

# PIP 170 ESD SR

## Solvent-Resistant ESD Epoxy System



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

### DESCRIPTION:

**PIP 170 ESD SR** is a three-component, highly chemical-resistant, highly cross-linked coating designed to provide electrostatic control. **PIP 170 ESD SR** is designed to be applied as an epoxy top coat or used to recoat an existing epoxy floor. This product is designed for controlling ignition risk in areas exposed to flammable solvents and vapors.

### USES:

Target areas to install **PIP 170 ESD SR** include chemical and flammable processing areas, conformal coating rooms, Lithium Ion battery production plants, munitions facilities, paint kitchens and fuel testing facilities. **PIP 170 ESD SR** is able to withstand a wide array of solvents and fuels while providing mechanical and electrical spark resistance.

### ADVANTAGES:

- 100% solids, fast-cure resin system
  - Precise ESD performance and protection
  - Excellent impact and abrasion resistance
  - Offers protection from chemical attack
  - Repairable
  - Complies with VOC regulations for Industrial Maintenance Coatings in the OTC and CA.
  - 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 *unopened* containers indoors between 65°F (18°C) and 90°F (32°C).

**SHELF LIFE:** 3 months from date of manufacture (unopened)

### PACKAGING KITS/ PART NUMBERS:

**PIP 170 ESD SR Pigmented Semi-Gloss 1.29 gallons**  
ESD-170-A/2SF, ESD-170-B/HGSF, CPESD-xxx/HP

**PIP 170 ESD SR Pigmented Semi-Gloss 3.05 gallons**  
ESD-170-A/5SF, ESD-170-B/1SF, CPESD-xxx/P

### OPTIONS:

**Color Pack:** 0 VOC Color packs designated as **CPESD-XXX** can be used with **PIP 170 ESD SR**. Many standard and custom colors are available; please refer to the price list for available colors. It is important to have a color consistent floor in a similar color before application of **PIP 170 ESD SR**.

As the base color of ESD-170-A (Part A) is gray, the color of the CPESD-xxx color pack is not necessarily indicative of the final finished product color. The color is achieved from the combination of the color pack, Part A and Part B.

**Traction:** Aggregate can incorporated with **PIP 170 ESD SR** to impart improved traction in slip hazard areas.

### LIMITATIONS:

**Contamination and surface defects (fisheyes):** If contaminants of oils, silicones, mold release agents and/or others are present, **PIP 170 ESD SR** may fisheye or crawl away from the surface if contamination is present and will blush in humid conditions. Surface contaminants should be removed with a suitable detergent prior to application. Solvent cleaning of silicone contaminants is NOT RECOMMENDED. Please contact the lab for additional recommendations.

### MATERIAL PROPERTIES\*:

Properties	Test Method	Results
Flash Point	ASTM D3278	≥255 °F (124°C)
Volume Solids (mixed)	ASTM D2369	100 %
Mixed Viscosity	ASTM D2196	1300-2300 cPs
Dry Time	ASTM D5895	Tack Free 3 hr Dry 5-8 hr Full Cure 7 days
VOC-Volatile Organic Compound	ASTM D3960	0 g/l clear & pigmented

### CURED PROPERTIES\*:

Properties	Test Method	Results
Abrasion Resistance Tabor CS-17, mg loss/1000 cycles/1000g mass	ASTM D4060	75 mg
Coefficient of Friction- COF James Test	ASTM D2047	0.7
Tensile Strength	ASTM D2370	8,000 psi
Adhesion to Concrete	ASTM D4541	350 psi concrete failure
Impact	ASTM D2794	16 in.lbs Direct & Reverse
Hardness (Pencil)	ASTM D3363	2H
Dry Film Thickness	at 15 mils WFT	15 mils

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\*Properties and results are based on laboratory testing at 72°F (22°C) %50 RH, theoretical calculations and estimates. Typical properties, as stated, are to be considered as representative of current production and should not be treated as specifications.

### CHEMICAL RESISTANCE\*:

PIP 170 ESD SR	1 Day	7 Days
<b>ACIDS, INORGANIC</b>		
10% Hydrochloric	E	E
30% Hydrochloric	E	G
10% Nitric	E	E
50% Phosphoric	E	G
37% Sulfuric	E	G
98% Sulfuric	E	G
<b>ALKALIES</b>		
10% Ammonium Hydroxide	E	E
50% Sodium Hydroxide	E	E
<b>SOLVENTS</b>		
Ethylene Glycol	E	E
Isopropanol	E	E
Methanol	G	P
d-Limonene	E	E
Jet Fuel	E	E
NMP	E	E
Ethanol	E	G
Mineral Spirits	E	E
Xylene	E	E
Methylene Chloride	F	P
MEK splash	G	G
MEK spill	F	P
<b>MISCELLANEOUS</b>		
20% Ammonium Nitrate	E	E
Brake Fluid	E	E
Bleach	E	E
Motor Oil	E	E
Skydrol®500B	E	E
Skydrol®LD4	E	E
20% Sodium Chloride	E	E
10% TSP	E	E

\*Based on spot testing.

