



Ground Zero Electrostatics BROADLOOM CARPET INSTALLATION

BROADLOOM CARPET INSTALLATION INSTRUCTIONS

INTRODUCTION

INSTALLATION CONDITIONS

The success of a carpet installation depends greatly on the temperature and relative humidity (RH) of both the carpet and the floor. For this reason, it is extremely important to strictly control the environmental conditions of the installation site. The temperature and relative humidity (RH) must be continually maintained at 65° to 95°F and 10% to 65% RH for a minimum of forty eight (48) hours prior to installation. These conditions should be constantly maintained during, and at least 72 hours after, installation. Ideally, building temperature and RH should be maintained within the stated ranges on a continual basis for the life of the carpet.

To maintain the temperature and relative humidity, heating and air conditioning systems must be in working order. Do not use space heaters as an alternate to a central heating system. Space heaters will not uniformly warm the floor. Once the installation area has a stabilized temperature and RH (between 65° to 95°F and 10% to 65% RH), with a minimum slab temperature of 65°F, spread the carpet within the installation area and allow it to precondition for a minimum of 24 hours prior to installation.

Remember, the success of a carpet installation depends greatly on the temperature and relative humidity (RH) of both the carpet and the floor. If the humidity is above 65%, then the adhesive will not dry properly for a direct glue-down installation; and, if the floor is colder than 65°F, the adhesive will dry without becoming tacky. Additionally, cold carpet cannot be sufficiently power stretched for a stretch-in installation. If a carpet has been installed by the stretch-in method and the heat or air is turned off, moisture will return to the carpet causing the carpet to swell or buckle. However, if the heat or air is turned back on, the moisture will be removed from the carpet and the carpet may flatten back out. Schools, churches, and other buildings where the central heat and air are often turned off for extended periods of time, should be advised of the possibility of the carpet buckling if it is installed by the stretch-in method.

PROTECTING THE CARPET EDGE

The carpet edge must be protected at the transition of carpet to other floor covering materials.

VENTILATION

Installers should be aware that whenever possible and environmental conditions permitting, carpet should be allowed to ventilate with the induction of fresh air. Avoid recirculation of indoor air; air should be exhausted to the outside. During installation, maintain fresh-air ventilation by using fans, by operating the building's ventilation fan system, and by opening windows and doors (if possible and if conditions permit). After installation, continue to fresh-air ventilate for 48 to 72 hours at normal room temperatures by operating the ventilation fan system at full capacity and by opening windows and doors, if possible. The key to minimizing any odors and speeding up the airing out process is ventilation. Most emissions drop significantly within 48 hours. Any odors, if noticeable at all, usually disappear within seven days.

This technical document cannot possibly address all situations encountered by the commercial installer. If you have any questions, please contact Ground Zero Electrostatics at 1-800-460-7828 or technical@gndzero.com



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A. PREPARATORY INFORMATION FOR ADHESIVE CARPET INSTALLATIONS

INTRODUCTION

There are six types of floors generally encountered by the commercial installer: below grade concrete, on grade concrete, suspended concrete, suspended wood, terrazzo, and metal. Each of these floor types must be properly prepared to receive both the adhesive and the carpet. Accurate floor preparation is mandatory for a successful adhesive carpet installation. Though some carpet systems are less forgiving than others as to the condition required of the subfloor, every adhered carpet requires a clean, sound substrate.

This section is structured into the following subtopics:

- Concrete Floor Preparation
- Priming of Concrete and Wood Floors
- Wood Floor Preparation
- Non-Porous Floor Preparation
- Existing Floor Coverings
- Existing Adhesives

CONCRETE FLOOR PREPARATION

- Surface Texture: All cracks 1/8 inch wide or wider must be filled with a suitable Portland Cement-based patch reinforced with polymers. The floor surface must be a sound, dry, clean, smooth, and even plane. It should also be free of dust, depressions, protrusions, all existing adhesive, curing agents, parting compounds, oil, grease, paint, sweeping compound residue, and any other contaminant that may prevent the required adhesion of the carpet system backing to the floor.

The 3M Scotch mesh disc driven by a 175 rpm floor machine makes short work of construction related contaminants that must be removed, paint and varnish over spray, cutting oils, joint compound, dried mud, etc. Both sides of the disc are used and the mesh does not load up like sandpaper. CAUTION: Do not sand or use a floor machine and disc on any product containing asbestos.

- Density: Any adhesive carpet installation over concrete requires a minimum concrete dry density of ninety (90) pounds per cubic foot. Although lightweight concrete (concrete mixed with perlite or vermiculite) may be primed or skim coated to provide a sufficient slab surface density to prevent adhesive absorption into the floor, priming or skim coating will not prevent fractures in the slab surface. Lightweight concrete surfaces will also be a problem when the carpet is removed. A significant amount of the slab surface may remain attached to the carpet back which has been installed via direct glue-down. Carpet squares pulled up in pressure-sensitive adhesive areas may bring with them from 1/8 to 1/4 inch of the slab surface, especially in the heavier trafficked areas.

