

# PIP 2000 UR

## Low-Odor, High Solids, High-Gloss Pigmented Urethane System



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

### DESCRIPTION:

**PIP 2000 UR** is a high-solids, high-gloss, three-part, aliphatic pigmented polyurethane coating. It can be applied over an epoxy primer or used to recoat an existing epoxy or urethane floor.

### USES:

Suited for production areas, show room floors, aircraft hangers, warehouses and other places where physical and chemical resistance combined with light stability are important.

### ADVANTAGES:

- High-gloss provides UV stability when applied pigmented and light reflectivity
- Excellent resistance to tire staining (hot or cold)
- Resists Skydrol®, jet fuels and other chemicals
- Four times floor life compared to most epoxies
- Complies with VOC regulations for Industrial Maintenance Coatings in the OTC & CA\* (\*excluding SCAQMD)
- Excellent wet edge color stability

**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:

**Volume Mix Ratio: .5A : 2B : .125C**

**1.31 gallons PIP 2000 UR Pigmented (350 SF @ 6 mils smooth)**  
2000-A/Q  
2000-B/1  
CPU-xxxx/HP

**2.62 gallons PIP 2000 UR Pigmented (701 SF @ 6 mils smooth)**  
2000-A/HG  
2000-B/2  
CPU-xxxx/P

**2.62 gallons PIP 2000 UR Pigmented GlossGrip #10 Texture (1200 SF @ 3.5 mils)**  
2000-A/HG  
2000-B/2  
CPU-xxxx/P  
GlossGrip #10/P

**2.88 gallons PIP 2000 UR Pigmented DiamondWear Texture (1320 SF @ 3.5 mils)**  
2000-A/HG  
2000-B/2  
CPU-xxxx/P  
DiamondWear/HG

Some pastel or vivid colors may require 2 pints (1 quart) of color for enhanced opacity when applying a single coat over dissimilar substrates. Consult Protective Industrial Polymers for specific recommendation.

### OPTIONS: *Low temperature and Low Humidity*

For applications where the temperatures are between 55°F-65°F combined with relative humidity levels (RH) between 20-35%, the use of **PIP 2000-2100-Series Spike** accelerator is recommended. Use of this accelerator will hasten the cure to be similar of the standard material in normal conditions (70-80F with 35-80% RH). The use of this accelerator in normal conditions will result in a shorter working time, higher viscosity build, reduced leveling and increases stickiness and roller drag. When relative humidity (RH) is below 20%, please consult Protective Industrial Polymers for specific recommendations and limitations.

See PIP 2000-2100-Series Spike Technical Data Sheet for more detailed information regarding the use of this accelerator.

DO NOT apply coatings unless the surface temperature is more than five degree over the dew point. During the application and cure of the coating, the substrate temperature, material temperature and room conditions should be ideally maintained between 65°F (18°C) and 90°F (32°C) with relative humidity (RH) between 30-80%. DO NOT apply coatings unless the surface temperature is more than five degree over the dew point.

**Color Pack:** 0 VOC Color packs designated as CPU-xxxx are used with **PIP 2000 UR**. 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 2000 UR** or multiple coats may be required.

**Texture:** **PIP GlossGrip #10 Additive** can be incorporated into **PIP 2000 UR** to create a wear texture while maintaining an easily cleaned glossy surface.

### LIMITATIONS:

**Contamination and surface defects:** If contaminants including oil, silicone, mold release agents and/or other materials are present, **PIP 2000 UR** may fisheye or crawl away from the surface. All surface contaminants should be removed with a suitable detergent prior to application. Solvent cleaning of silicone based contaminants is NOT RECOMMENDED; please contact Technical Service for additional recommendations.

**DO NOT APPLY PIP 2000 DIRECT TO PIP 1300 MVR. ALWAYS APPLY ANOTHER PIP EPOXY PRODUCT SUCH AS PIP 1000 SERIES COATINGS ON TOP OF THE PIP 1300 MVR BEFORE APPLYING THE PIP 2000 URETHANE.**

**UV Protection:** If applied as a clear coating (without the color pack), **PIP 2000 UR** will not protect underlying epoxy coatings from UV radiation and subsequent yellowing of the epoxy. Please use **PIP 2100 UR-Gloss** or **PIP 2100 UR-Satin** for clear applications requiring UV protection.