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

### Electrical Properties:

**PIP 170 ESD SR** static control flooring can be used to meet the recommendations set forth in ANSI-S20.20-2007 as well as the ignition control requirements of many codes and specifications for explosive and flammable materials.

*Resistance:* This product is capable of exhibiting surface resistance values in the static dissipative and \*conductive ranges in accordance to values defined in test method EOS/ESD Association ESD STM S7.1-2005.

\*Conductive properties may require the use of a conductive ground plane primer PIP 125 ESD WR-GP. Consult Protective Industrial polymers for specific requirements and recommendations.

*Reparability:* The lack of dependence on conductive fiber and ground plane primers allows this system to be repaired without sacrificing electrical performance.

Note: System must be properly grounded to a positive ground to assure proper operation and effectiveness of charge dissipating floor. To assure proper contact to floor surface, persons in area protected by ESD floor coating must wear approved quality ESD footwear.

### Mechanical Spark Resistance:

This system creates an inert plastic barrier. It does not contain metallic or carbide fillers that can create an impact spark. Applied at the proper thickness over plastic aggregates, this system meets most requirements for non-sparking membrane surfaces.

### INSPECTION AND APPLICATION:

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

**SUBSTRATE:** The substrate must be free of curing membranes, silicate surface hardener, paint, or sealer and be structurally sound. If you suspect concrete has been treated or sealed, proceed with complete removal process. Consult your PIP representative for further instruction if silicate hardeners or membranes have been utilized.

**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.

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**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 80°F (26°C). Relative Humidity (RH) should be limited to a maximum of 60%. 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
- Clean container for mixing material
- Low speed high torque drill motor
- High quality short nap roller covers- ¾ inch nap
- Application Squeegee

### PREPARATION:

Surface dirt, grease, oil and contaminants 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. Modify the blaster to minimize too heavy of a surface profile and over-lap marks. The results of industrial diamond grinding will vary depending on technique and the hardness of the concrete.

**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.

### APPLICATION:

**PIP 170 ESD SR MUST BE APPLIED OVER AN INSULATING EPOXY PRIMER.** Use PIP 1000 CR as the epoxy primer (See appropriate product data sheet for application instructions).

**MIXING:** Premix Part A component to re-disperse any settling that may have occurred during shipment until a smooth lump free consistency is obtained. Use a **Jiffy® ES** mix blade attach to a slow speed drill. Mix only complete kits, do not divide the kit. **Note:** Once this material is opened and mixed it can't be resealed for later use.

**MIX:** Pre-mix Part A for 2 minutes or smooth in consistency. Add Part B while mixing and mix an additional 1 minute. Add CPESD color pack and mix for an additional 1 minute. **DO NOT THIN UNLESS CONSULTING PROTECTIVE INDUSTRIAL POLYMERS!**

**APPLY PIP 170 ESD SR:** at a rate of 12-15 mils (105-140 sq. ft. per gallon) to the floor surface using a notched squeegee or application tray. Back roll the wet coating using a 3/16" inch nap mohair roller. Care should be taken to overlap and cross lap, but not over roll the coating introducing air to the surface.

**SPREADING RATE:** The best practice is to measure and grid the floor to be sure of proper application rate. Proper application rate is between 105 and 140 square feet per gallon

**CURING (DRYING):** Allow the coating to cure (dry) for a minimum 24 hours after application at 75°F (24°C) and 50% RH before opening the floor to light traffic. Full coating properties may take up to 7 days to develop.

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

### MAINTENANCE GUIDELINES:

**Allow floor coating 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 (Tyrex®) 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. Plasticizer migration from rubber tires can permanently stain the floor coating. If a rubber tire is planned to set on the floor for a long period of time, place a piece of acrylic sheet between the tire and the floor to prevent tire staining. 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 to the floor coating.

**READ SDS (SAFETY DATA SHEET) FOR SAFETY AND PRECAUTIONS. USE PRODUCT AS DIRECTED. THIS PRODUCT IS INTENDED FOR INDUSTRIAL USE ONLY.**

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### 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 MOSITURE, 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.