- Porosity Testing: To check the porosity of a concrete surface, pour a small quantity of water in several test areas. On a good, dense surface, the water will bead up and just sit there. Should the water be absorbed into the floor, the floor is not dense enough. This situation can cause failure of the installation. The same is true in the case of dusty concrete and newly sanded wood floors. When these conditions are encountered the floor should be primed with a latex primer. Priming will also provide a better adhesive bond and increase the adhesive coverage.

NOTE: Primers should never be used in an attempt to correct a moisture problem.





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• Moisture Testing: A moisture test is a requirement for any slab. All on or below grade slabs regardless of the age should be tested. Any moisture test must be performed with a minimum slab temperature of 55°F, because water movement is retarded at lower temperatures and test results will be inaccurate. To test for moisture use the calcium chloride moisture test.

• ASTM Designation: F 1869-98 Standard Test Method for measuring moisture vapor emission rate of concrete subfloor using Anhydrous Calcium Chloride.

• Calcium Chloride Moisture Test: (Conditioning) the test site should be the same temperature and humidity expected during normal use. If this is not possible, then the test conditions should be $75 \pm 10^\circ\text{F}$ ($23.9 \pm 5.5^\circ\text{C}$) and $50 \pm 10\%$ relative humidity. Maintain these conditions 48 hours prior to, and during testing. Test concrete slabs for moisture using the calcium chloride moisture test. Follow test kit manufacturers instructions. The moisture emission rate of a concrete floor is expressed in Lbs. /1000 square feet/24 hours. Approximately 3 days are required for the test. An emission rate of 3.5 lbs. maximum is acceptable. Three test locations for areas up to 1000 sq. feet, add one additional test for each 1000 sq. ft. or fraction thereof.

• Alkalinity Testing: A pH reading of 5-9.0 is satisfactory. Alkalinity is often a direct result of moisture migrating through the concrete slab. This water movement almost always carries alkaline salts with it and on occasion evidenced by a white residue left on the slab after the moisture evaporates. One may also encounter a hot slab (highly alkaline) which yields no visible signs of alkalinity. Since high alkalinity may cause an adhesive failure, its presence should always be tested for. pH testing should be performed in accordance with ASTM Standard Practice F-710. Any pH reading above nine (9) will require neutralizing the slab with a mild acid solution, followed by a thorough rinsing with water. **Moisture and pH test results obtained reflect only the concrete condition at the time.** Testing of concrete subfloors for moisture or alkalinity is the responsibility of the owner or general contractor. Testing should be performed by an independent specialist certified by appropriately recognized organizations such as IICRC or EQUAL.

• Other Considerations: Radiant heated floors are concrete slabs into which either electrical or hot water heating coils have been embedded and should present no real problems for a glue-down installation. If the installation is done with the heat on, the temperature of the surface will probably be too warm. If this is the case, adhesive set-up would be accelerated and open-time reduced; therefore, it would be necessary to reduce the floor temperature. The floor temperature should never exceed 85°F.

Painted concrete slabs are hazardous to work with because so many different types of paint are on the market, and many of them are not intended for use with carpet floor adhesives, thus affecting the carpet bond. Wet sanding is the preferred method for removing paint from a concrete slab, followed by thorough porosity testing.

Other surface coatings such as curing compounds, hardeners, sealers, and parting compounds are widely used in new construction and can interfere with the bond of carpet floor adhesives to the slab. Although curing compounds are frequently made of an oil, wax, or resin base and are usually eroded by foot traffic prior to carpet installation, care must be taken to ensure that all residue is removed. Hardeners do not usually cause trouble, but excess amounts should be removed. In lift-slab and tilt-up construction, parting compounds (intended to prevent adhesion to permit separation of the slabs) must be removed also. If grinding or sanding is necessary to treat any of the above conditions, run a porosity test to determine if a primer is required. **The warranties and performance guarantees are the responsibility of the sealer, primer, or underlayment manufacturer and not the carpet manufacturer.**



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PRIMING OF CONCRETE OR WOOD FLOORS

Priming a subfloor, either concrete or wood, is intended to eliminate, or at least moderate, minor surface dusting. Priming also reinforces the concrete surface, makes adhesive spread easily thus increasing coverage, and improves the adhesive bond. Priming should never be used to overcome a moisture condition. To prime a subfloor effectively, two coats may be required. The primer may be applied by roller, trowel, or airless at the rate of up to 500 square feet per gallon (depending on the roughness and porosity of the subfloor).

NON-POROUS FLOOR PREPARATION

Terrazzo and other non-porous floors require a special consideration as subfloors for carpet since the adhesives used depend on evaporation of moisture to achieve a set, which means the water vapor must have a path to the atmosphere. With conventionally backed carpets, evaporation will proceed through the carpet

EXISTING FLOOR COVERINGS

Many resilient floors provide an excellent base for an adhesive carpet system installation if the floors are soundly constructed, securely bonded, free of all finishes, and not cushioned or embossed. Identifying the type construction of the existing resilient floor is critical for insuring successful adhesion. For example, a securely bonded VAT or VCT floor 3/32 inch minimum thickness provides a good adhesive subfloor; yet, a vinyl floor or rubber floor may not. If it is necessary to adhere to quarry tile, or other tile with recessed grout lines, the floor must be skim coated with a fortified Portland Cement underlayment to bring the grout lines flush and level. Follow the underlayment manufacturer's instructions regarding application, thickness, and priming requirements.