## PIP 2000 VIVID

**Vivid Colors:** Bold vivid colors especially in the blue and green family require a special Part A and Part B; **2000-A VIVID** and **2000-B VIVID** if a high gloss finish is desired. Failure to utilize the **2000 Vivid** will result in a dull irregular sheen. Applicable colors currently as of this update are:

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1. CPU-26 Hyper Blue
2. CPU-31- Cat Green
3. CPU-61- Deep Blue
4. CPU-75- Regal Blue
5. CPU-142 Blue Gray
6. CPU-305-NSK Green
7. CPU-350 Safety Red
8. CPU-357 Magnum Green
9. CPU-374 Dirty Blue
10. CPU-450- Safety Blue
11. CPU-514- Paradise Green
12. CPU-526- Aisle Green
13. CPU-589- Grass Green
14. CPU-945 Pantone
15. CPU -2935 Lazer Blue (RAL)
16. CPU-2945 Signal Blue (RAL)
17. CPU-6018 Green

Consult Protective Industrial Polymers for updates to this list of colors if uncertain as to the use of the 2000 VIVID product.

### MATERIAL PROPERTIES\*:

Properties	Test Method	Results
Flash Point	ASTM D3278	187 °F (86°C)
Volume Solids (mixed)	ASTM D2369	85-90%
Mixed Viscosity	ASTM D2196	400 cPs
Dry Time	ASTM D5895	Tack Free 6 hr Dry 12-16 hr Full Cure 7-14 days
VOC-Volatile Organic Compound	ASTM D3960	< 175 g/l Clear & Pigmented

### CURED PROPERTIES\*:

Properties	Test Method	Results
Abrasion Resistance Taber CS-17, mg loss/1000 cycles/1000g mass	ASTM D4060	25 mg
Coefficient of Friction- COF James Test	ASTM D2047	0.55 0.65(w/GlossGrip #10)
Tensile Strength	ASTM D2370	2300 psi
Elongation	ASTM D2370	5%
Impact	ASTM D2794	140 in.lbs Direct & Reverse
Hardness (Pencil)	ASTM D3363	3H
Dry Film Thickness	at 4 mils WFT	3.5 mils
Flammability	ASTM E648	Class 1

Flame Spread	ASTM E84	Class A
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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 2000 UR	1 Day	7 Days
<b>ACIDS, INORGANIC</b>		
10% Hydrochloric	G	G
30% Hydrochloric	G	F
10% Nitric	G	F
50% Phosphoric	G	F
37% Sulfuric	F	P
<b>ACIDS, ORGANIC</b>		
1110% Acetic	G	F
10 % Citric	G	G
Oleic	E	E
<b>ALKALIES</b>		
10% Ammonium Hydroxide	E	E
50% Sodium Hydroxide	E	E
<b>SOLVENTS</b>		
Ethylene Glycol	G	G
Isopropanol	G	G
Methanol	P	P
d-Limonene	E	E
Jet Fuel	E	E
Gasoline	E	E
Mineral Spirits	E	E
Xylene	E	E
Methylene Chloride	P	P
MEK	G	G
PMA	G	G
<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

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20% Sodium Chloride	E	E
10% TSP	E	E

\*Based on spot testing of the clear coating after 14 days of cure. Pigmented versions may see reduced chemical resistance and staining.

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

### INSPECTION AND APPLICATION:

Caution! Follow all precautions and instructions prior to installation.

**PIP 2000 UR must be applied to an epoxy or other approved primer or base coat. Sections below detailing substrate, moisture and vapor/contamination apply to the required conditions of the concrete substrate prior to application of an epoxy primer.**

**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. 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.

### APPLICATION EQUIPMENT:

- Protective equipment and clothing as called for in the SDS (Safety Data Sheet)
- Jiffy® Mixer Blade
- Clean container for mixing material
- Low speed high torque drill motor
- High quality short nap roller covers- ¼ 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:* Shot 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.

**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:** Use a Jiffy®ES mix blade attached to a slow speed drill. The color pack should be added slowly with the mixer running first to the **2000-B** (Part B) and mixed thoroughly until color is uniform throughout the container prior to adding the **2000-A** Part A. Add **2000-A** (Part A) and mix all components together for 2-3 minutes. Product may be thinned with Xylene or S-1 solvent with a maximum addition of 8 ounces per mixed gallon of the **PIP 2000 UR**. Never use an alcohol solvent to thin a Protective Industrial Polymers urethane coating. Please consult Protective Industrial Polymers for additional thinning recommendations.

