Technical Data Sheet

PIP 1000 CR/HB/FS/ST

Universal Epoxy Coating and Primer System

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

DESCRIPTION:

PIP 1000 series coatings are a two-component or three component (with color packs), universal, 100% solids, epoxy resin coating systems that can be applied either clear or pigmented. **PIP 1000** has a universal, clear unfilled "A" component (1000-A) and is supplied with a choice of curing agents to achieve specific cure rates, chemical resistance requirements and final aesthetics. This product produces a gloss finish.

USES:

Use as a primer, build coat, broadcast, anchor and top coat simply by selecting and mixing with the correct curing agent.

ADVANTAGES:

- Match the curing agent to the needs of the project.
- Extremely low odor
- High build application
- Excellent impact and abrasion resistance
- Seals substrate reducing water vapor intrusion
- Resists staining from cleaning and industrial chemicals
- Complies with VOC regulations for industrial maintenance coatings in the OTC and CA*. (*including SCAQMD when thinned to maximum)

STORAGE: Materials should be stored in un-opened containers between 65°F (18°C) and 90°F (32°C) and at or below 50% RH.

SHELF LIFE: 1 year from date of manufacture (un-opened).

PACKAGING KITS/ PART NUMBERS:

3 Gallon Clear Kit:
1000-A/2
1000xx-B/1 (xxx denotes either HB, CR, FS or ST)
15 Gallon Clear Kit:
1000-A/5 (2 ea.)
1000xx-B/5
159 Gallon Clear Kit:
1000-A/55 (2 ea.)
1000xx-B/55

3.125 Gallon Pigmented Kit:
1000-A/2
1000xx-B/1
CPU-###/P
15.63 Gallon Pigmented Kit:
1000-A/5 (2 ea.)
1000xx-B/5 (1 ea.)
CPU-###/P (5)
165.6 Gallon Pigmented Kit:
1000-A/55 (2 ea.)
1000xx-B/55
CPU-###/P (53)

* xx denotes suffix for specialized hardener

OPTIONS:

Color-Many standard and custom colors are available. Please refer to the price list for available colors. Brilliant or pastel colors may require multiple coats or double color packs to obtain full hide on a substrate of dis-similar color.
Various aggregates of different size shapes and composition can be incorporated into **PIP 1000** to improve traction in slip hazard areas.

LIMITATIONS:

Contamination and surface defects: If contaminates including oil, silicone, mold release agents and/or other materials are present, resin systems may fisheye or crawl away from the surface. All surface contaminates should be removed with a suitable detergent prior to application. Solvent cleaning of silicone based contaminates is NOT RECOMMENDED. Please contact Technical Service for additional recommendations. **PIP 1000 will** amber over time from UV exposure. Top coating with a pigmented aliphatic urethane will provide UV stability.

MATERIAL PROPERTIES*:

Properties	Test Method	Results
Flash Point	ASTM D3278	≥215 °F (102°C)
Volume Solids (mixed)	ASTM D2369	100 %
Mixed Viscosity	ASTM D2196	400-700 cPs
Dry Time	ASTM D5895	Tack Free 4-6 hr Dry 6-10 hr Full Cure 7 days
VOC-Volatile Organic Compound	ASTM D3960	0 g/l clear & pigmented ≤250 g/l with max thinning

CURED PROPERTIES*:

Properties	Test Method	Results
Abrasion Resistance Tabor CS-17, mg loss/1000 cycles/1000g mass	ASTM D4060	75 mg
Coefficient if Friction-COF James Test	ASTM D2047	0.55 0.65(w/NS-36)
Tensile Strength	ASTM D2370	12,000 psi
Adhesion to Concrete	ASTM D4541	350 psi concrete failure
Impact	ASTM D2794	40 in.lbs Direct & Reverse
Hardness (Shore D) Hardness (Pencil)	ASTM 2240 ASTM D3363	85-90 2H

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Dry Film Thickness	at 15 mils WFT	15 mils
Water Absorption	ASTM C413	<0.5%
Flame Spread	ASTM E84	Class A
Flammability Rating	ASTM E648	Class 1
Flammability	ASTM D635	Self Extinguishing

*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*: Consult Protective Industrial Polymers for specific requirements.

RECOMMENDED APPLICATION RATE:
7-10 mils as a primer (optional additional of xylene solvent);
up to 30 mils as a coating.

Primer Applications:
Up to 1 gallon of xylene solvent can be added per 3.00 gallons of resin (total 4.00 gallons) for a maximum concrete penetration. VOC rating at this dilution is < 250 g/l. 1000CR-B is the recommended hardener for this application.

CURING AGENT OPTIONS:

1000CR-B curing agent offers the best chemical resistance and is recommended for use as a direct to concrete primer. This coating is not intended for final finish applications which require stringent UV stability as it will amber the most in comparison to the other curing agents. However, it is the most chemical resistant version of the PIP 1000-series coatings. 1000CR is not intended for direct-to-concrete applications where there are known or suspected high levels of water vapor transmission.