EXISTING ADHESIVES

All existing adhesives should be removed. An existing carpet latex floor adhesive with the adhesive trowel ridges eliminated can in many cases produce a secure bond. Install several 3' x 3' test areas. Test bond to floor after 72 hours. If extraordinary force is required to pull the carpet from the floor, leaving the floor and carpet back fully covered with adhesive the installation could proceed.

LIQUID ADHESIVE REMOVERS

The use of liquid adhesive removers is not recommended as any residual left on or in the concrete slab is capable of producing a failure of the new floor adhesive. Removal of residual adhesive is recommended by either wet - scraping or by using a terrazzo floor machine. When using a floor machine, use clean sharp, coarse cutting sand mixed with detergent and water. Ensure the mixture stays wet and do not allow any dusting. Thoroughly rinse floor with clear water. Ensure that the concrete slab is thoroughly dry prior to installing the carpet.

WOOD FLOOR PREPARATION

All existing wood surfaces must be free of chemicals applied under pressure to prevent outdoor deterioration or enhance flame retardancy, oil, wax, paint, varnish, and old adhesives and any other contaminant that may prevent the required adhesion of the carpet backing system to the floor. Additionally, all wood floors must be suspended a minimum of eighteen (18) inches, be cross ventilated, and have an appropriate vapor barrier installed. Wooden subfloors bonded directly to, or laid over, sleepers on concrete that directly contact the ground are not an acceptable substrate for any carpet installation. Possible moisture contained in the concrete can cause the wood to swell, buckle, or eventually rot.



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A double-layer wood subfloor suspended over open wood joists (sixteen inches on center or less) and made of 1/2 inch plywood rated as either APA underlayment INT (interior type), APA underlayment INT (with exterior glue), APA underlayment CC plugged ext. (exterior type), is acceptable as an adhesive subfloor. Single layer tongue and groove with a maximum three (3) inch face should be covered with a 1/4 inch APA underlayment grade plywood. Single layer floors not of tongue and groove construction and having more than a three (3) inch face should be covered with a 1/2 inch APA underlayment grade plywood. An uncupped, double-layer tongue and groove wood floor is a suitable subfloor for adhesive carpet installations.

The warranties and performance guarantees are the responsibility of the plywood underlayment manufacturer and not the manufacturer of the carpet.

Ground Zero Electrostatics does not recommend the use of chipboard or particle board as carpet underlayment material.

PRIOR TO INSTALLATION

Before actual installation begins, check the following list to insure compliance with every detail:

CAUTION:

Carpet performs best when the major traffic runs the carpet length. It is not recommended that the carpet length be run the corridor width, producing a seam every 12 feet across the corridor.

- (a) Carpet transported to the job site in rolls free of any wrinkles or creases. DO NOT BUNDLE! Bundling will cause creases and wrinkles which may prove difficult to remove during installation. If loose bundling or bending is absolutely necessary to transport the carpet to the installation site, unroll the carpet as soon as it is delivered.
- (b) Floors properly prepared.
- (c) Building and carpet preconditioned for 48 hours prior to installation at a constant temperature and relative humidity between 65° to 95°F and 10% to 65%, respectively.
- (d) Carpet laid out according to specifications.
- (e) Shop drawing/plan prepared for the area to be carpeted.
- (f) Plan checked against the available roll lengths and dye lot numbers to keep cross seaming to a minimum. If using more than one dye lot, record on the shop drawing the exact location where the dye lot change will occur to minimize possible color differences. This transition point must be recorded on the shop drawing.
- (g) Seam locations planned so that no perpendicular seams will occur at doorways or entries. All doorway seams should be centered directly under the door.
- (h) Seams should run with the flow of traffic. The only exception occurs when windows allow incoming daylight to highlight seams from the side. In this situation, run the seams into the daylight to reduce the visibility of the seam.
- (i) All seams trimmed.
- (j) Pile running in the same direction
- (k) GZ C2000 adhesive on hand and correct trowel notch size determined.
- (l) Enough manpower available to professionally complete the installation.



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CAUTION

Do not attempt to seam dissimilar backing systems. The primary backings to be seam welded together must exactly align (join) at the seam.

•**NOTE:** Prior to beginning a direct glue-down installation, the installer must be familiar with all information contained in the section titled, Floor Preparation for Adhesive Carpet installations.

CARPET LAYOUT

In order to allow the carpet to become relaxed and conditioned to the room environment, dry lay the carpet in the area a minimum of 24 hours prior to the actual carpet installation. Ensure that the area's temperature is a minimum of 65°F and the relative humidity is between 10% & 65%.

