

# Protect 125 ESD WR-GP

## ESD Epoxy Ground Plane System



7875 Bliss Parkway North Ridgeville, OH 44039  
440-327-0015 440-353-0549 - FAX

**DESCRIPTION:**

**Protect 125 ESD WR-GP** is a two-component, waterborne, solvent free epoxy resin ground plane coating system designed to develop a uniform, non-tracking conductive ground plane to facilitate a consistent electrostatic discharge. When used in combination with **Protect 100 ESD HB** or **Protect 170 ESD SR** it produces lower surface resistance readings to meet the mandated requirements of ignition control applications.

**USES:**

**Protect 125 ESD WR-GP** is installed in many environments where the damaging effects of electrostatic discharge (ESD) cannot be tolerated. Primary industries that use ESD flooring include *Electronic Assembly, Data Processing, Military/Aerospace, Hazardous Industries (dust or explosion hazards)*. This system is intended for application over top of a PIP insulating epoxy primer or build coat.

**ADVANTAGES:**

- Consistent resistance to ground
- In combination with a Protect ESD top coat delivers the conductive resistance range of 25,000 – 1 Million ohms (tested per EOS/ESD STM 7.1 2005)
- Maintains ESD properties throughout the thickness of the applied system and is not dependent humidity for proper conductivity
- 0 VOC; virtually odorless
- Rapid drying time and development of electrical properties.
- Meets ANSI/ESD S20.20-2014 ESD Association Standard for the Development of an Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices) Meets or exceeds specification under the following testing methodologies under standard:  
ANSI/ESD STM7.1-2013  
ANSI/ESD STM97.1-2015  
ANSI/ESD STM97.2-2016  
ANSI/ESD S6.1-2014

**STORAGE:** Materials should be stored in original un-opened containers indoors between 65°F (18°C) and 90°F (32°C) and at or below 50% RH. Material contains water and is susceptible to freezing.

**SHELF LIFE:** Unopened containers 3 months from date of manufacture.

**PACKAGING KITS/ PART NUMBERS:**

**Volume Mix Ratio: Premeasured Kits only**  
**Protect 125 ESD WR-GP Kit –2.50 gallons (including ½ gal water)**

Protect ESD-125-WR-GP-B/5SF, Protect-ESD-125-WR-GP-A/HG  
**The addition of ½ gallon of water is required AFTER the Part A and B is thoroughly mixed together.**

**LIMITATIONS:**

*Contamination and surface defects (fisheyes):* If contaminants of oils, silicones, mold release agents and/or others are present,

**Protect 125 ESD WR-GP** may fisheye or crawl away from the surface. Surface contaminants should be removed with a suitable detergent and mechanical preparation prior to application.

**MATERIAL PROPERTIES\*:**

Properties	Test Method	Results
Flash Point	ASTM D3278	≥200 °F
Volume Solids (mixed)	ASTM D2369	42 %
Mixed Viscosity	ASTM D2196	600-1200 cPs
Dry Time	ASTM D5895	Tack Free 2-4hr Dry 6-8 hr Full Cure 7 days
VOC-Volatile Organic Compound	ASTM D3960	<0 g/L

**CURED PROPERTIES\*:**

Properties	Test Method	Results
Abrasion Resistance Tabor CS-17, mg loss/1000 cycles/1000g mass	ASTM D4060	100 mg
Adhesion to Concrete	ASTM D4541	350 psi concrete failure
Impact	ASTM D2794	120 in.lbs Direct & Reverse
Hardness (Pencil)	ASTM D3363	3B
Dry Film Thickness	at 6 mils WFT	2.5 mils

\*Properties and results are based on laboratory testing at 72°F (22°C) %50 RH and are theoretical calculations and estimates.

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**CHEMICAL RESISTANCE\*:**

Protect 1200 Clear	1 Day	7 Days
<b>ACIDS, INORGANIC</b>		
10% Hydrochloric	G	G
30% Hydrochloric	P	P
10% Nitric	P	P
50% Phosphoric	P	P
37% Sulfuric	F	P
<b>ACIDS, ORGANIC</b>		
10% Acetic	F	P
10 % Citric	E	G
Oleic	P	P
<b>ALKALIES</b>		
10% Ammonium Hydroxide	E	E
50% Sodium Hydroxide	G	F
<b>SOLVENTS</b>		
Ethylene Glycol	E	E
Isopropanol	P	P
Methanol	P	P
d-Limonene	E	E
Mineral Spirits	E	E
Xylene	P	P
Methylene Chloride	P	P
MEK	P	P
PMA	P	P
<b>MISCELLANEOUS</b>		
20% Ammonium Nitrate	E	E
Bleach	E	E
20% Sodium Chloride	E	E
10% TSP	E	E

\*Based on spot testing of the clear coating after 14 days of cure.