1000HB-B is a general-purpose curing agent with the best overall aesthetics and gloss properties. It has the least resistance to amine blush. PIP 1000HB is not intended for direct-to-concrete applications where there are known or suspected high levels of water vapor transmission.

1000FS-B curing agent provides up to a 50% faster curing time than 1000HB-B, 1000CR-B and 1000ST-B. 1000FS-B exhibits good aesthetics with low blush propensity considering its fast curing properties. 1000FS-B will amber (more than 1000HB but less than 1000CR) and is not recommended for final finish applications which require stringent UV stability. 1000FS-B has a reduced working time and recoat window and must be sanded within 8 hours in temperatures above 75F and 12 hours in temperatures between 60 and 70F. Contact Protective Industrial Polymers with specific requirements, recommendations and limitations.
1000 FS is not intended for direct-to-concrete applications where there are known or suspected high levels of water vapor transmission.

1000ST-B is a general purpose curing agent with increased rheology which provides for an orange peel or slightly stippled finish when applied at 5-6 mils. 1000ST exhibits good UV and chemical resistance properties, excellent gloss and aesthetics with extremely low blush propensity. 1000ST is not intended for direct-to-concrete applications where there are known or suspected high levels of water vapor transmission.

INSPECTION AND APPLICATION:
Caution! Follow all precautions and instructions prior to installation.

SUBSTRATE: The concrete substrate must be free of curing membranes, silicate surface hardener, paint, or sealer and be structurally sound. Do not coat if concrete contains Type III Portland Cement. If you suspect concrete has been treated or sealed, proceed with complete removal process. Consult your PIP representative for further instruction if Sodium or Potassium metasilicate hardeners or densifiers are suspected or have been utilized. Concrete must have a minimum internal tensile strength of 200 psi when tested in accordance of ASTM C1583. Concrete must have a maximum relative humidity of less than 75% when tested as per ASTM F2170.

MOISTURE 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. 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 for further specific recommendations.
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. Testing for these prior to application is always recommended. 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 30-80%. 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- ¼-3/8 inch nap**
- **Application Squeegee**

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

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Mechanical Preparation: Shot Blasting or aggressive diamond 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.

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. Isolation or expansion joints must be filled with a flexible material designed for expansion and should not be coated over.

MIXING: ***In bulk packaging containers such as full 5-gallon containers and drums, pre-mix the Part A prior to in field metering.***
Mix ratio for curing agents 1000HB, 1000CR 1000FS and 1000ST is 2 Parts A to 1 part B by volume. A pint of CPU color is recommended per 3 gallon mix. The color pack should be added and mixed in homogenously prior to adding the Part B hardener. Mix all components together for 2-3 minutes with a Jiffy® ES mix blade attached to a slow speed drill. Mix only enough material at one time that can be applied without exceeding the pot life. ***Note:*** Once this material is mixed, it can't be resealed for later use.

APPLICATION:

APPLY PIP 1000 to the floor surface using a notched or flat squeegee depending on desired thickness. Leaving the material sit in the pail longer than 5 minutes will result in an increase of viscosity and reduce leveling properties. Back roll and evenly spread the wet coating using a ¼-3/16" inch nap non-shed roller. Care should be taken to overlap and cross lap, but not over roll the coating introducing air to the surface.

SPREADING RATE: When **PIP 1000** is applied as a primer, surface irregularities and porosity in the concrete may affect coverage rate. Be sure to plan accordingly as there may be a need for extra material to provide proper coverage. Material applied too heavy may blister or develop stress cracks or may remain soft for an extended time if applied very heavy in puddles at temperatures below 60F. Too little material may produce dry spots and a non-uniform look. The best practice is to measure and grid the floor to be sure of proper application rate.

CURING (DRYING): Allow the coating to cure (dry) for a minimum of 12 hours for 1000HB, 1000CR or 1000ST after application at 75°F (24°C) and 50% RH before opening the floor to light traffic, allow more time for low temperatures and higher humidity or for heavier traffic.
For 1000FS, allow the coating to cure (dry) for a minimum of 6 hours after application at 75°F (24°C) and 50% RH before opening the floor to light traffic, allow more time for low temperatures and higher humidity or for heavier traffic.
As a general rule, a temperature change of every +/-10-degree F will either double the cure time or cut in half. Full coating properties may take up to 7 days to develop.

RECOAT: **PIP 1000** can be top coated with other PIP urethanes or epoxies within 24 hours (see exception under 1000FS-B curing agent) at 70-75F 30% RH without sanding or may be used as a topcoat over existing (sound) PIP epoxy coatings. If the re-coat window has expired, the prior cured coating surface must be sanded with 100 grit sand paper or sanding screen installed on a swing-type floor buffer. Sand to a uniform dulled surface. Remove all sanding debris with a vacuum and damp mop. Scrub with detergent and rinse with clean water. Surface must be dry before coating.

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

DISPOSAL: Dispose in accordance with federal, state, and local regulations.

READ SDS (SAFETY DATA SHEET) FOR SAFETY AND PRECAUTIONS. USE PRODUCT AS DIRECTED FOR INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN.

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 (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. 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.

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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.