GZ APPROVED ADHESIVE AND MINIMUM TROWEL NOTCH SIZE

GZ-C2000 carpet floor adhesive is approved for all direct glue-down installations. The floor adhesive shall be spread uniformly over the subfloor with the correct trowel leaving adhesive ridges of sufficient size to achieve full and complete coverage of the carpet backing.

THIS REQUIREMENT IS NOT OPTIONAL!

ActionBac® installations require a minimum trowel notch size of 1/8 inch x 1/8 inch x 1/16 inch. If in doubt about what trowel notch size to use, spread some adhesive onto the floor that is to be covered for a test area. Lay the carpet into the adhesive and roll the carpet with the appropriate roller. Then, pull the carpet off the floor and see if there is full and complete coverage of the carpet backing while still maintaining complete adhesive floor coverage. If necessary, adjust notch size to achieve the required 100% transfer.

SEAM PREPARATION

Seams shall be prepared by trimming off the mill, or factory edge. This cut is to be made far enough in from the carpet edge so that a clean and even seaming edge is achieved. Cutting tools with razor-type blades, such as cushion-back cutters, should be used for seam preparation. All recommendations for seam preparation and cutting must be followed.

SEAM TRIMMING

•Loop Pile Constructions: If the carpet is a straight row, level, or multi-level loop construction, insert a screwdriver or the nose end of the cushion-back cutter (with the blades retracted) between tuft rows. Run it the entire length of the carpet, separating the yarn and opening a path for the cutter. Trim into the body of the carpet far enough from the factory edges to obtain full face weight and good lamination of the backing system. This distance will vary from 1 to 2 inches from the edge on straight row constructions to as much as 3 inches on some graphic constructions. Using the cushion-back cutter, trim both seam edges by cutting between the tuft rows. Cut close to the main body to obtain a tight seam by trimming with the blade close to the seam edge.

•Cut Pile Constructions: Cut pile carpet is sheared in the final stages of manufacturing; therefore, the only thing keeping the cut pile yarn in an erect position is the yarn tuft beside it. Along the factory edges, this face yarn naturally lies to the outside of this edge (no support side). To obtain a uniform pile height on both seam sides, it is always necessary to trim in further on cut piles than on level loops. Depending upon pile height, this distance will range from 1 inch to 1½ inches into the body of the carpet.



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• Graphic Constructions: These carpets must be trimmed from the face using either a loop pile cutter (Roberts #10-152) or a cushion-back cutter. Trim into the body of the carpet far enough from the factory edges to obtain full face weight and good lamination of the backing system.

- (a) Because of the shifting mechanism of graphics tufting equipment, there may be a variance of 2" to 6" in width after selvage edges are trimmed. To separate the rows, either use a cushion-back cutter with the blades retracted or a screwdriver with the blade corners rounded off, and run the instrument the length of the seam.
- (b) Always be sure the blade on the trimmer is on the seam side. This precaution is necessary to prevent trimming the width of the tool beyond the tuft row, thus causing the backing to protrude this distance beyond the face yarn.
- (c) In those situations where tuft rows are not true enough to enable a tuft row on one seam edge to tightly join the tuft row on the opposite seam edge, an alternate seam trimming method is used only on non-pattern constructions.
- (d) This alternative method involves row cutting the first seam edge that has the pile lying toward the seam. Slide the second breadth about 1 1/2 inches under the first trimmed edge, or far enough to obtain full face weight. Be sure this overlap is uniform throughout the length of the seam. Using the first trimmed edge as a guide, trace cut the second breadth to the first seam edge. This method is to be used when the edges will not conform when row cut.

• For Over Tuft and Printed Patterns: Find the match point (where extra pattern is left on both sides) and cut into the width to the match point-then cut 1 inch into the length. At the match point, you now have a cut shaped like an "L". Perform this trimming procedure at all match points along the entire length of the seam. Turn the previously cut "L's" face up. Lay a straight edge against the "L's" two at a time. Cut between these two, reset the straight edge between two more "L's", and cut again. (For cut pile carpet, you may want to fold the carpet face down, cut through the secondary back only so as not to bevel cut the face yarn.) This procedure permits you to cut the carpet from the back side and still know where the match is.

SEAM CHARACTERISTICS

Regardless of the seaming method, a properly constructed seam:

- Has cleanly trimmed edges properly secured with GZ-C2000-SS where applicable.
- Has tightly abutted edges without gaps.
- Maintains reasonable pattern match where applicable.
- Will not be invisible.

B. PROCEDURES FOR-INSTALLING ACTIONBAC® BACKED CARPET

The following procedures are to be used as a guide to proper direct glue-down installation of ActionBac® carpets. Prior to beginning the installation, ensure that you understand and have complied with all information presented in Topic A., Preparatory Information for Adhesive Carpet Installations. The following instructions are for the installer who is an experienced and qualified professional.



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ADHESIVES:

The use of GZ-2000 Conductive Adhesive carpet floor adhesive is recommended for ESD installation.

TROWEL SIZE:

The minimum trowel size to be used for the installation is 1/8" x 1/8" spaced at 1/16". Floor conditions may require a trowel with deeper notches.