**Legend:** E- Excellent (Not Effected)  
G-Good (Limited Negative Effect)  
F-Fair (Moderate Negative Effect)  
P-Poor (Unsatisfactory)

**ELECTRICAL GROUNDING:**

Installing the PIP ground plane on primed concrete surface and anti-static coating is mandatory. The ground plane must be grounded to an earth ground to function properly. Conductive copper tape installed below the ground plane every 1000 sq. ft. or approved contact points. The copper tape and/or contact points must be connected to the buildings electrical ground or directly to

an approved earth ground. Copper is not allowed in all applications. The EOS/ESD Association provides instruction for proper grounding of ESD equipment and floors. Please contact Protective Industrial Polymers Inc. for proper grounding.

**INSPECTION AND APPLICATION:**

**Caution! Follow all precautions and instructions prior to installation.**

**SUBSTRATE:** The substrate must be primed with Protect 1000 CR, Protect 1200, Protect 1500, VM-PR or an approved insulating primer.

**MOISTURE:** Moisture and moisture vapor transmission rates are dynamic in nature and may change over time. Initial testing does not guarantee future results. If the relative humidity of the concrete substrate is over 75% (using ASTM F2170), Protective Industrial Polymers must be consulted and issue a written moisture mitigation recommendation prior to product use.

**VAPOR/CONTAMINATION:** Testing for MVT does not guarantee against future problems. If there is no known vapor barrier or the vapor barrier is inadequate, there is an elevated risk of bond failure. Other factors including the migration of oils, chemicals, excessive salts or Alkali Silica Reaction (ASR) from the concrete from may also elevate the risk of adhesion difficulties. Consult your PIP representative for approved mitigation treatments.

**TEMPERATURE AND HUMIDITY:** During the application and cure of the coating, the substrate temperature, material temperature and room conditions must be maintained between 65°F (18°C) and 90°F (32°C). Relative Humidity (RH) should be limited to 30-70%. DO NOT apply coatings unless the surface temperature is more than five degree over the dew point.

**APPLICATION EQUIPMENT:**

- Protective equipment and clothing as called for in the SDS (Safety Data Sheet)
- Jiffy® Mixer Blade Model ES
- Low speed high torque drill motor
- High quality short nap roller covers- 3/8"-½ inch nap
- Application Squeegee

**PREPARATION:**

Surface dirt, grease, oil and contaminates must be removed by detergent scrubbing and rinsing with clean (clear) water.

*Mechanical Preparation:* Blasting or grinding the surface is the preferred method of preparation. The success of industrial diamond grinding as a concrete preparation method will vary depending on technique and the hardness of the concrete.

**MIXING:** Pre-mix Component B for 2-3 minutes at slow speed prior to adding the Part A. Care must be taken to re-distribute any solid material that may have settled on the bottom of the pail during storage and shipping. Use a Jiffy® ES mix blade attach to a slow speed drill. Then pour component A into component B and mix together for 2-3 minutes.

**Add ½ gallon of clean water ONLY AFTER the Parts A and B are thoroughly mixed. Mix for an additional 1 minute.**

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**APPLICATION:** Apply **Protect 125 ESD WR-GP** at a rate of 4-6 mils, (400-267 sq. ft./gal) to the previously primed concrete or approved substrate. Product may be bucket or pan rolled with a ¼"-3/8" nap roller or by spreading with a notched squeegee followed by a finish roller to render an even film thickness.

Protect 125 ESD WR surface tacks very quickly. If applying with a squeegee, the roller personnel must be directly behind the squeegee. Failure to do this will result in roller marks and inability to spread and level the material.

Insufficient film thickness material may produce inconsistent or non-compliant electrical properties. The best practice is to measure and grid the floor to be sure of proper application rate and performance.

**CURING (DRYING):** Allow the coating to cure (dry) for a minimum of 4 hours after application at 75°F (24°C) and 50% RH before applying subsequent topcoat. Allow more time for low temperatures and higher humidity.

**JOINTS:** All non moving joints (control joints) can be filled with a rigid or semi-rigid joint compound. Construction joints may be filled with semi-rigid joint filler and might need to be re-built and re-cut depending on conditions. Consult Protective Industrial Polymers for proper treatment of moving joints.

**RECOAT:** **Protect 125 ESD WR-GP** can be top coated with other Protective ESD coatings after proper cure. Topcoat should be applied within 24 hours.

### MAINTENANCE GUIDELINES:

**Allow floor coating systems should be allowed to cure at least one week before cleaning by mechanical means (IE: sweeper, scrubber, disc buffer).**

**CARE:** Increased life of the floor will be seen with proper maintenance and will help maintain a fresh appearance of your new Protective Industrial Polymers floor. Regularly sweep to avoid ground in dirt and grit which can quickly dull the finish, decreasing the life of the coating. Spills should be removed quickly as certain chemicals may stain and can permanently damage the finish. Only soft nylon brushes or white pads should be used on your new floor coating. Premature loss of gloss can be caused by hard abrasive bristle Polypropylene (Tynex®) brushes.

**CAUTION:** Heavy objects dragged across the surface will scratch all floor coatings. Avoid gouging or scratching the surface. Pointed items or heavy items dropped on the floor may cause chipping or concrete pop out damage. Rubber burns from quick stops and starts from lift trucks can heat the coating to its softening point causing permanent damage and marking.