Optional **GlossGrip** or **DiamondWear** should be added after the Part A, Part B and color is mixed.

### APPLICATION

#### DO NOT SPRAY!!

Prior to coating, the floor must be completely free of fine dust and minute debris. It is best to mechanically wash, rinse and finally damp wipe the floor with clean towels and water. It is also recommended to rid roller of initial loose nap by wetting and painting a small scrap piece of plastic sheeting or cardboard prior to using on the floor.

Atmospheric Relative Humidity above 50%, regardless of temperature, has a dramatic effect on reducing the workable wet edge tie-in time relating to consistent color development of PIP 2000 or PIP 2100 series urethanes. Temperatures above 75F have the same impact. When encountering either of these situations or a combination of both, it is imperative to mix, apply, and finish roll the coating within 10 minutes. Exceeding this time may present roller marks or dark edge lines. Plan your application pattern ahead of time so that these wet tie-in times can be met as practically possible.

#### SMOOTH GLOSS APPLICATION

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Pour entire mix as quickly as possible to the floor. Quickly spread material uniformly using a notched squeegee over the floor. Then level by back-rolling with a 3/8"-3/16 inch nap non-shedding roller. Care should be taken to overlap and cross lap, but not over roll the coating introducing air into the surface. Applying the material too thin (less than 6 mils) may result in poor leveling, may exhibit a slight orange peel finish and not sufficiently hide small dust, dirt and roller lint commonly encountered and exacerbated on high gloss floors. The best practice is to measure and grid the floor to be sure of the proper application rate.

**TEXTURED APPLICATION** Apply PIP 2000 UR containing GlossGrip #10 to the floor surface utilizing a roller pan and roller. Do not squeegee as it will be very difficult to remove the squeegee lines. It is best to place a screen at the bottom of the pan to prevent the roller from picking up settled aggregate at the bottom of the pan. Roll often so as to expose aggregate uniformly. Material applied excessively heavy (greater than 3.5 mils) will exhibit irregular texture, may blister or gas and can be soft during curing. Applying the material too thin will result in a non-uniform gloss. The best practice is to measure and grid the floor to be sure of the proper application rate.

**CURING (DRYING):** The cure time of PIP 2000 UR is greatly dependent on both temperature and relative humidity. At 70-75 degrees F and 35% RH, PIP 2000 UR should be tack free and light foot traffic or recoat ready after 6-8 hours of cure. Allow the coating to cure (dry) for a minimum 24 hours before vehicular traffic. Final physical and chemical resistance properties are achieved at 7-10 days. Allow for longer cure times at lower temperatures and low humidity.

PIP 2000-2100-Series Spike can be added to decrease the curing time of PIP 2000 UR. Below are approximate guidelines to use for additions of PIP 2000-2100-Series Spike. Jobsite conditions other than which are listed may also affect curing profile. Use only as a general guideline.

**Cure Profile (72F and 35% RH) PIP 2000**

Standard product (Tack free, light foot traffic ready)	6-8 hrs.
2 fl. oz. 2000-2100-Series Spike/2.5 gal. mixed	4.5-5.5 hrs.
4 fl. oz. 2000-2100-Series Spike/2.5 gal. mixed	3.5-4.5 hrs.

**Cure Profile (60F and 35% RH) PIP 2000**

Standard product (Tack free, light foot traffic ready)	10-12 hrs
4 fl. oz. 2000-2100-Series Spike/2.5 gal. mixed	8 hrs
6 fl. oz. 2000-2100-Series Spike/2.5 gal. mixed	6 hrs

**Cure Profile (90F and 60% RH) PIP 2000**

Standard product (Tack free, light foot traffic ready)	3-4 hrs
2 fl. oz. 2000-2100-Series Spike/2.5 gal. mixed	1.5-2 hrs.
4 fl. oz. 2000-2100-Series Spike/2.5 gal. mixed	Not recommended
6 fl. oz. 2000-2100-Series Spike/2.5 gal. mixed	Not recommended

**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. 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 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.