ESD FLOORING GROUNDING RECOMMENDATIONS:

Make no mistake! To achieve the electrical specifications for the ESD Flooring Materials you have selected your floor must be grounded. Proper grounding techniques are important in even the most basic of environments, and *critical* in explosive, ordinance and munitions environments. **Every installation is different!** We generally supply (at no charge with your flooring order) a quantity of grounding hardware appropriate for basic grounding in non-critical standard environments. Further, the quantity of grounding hardware we provide is for use with installations utilizing one of our conductive adhesive floor bonding mechanisms applied to concrete substrates. Using more (or less) grounding locations and hardware will allow you to "fine tune" your conductivity (if required). Conditions such as highly insulative substrates (wood, carpet, etc) that you wish to cover with your new ESD Flooring or environments encountering extreme sensitivity to ESD "events" (hard drive manufacturing, raw sensitive electronic component handling, explosive, munitions etc) may require increasing your grounding hardware requirements. Clients are urged to evaluate their conditions and environment and contact us as needed if additional grounding may be required. Sections One and Two of this Document encompass the use of two types of standard grounding hardware provided by Ground Zero Electrostatics. While Drawings and Overviews in Section Three provide information on the quantity of grounding required for the following environments.

- **Basic:** Office, Telecom, many manufacturing environments.
- **Advanced (or for insulative substrates):** Raw component handling, hard drive mg, etc.
- **Critical:** Ordinance and explosive environments.

OVERVIEW

ESD Carpeting and Vinyl Flooring (marketed under the trade names of X-O Stat ESD Carpet, ZeroStat ESD Carpet, Azo-Stat ESD Carpet, PolyStat ESD Tile, ZeroStat ESD Tile, UltraStat ESD Tile and Euro-Stat ESD Tile) must be grounded to provide reliable elimination of electrostatic potential. These instructions are designed to provide a comprehensive overview for the majority of environments utilizing our static dissipative and conductive flooring materials. Our ESD Flooring materials are designed to work in conjunction with either our liquid conductive adhesive (GZ C-2000) or our unique releasable adhesive "Tape" (URAS). All adhesives provide reliable anchoring of the flooring, as well as a conductive media allowing equalization of electrostatic potential for subsequent elimination via ground mechanism(s). Two Types of grounding mechanisms are available from Ground Zero. Grounding suggestions for all types of adhesives and GZ Grounding mechanisms are similar, however the quantity of grounding hardware and connections are increased for Advanced and Critical applications see Section Three).



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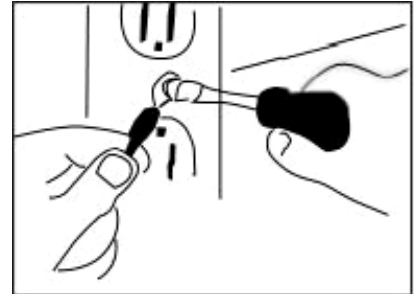
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Goal: To provide a reliable mechanical connection from your ESD flooring and adhesive to a dependable earthed electrical ground in your building.

Section One of Three INSTALLATION AND USAGE OF FLOOR GROUNDING PLATES:

GZ ESD Floor Grounding Plates (PN: SP-GNDPLT-ASM) are manufactured in a 2.625 wide X 3.625 heavy gage stainless steel. These devices are supplied complete with a conductive adhesive backing and heavy gage test lead wiring terminated with a #10 ring terminal. The plates are designed to be placed on top of ESD flooring materials and attached to flooring by removing the adhesive liner (on the underside of the plates) and pressing firmly in place. The attachment of ground terminal wire (#10 ring terminal eyelet) to center screw of AC electrical face plate cover is compliant with most state and local codes and



provides a good mechanical connection of flooring to the electrical grounding system of your building (see figure 1). If your grounding requirements mandate a "attachment to AC Electrical Ground" we recommend utilizing a local electrician to ground terminal wires. In Basic environments, these plates may be used without a copper (or brass) foil underlayment, however best results are generally obtained by placing a small 3' long piece of copper (or brass) onto the substrate edge and up a wall (by a wall outlet preferably) prior to applying the adhesive. The foil is subsequently folded over the top of the flooring (for about 2") and covered with a grounded plate. The Plates should always be used in conjunction with the a more extensive foil grounding tape underlayment when installing in Advanced or Critical Environments or when applying static dissipative or conductive materials on top of highly insulative surfaces such as wood or carpeted substrates. When used with copper foil grounding tape, the function of the plate is to provide a mechanically reliable attachment of copper foil flooring underlayment grid to ground. Simply fold terminated copper foil strip over the top of the flooring (trim if necessary to a length of about 2 inches), remove adhesive liner from plate, place plate over foil "tab," press firmly in place and ground. Further details for recommended usage of foil grid tape can be found in section Two with appropriate diagrams listed in Section Three.