**REPAIR:** Repair gouges, chip outs, and scratches as soon as possible to prevent moisture and chemical under cutting and permanent damage.

**TECHNICAL SUPPORT:** For application questions, please contact your salesman or PIP technical service at 440-327-0015.

**READ SDS (SAFETY DATA SHEET) FOR SAFETY AND PRECAUTIONS. KEEP OUT OF REACH OF CHILDREN.**

### WARRANTY AND CONDITIONS OF USAGE

**WARRANTY AND LIMITATION OF LIABILITY:** Protective Industrial Polymers Inc. ("PIP") warrants that its products shall conform to the manufacturer's written specifications and shall be free from defects for one (1) year from the date of purchase. PIP MAKES NO WARRANTIES, IMPLIED OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSES OF ITS PRODUCTS AND EXCLUDES AND DISCLAIMS THE SAME, INCLUDING, WITHOUT LIMITATION, FAILURE OF THE PRODUCT DUE TO ACTS OF GOD, FLOODING, EXTREME OR ABNORMAL TEMPERATURES, HUMIDITY AND MOISTURE, STRUCTURAL CONDITIONS, SITE PREPARATION AND CONDITIONS, ACCIDENTS, DAMAGE CAUSED BY INSTALLATION OF MACHINERY, EQUIPMENT OR FIXTURES WITHOUT ADEQUATE FLOOR PROTECTION OR WITHOUT ADEQUATE TIME FOR CURING, FAILURE TO COMPLY WITH CONDITIONS OF USAGE (SPECIFIED BELOW), VANDALISM, NEGLIGENT OR INTENTIONAL ACTS OF THIRD PARTIES OR OTHER CASUALTIES. If any PIP product fails to conform to this warranty, PIP shall either replace the product at no cost to Buyer or refund the cost of the product, in PIP's sole discretion. Replacement of any product or a refund of the cost of any product shall be the sole and exclusive remedy available to buyer, and buyer shall have no claim for incidental, special or consequential damages, including, without limitation, business interruption damages. Any warranty claim must be made within one (1) year from the date of delivery of products. PIP does not authorize anyone on its behalf to make any written or oral statements which in any way alter PIP's warranty or installation and storage information or instructions in its product literature or on its packaging labels. Any installation of PIP products which fails to conform to such installation information or instructions or the "Conditions of Usage" (specified below) shall void this warranty. Product demonstrations, if any, are done for illustrative purposes only and do not constitute a warranty or warranty alteration of any kind. Buyer shall be solely responsible for determining the suitability of PIP's products for the Buyer's intended purposes.

**CONDITIONS OF USAGE:** Installation of all products purchased must be by professional installers periodically published by PIP or otherwise approved by PIP in writing. Modification to any of PIP's products voids the warranty. The installer shall maintain a written contemporaneous record of field conditions (including, without limitation, surface and atmospheric conditions, usage rates, and lot numbers of products installed). PIP reserves the right of inspection of any installed product, installation and maintenance records and records of field conditions and may conduct additional testing as is reasonably required to investigate any warranty claims. Warranty shall only apply for products or materials that have been paid for in full. Moisture Vapor Transmission (MVT) and ASR (Alkali Silica Reaction) Disclaimer and Exclusion: Although rare, some floors at or below grade level are sometimes subjected to saturation by moisture from beneath the concrete floor slab. This moisture can travel through the concrete and collect between floor toppings creating the potential for delaminating from hydrostatic pressure and or ASR. Conditions contributing to this include heavy rainfall, broken pipes, excess hydration within fresh concrete, and other factors or defective and old concrete. These factors are difficult, if not impossible to predict. PIP recommends testing for MVT and/or the presence of ASR in the concrete substrate prior to applying any polymer floor topping. The recommended test method for MVT is ASTM F 2170-11. ASR can be predicted by a higher than normal pH within the concrete. If high pH should be detected, it is recommended a lab test for ASR. If and when delamination of the floor occurs because of a moisture condition that exists beneath or in the concrete slab beyond the capacity of the individual product installed or failure of the concrete due to ASR, this Limited Warranty does not extend to such delaminating or topping failure. This writing constitutes the sole and only agreement of warranty relating to PIP products.

**ESD-CONTROL COATING WARRANTY ADDENDUM:** The properly installed ESD coating will retain static control properties for a period of five years from the date of installation under normal and ordinary wear conditions. This warranty is null and void if the ESD-control coating are no longer intact or said coating has been coated with waxes, finishes or other coatings. This warranty will be null and void in any area where the ESD control coating has been damaged. PIP will, under this limited warranty, provide replacement material for reinstallation of the ESD coating System. In no event shall PIP be liable for any consequential damages or additional cost and shall only be responsible for the cost of the material. Any original or replacement coatings must be installed by PIP or a recognized PIP installer. **This warranty only applies to materials paid for in full.** No other representations or ESD related warranties are made with respect to said product.