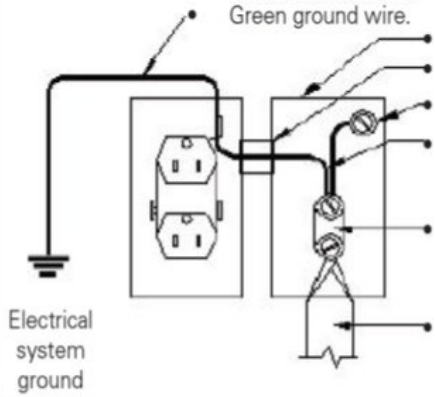



### Method B Detail



1. Steel building frame
2. Electrical lug, mechanically fastened to steel frame for connection to copper grounding strap.
3. 18" copper grounding strap, with 9" of strap embedded in adhesive.
4. ESD tile.

### Method C Detail




1. Receptacle box.
2. Conduit coupling.
3. Receptacle box grounding connection.
4. #12 awg copper wire, routed from receptacle box grounding connection, to electrical lug and then to electrical system ground.
5. Electrical lug, mechanically fastened to receptacle box for connection to copper grounding strap.
6. 18" copper grounding strap.

## POST INSTALLATION FLOORING PROTECTION

We recommend that the installation of new flooring material be performed after all other trades have completed their work. If this is not possible, properly protecting the new flooring material is essential to prevent damage. So, the following should be considered immediately following the installation process.

- Sweep or vacuum flooring to remove loose dirt, debris, and grit so that it does not become trapped under flooring protection.
- Protect newly installed flooring with construction grade undyed kraft paper or protective boards, such as Ram Board, ThermoPLY, 1/8" Masonite panels, or other materials to prevent damage by other trades.
- Restrict traffic for a minimum of 24 hours unless utilizing a dry-set application method that allows immediate foot traffic.
- Restrict heavy traffic, rolling loads, pallet jacks, furniture, and appliance placement for a minimum of 72 hours.
- After 72 hours heavy rolling loads, pallet jacks, furniture and appliance placement can take place with proper protection with 1/4" Masonite panels or similar protective measures. Do not slide or drag pallets or heavy equipment across the installed flooring.
- Post Installation, Prior to Service Maintenance requirements can take place after a minimum of 72 hours after the installation is completed.

## ESD VERIFICATION

After installation is completed, we can provide verification to ensure the ESD Flooring Installation is working as intended. If this service is desired, please contact the region representative to schedule this service.

To perform the service, there are several things that need to be completed and provided to schedule the testing.

- A contact with the facility to be verified.
- Invoices showing the material installed along with the adhesive utilized.
- Verification testing can only be performed if the following conditions are met:
  - 14 days after the last installation activities to allow the adhesive to properly cure.
  - Completion of the Post Installation, Prior to Service Maintenance process must be completed. This can occur 3 days after the last installation activities.

## SUPPORT & ADDITIONAL RESOURCES

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|---|---|
| **Product Support Phone & Email** | (800) 633 – 3151 / info@flexcofloors.com |
| **Technical Support Phone & Email** | (844) 393 – 4044 / solutions@rhctechnical.com |
| **Product Technical Documentation** | www.flexcofloors.com |
| **Associated or Related Documentation** | PSD-805 Modified Pressure Sensitive ESD Adhesive<br>USD-810 Urethane Enhanced Two-Part ESD Adhesive<br>ESD Copper Grounding Strip Technical Data<br>Understanding Excelsior Adhesive Products Technical Bulletin<br>Understanding Installation Substrate Requirements Technical Bulletin<br>Referenced Standards within Technical Documents Technical Bulletin<br>ESD Rubber Flooring Care & Maintenance |