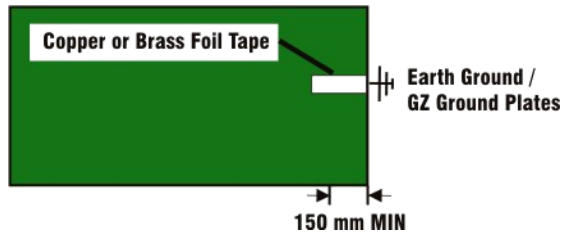
Section Two of Three Installation and usage of USGZ Copper (or Brass) Foil Grounding Grid Tape.

This .500 wide X 108 foot long Copper (or Brass) foil, adhesive backed tape is supplied in roll form (PN: TP-7521) and is extremely useful for pre-placing a grid or ground strap beneath your ESD flooring material. The function of the tape is to provide a strap, pattern or grid underlayment beneath the ESD floor prior to covering with the appropriate conductive adhesive. The foil is subsequently attached to multiple permanently grounded objects (such as water pipes, building superstructures, metal beams, building electrical conduit systems, etc). To apply, sweep substrate to remove loose dust and abrasives. Using the diagrams below decide on the appropriate quantity for your environment (please contact our Engineering Dept if you have any questions). Remove the adhesive liner (backing) from the Foil and press firmly in place on substrate. Gently pull tape as you unroll (to keep from puckering), smooth the tape in place with

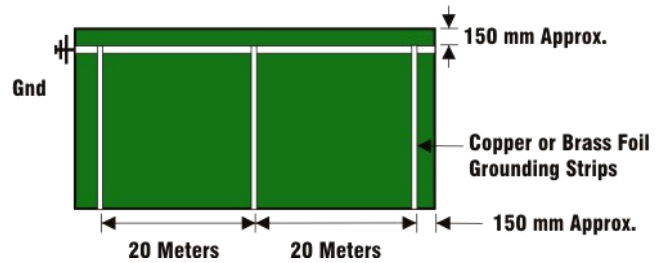
foot or towel. The tape may be attached to ground by simply (with liner removed), running the tape up (or on) the permanently grounded object. More secure mechanical connections may be achieved by using the tape in conjunction with our USGZ ESD Floor Grounding Plates listed in Section One.

Section Three of Three Copper or Brass Foil Grounding Grid Recommendations:

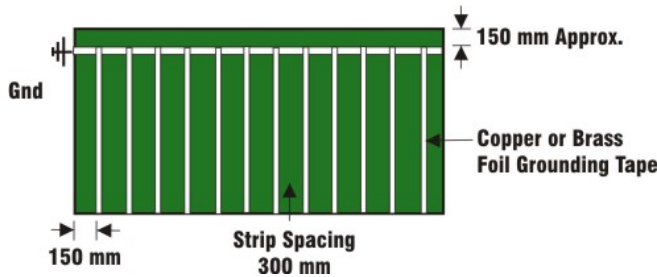
Basic:



Advanced:



Critical:



ADHESIVE APPLICATION:

The floor adhesive shall be spread uniformly over the subfloor with the correct trowel leaving adhesive ridges of sufficient size to achieve full and complete coverage of the carpet backing.

SITE CONDITIONS:

The floor temperature must be a minimum of 65 °F and the humidity a maximum of 65%. These conditions must be maintained a minimum of 48 hours prior to installation and continually maintained 24 hours a day, 7 days a week and at least 72 hours following completion of the installation.

HANDLING:

Use only lift trucks equipped with carpet booms. Bending or folding is not recommended,

PREPARATORY INFORMATION

- Adhesive: GZ-C2000 Conductive Adhesive for ESD install.
- Adhesive Trowel Size: Minimum notch size 1/8" x 1/8" spaced 1/16". The floor adhesive shall be spread uniformly over the subfloor with the correct trowel leaving adhesive ridges of sufficient size to achieve full and complete coverage of the carpet backing. This requirement is



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not optional! If necessary, adjust notch size to achieve the required full and complete coverage of the carpet backing.

INSTALLATION (Read all instructions below prior to proceeding.)

1. Dry lay the area to be carpeted, checking against the available roll lengths and dye lot numbers to avoid extra cross seaming. Take into consideration all support columns, entrance areas, and other obstructions to attain the best carpet layout.
2. Then select a starting point near the center of the area. Strike a white chalk line on the floor to mark the first seam location. Be sure this first seam is parallel to the outer walls.
3. Check the carpet for direction of pile lay, being careful to keep all the carpet pile laying the same direction.
4. Cut two lengths of carpet allowing about 1 1/2 inches to run up the walls for future trimming, and position the lengths of carpet side by side along the chalk line with the pile lay of both in the same direction.
5. Perform seam trimming operations as described in ***Seam Preparation and Seam Trimming Information for Adhesive Carpet Installations.***
6. Move the first length of carpet up to the starting chalk line and stay-nail along its center line, parallel to the seam. During this procedure, work out any wrinkles allowing the carpet to lie smoothly on the floor. Stay-nail at approximately 12 to 18 inch intervals following the center line of the carpet along its entire length. Make sure the carpet does not shift from the chalk line. Drive the nails into the floor just far enough (approximately 1/8 inch) to hold the carpet in place. Use the strip of carpet that was trimmed from the width as a "marker" and stay-tack through it. In this manner, the stay-nails will be clearly visible, and none will be lost in the carpet as the installation proceeds.
7. Now check the yarn alignment of the second cut against that of the first and decide whether the yarn will align properly to produce a tight seam. Non-pattern styles only: When the tuft rows are slightly serpentine, trim one seam edge, then slide the second seam edge a minimum of 1 1/2 inches under the first trimmed edge. Using the first edge as a guide, trace cut the second seam side so that it conforms to the first trimmed seam edge. The first trimmed edge must be the edge (breadth) that has the face yarn pile lay in the width direction, laying into the seam. If this cut is reversed, the second traced cut seam edge will be bevel cut.
8. A compression of 1/16 inch is recommended for compression seam set up. Ensure that both lengths of carpet lie perfectly flat and tension-free.
9. Stay-nail the second length as in Step 6.
10. Carefully fold back both lengths toward stay-nails. Carpet may become torn or ripped if pulled against stay-nails.
11. The exposed floor between the folded cut should be swept and vacuumed, if necessary.
12. When installations are on very dry concrete, it is recommended that water be used to damp mop the floor. (Be certain to remove all puddles or excess moisture.) For relatively non-porous surfaces such as epoxy-terrazzo, vinyl, or steel, it is important to allow sufficient time for the adhesive to become tacky before applying the carpet.
13. With a notched trowel (minimum size of 1/8 inch x 1/8 inch x 1/16 inch), spread the GZ-C2000 Conductive Adhesive evenly and without interruption using a sweeping semi-circular motion. Apply the floor adhesive using as many craftsmen as necessary to ensure uniform adhesive open time the length of the seam area. Spread the adhesive in a straight line at the folds so that there are no scalloped edges to spread to when the



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uncemented portion is turned back. The trowel must be kept clean and periodically re-notched as required. The floor adhesive shall be spread uniformly over the subfloor with the correct trowel leaving adhesive ridges of sufficient size to achieve full and complete coverage of the carpet backing.

14. In most installations GZ-C2000 Conductive Adhesive requires no open time. Conventional adhesives will require sufficient open time to provide green grab (light adhesion to the floor). Do not let the adhesive skin over. Use the tacky wet installation method. Open time will vary depending upon environmental conditions, generally 20 minutes but not to exceed one hour. Lay the folded edge of the first cut into the adhesive. To do this, the installers should position themselves at intervals along the entire length of the fold, grasp the folded edge, lift it up, and walk towards the seam. The installer in the middle of the roll walks ahead thus forming a wedge: A cardboard carpet roll core cut into 2 foot lengths can be used for smoothing the carpet into place.
15. Carefully apply a 1/8 inch continuous bead of GZ-C2000 carpet seam sealer to the cut edge at the proper height to lock in the tufts and seal the edge of the first cut. **NOTE: Backed carpet does not require the use seam sealer.**
16. Next, grasp the folded edge of the second breadth and place it over the adhesive as in Step #14 with the exception that this flap should be "walked in" evenly rather than using the wedge method. "Walk in" all but 1 foot of the second breadth and fold this amount back again.
17. The installers should now step onto cut #1, face cut #2, and holding thumbs up, grasp the 1 foot fold of cut #2 and place it into the adhesive approximately 1/4 inch from the edge of cut # 1. Slide this edge until it tightly abuts the edge of the first roll. The 1/16 inch overage will help achieve a tight, compressed seam. Do not let the seam peak.
18. Hold the edge in place by kneeling on it and work the excess created by the 1/16 inch overlap out toward the stay-nails. The seam adhesive on the edge of the first length will transfer to the seam edge of the second length to seal the seam and prevent fraying. In case of light peaks or gaps, a knee-kicker may be needed to move the carpet slightly to obtain a closed and even seam. Immediately clean up wet GZ-C2000 Seam Sealer from face yarn with a clean white cotton cloth wet with soap and water. Do not allow sealer to dry in any area in need of clean up. Brush or roll any looseness and trapped air bubbles away from the seam with a light roller or carpet tractor. This complete procedure must be done before the adhesive sets up.
19. Turn the unglued portion of the first length of carpet back toward the seam. Spread adhesive for a 6 foot width along the entire length. Lay the carpet onto the adhesive. Brush or roll out looseness and trapped air toward the wall, i.e., away from seam.
20. Cut the next and continuing lengths of carpet and position each. Repeat the above procedure to complete the installation.
21. While the adhesive is still tacky, the carpet must be pressed down along the wall. As each length is installed, trim and fit at walls and around jogs, pillars, etc. using the Roberts 0-905 wall trimmer and Roberts 10-440 hooked blades. The carpet can now be rolled with a 75 pound roller.
22. If cross seaming is necessary, follow the procedures outlined in the next subtopic entitled Cross Seaming.
23. The exposed edges should always be protected either by a suitable edge molding. Resilient moldings can be fastened to the floor by contact cement or a similar material. The metal can be fastened- with concrete nails or other appropriate fastening devices.



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24. Clean up GZ-C2000 Conductive Adhesive while still wet with soap and water. Apply with a clean, white cotton cloth using a blotting action. Do not saturate the carpet by pouring water directly onto the carpet's surface. Blot with a dry white cotton cloth.
25. The removal of "air bubbles" under previously installed carpet can be quickly accomplished by the use of a large needle and syringe. Puncture the bubble and extract the air.

CROSS SEAMING

If cross seaming is necessary, insure that the direction of the pile is the same for all pieces and lay each piece into position allowing a minimum of 2 inches overlap at the seam area and 1 1/2 inches for trimming at the wall. Trim all lengthwise edges, and fit the trimmed edges to the trimmed edge of the last full width. Reverse roll both seam sides prior to trimming to establish carpet curl towards the floor. If the carpet will allow, trim the first seam edge of the cross seam between the stitch rows and trace cut the second seam edge to fit the first. (The seam edge will most likely not be straight; however, a less obvious seam will result using this technique.) Pattern carpet must be matched.

A second acceptable method is used when following stitch rows would produce an obvious seam on a slant. Cut the carpet from the face with a cushion back cutter using a straight edge as a guide, trimming the seam edge at a 90° angle to the length seam. Use this trimmed edge (with the pile sweeping toward the seam edge) as a guide for trace cutting the second edge.

On all seams, length or cross, all edges must be sealed with GZ-C2000 Seam Sealer to prevent raveling or fraying. This step must be followed and is not optional.

PATCHING

In general, carpet glued directly to the floor lends itself to patching rather than burling. The recommended patching procedure is as follows:

- (a) For patching purposes, it is best to use a previously installed piece of carpet, if available. First, determine pile direction and cut between pile rows, removing the area to be replaced and being careful to avoid cutting the pile yarns. (For cutting purposes, use a slotted blade knife or cushion-back cutter, whichever suits the situation best).
- (b) With an awl, lift out the damaged section and remove any adhesive from the floor.
- (c) Determine the size of the replacement patch by increasing its dimensions slightly as compared to the dimensions of the damaged section of carpeting.
- (d) Apply GZ-C2000 Conductive Adhesive to the floor and GZ-C2000 Seam Sealer to edges of the patch.
- (e) Insert the patch by bending the edges inward. Smooth the pile with the back of a knife and finish by fracturing the seam areas.

CAUTION:

- Carpet should not be subjected to traffic for at least 24 hours after the completion of the installation.
- Do not wet clean any direct glue-down carpet until the installation has been completed for thirty (30) days.
- Do not cover a direct glue-down installation with a moisture barrier protection such as plastic, as it will cause buckling and possible mildewing by "trapping"



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moisture in the adhesive. Protect the installation with a non-staining building paper or cover the carpet with Host Dry Absorbent Compound.
-Flooding voids manufacturer's warranties.

PATTERN CARPET

Patterned Carpet Considerations

It is imperative that parties discuss pattern configuration, the backing system, installation method, bow, skew, and pattern variation to prevent the possibility of having a very dissatisfied customer.

Sequence Pattern Carpet by Size

Patterned carpet should be sequenced by the pattern size not by manufacturing roll numbers; however, do not mix dye lots.

Patterned carpet is a textile product, and as such, will seldom perfectly match at the seams. The flooring contractor should (a) know what product he is installing prior to opening the carpet at the job site and (b) have the qualified personnel, equipment (power stretchers, etc.) and training to properly install the specified product to the customer's realistic expectations.

Patterned carpet must be installed working from the longest pattern in the dye lot to the smallest pattern: The goal is to minimize the labor cost in bringing the pattern into register at seams. Install the longest pattern in the dye lot to the next longest pattern - continuing in this manner to the shortest pattern in the dye lot. We cannot shrink carpet. We can stretch carpet.

- A) Dry lay the entire area before gluing any carpet; this process allows for documentation of panel sizes and fine-tuning of pattern sequencing.
- B) As a minimum check, measure the pattern repeat at the open end of each roll. All measurements should be to the nearest 1/4". Example 14' 11 1/4", 14' 11 1/2", 14' 11 3/4", etc.
 - 1) Measure from an exact match point of the pattern to the corresponding match point in the length direction of the carpet. Measure the pattern nearest the carpet edge.
 - 2) Patterns with length repeat of 7/16" - 3"; count 60 patterns and record the measurement.
 - 3) Patterns with length repeat of 3.1" - 9"; count 20 patterns and record the measurement.
 - 4) Patterns with length repeat of 9.1" - 18"; count 10 patterns and record the measurement.
 - 5) Patterns with length repeat of 18.1" - 48"; count 5 patterns and record the measurement.
- C) If possible rolls 60' and longer should be checked at open-end, roll center, and core end.

GROUND ZERO ELECTROSTATICS DOES NOT GUARANTEE AN EXACT OR PERFECT MATCH ON ANY OF THEIR PATTERNED QUALITIES. REASONABLE PATTERN MATCH MAY BE ATTAINED BY USING TRAINED, FCIB CERTIFIED CRAFTSMEN AND BY FOLLOWING OUR PATTERNED INSTALLATION PROCEDURES.



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