Technical Data Sheet

PIP 3600 EM

Epoxy Mortar System

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

DESCRIPTION:

PIP 3600 EM is a four-component, epoxy mortar formulated with a modified amine curing agent specially designed to efficiently wet aggregate, enabling higher aggregate-to-binder ratios, yet producing a very dense, closed surface. PIP 3600 EM is easily hand or power troweled at a 3/16" to 1/4" thickness and can be extended with larger aggregates in deep fill applications up to a 4" thickness. It is offered in both a standard "4 bag" mix and an optional "5 bag" mix for pitching filling, sloping and lighter duty, economical applications.

USES:

This system is designed for restoring old or damaged concrete by creating a dense protective layer. Suited for industrial applications where a compacted epoxy mortar is specified.

ADVANTAGES:

- Extremely low odor
- Good chemical resistance
- Seals substrate to create environmental barrier
- Excellent trowel properties
- Complies with VOC regulations for Industrial Maintenance Coatings in the OTC and CA.
- LEED MR 4.1 Qualification attainable with partial aggregate substitution with PIP Recycled Glass.

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:

4 Bag PIP 3600 EM Mortar 9.36 Cu.Ft (5 SINGLE MIXES) 600 SF @ 3/16"
(2) 3600-A/5
(1) 3600-B/5
(10 bags) 3000-Coarse Aggregate (500 lbs.)*
(10 bags) 3000-Fine Aggregate (500 lbs.)
OR
20 bags PIP Coarse Aggregate (1000 lbs.)

CHOICE OFF AGGREGATES OR BLENDING OF AGGREGATES IS INSTALLER CHOICE BASED ON PREVIOUS EXPERIENCE, GROUTING PREFERENCES, ECONOMICS, AND PERSONAL PREFERENCE

** LEED MR 4.1 Qualification attainable with 10 bag substitution (500 lbs.) of PIP Recycled Glass for 10 bags of the 3000-Series Coarse Aggregate.*

4 Bag PIP 3600 EM Mortar 99.2 Cu.Ft (53 SINGLE MIXES) 6348 SF@ 3/16"
(2) 3600-A/55
(1) 3600-B/55
(106 bags) 3000-Coarse Aggregate (5300 lbs.)*
(106 bags) 3000-Fine Aggregate (5300 lbs.)
OR
212 bags PIP Trowel Blend single blend Aggregate (10600 lbs.)

** LEED MR 4.1 Qualification attainable with 106 bag substitution (5300 lbs.) of PIP Recycled Glass for 106 bags of the 3000-Series Coarse Aggregate.*

CHOICE OFF AGGREGATES OR BLENDING OF AGGREGATES IS INSTALLER CHOICE BASED ON PREVIOUS EXPERIENCE GROUTING PREFERENCES, ECONOMICS, AND PERSONAL PREFERENCE

OPTIONAL "5 BAG" mix designs for pitching filling, sloping and lighter duty, economical applications below.

5 Bag PIP 3600 EM Mortar 11.7 Cu.Ft (5 SINGLE MIXES) 750 SF@ 3/16"

(2) 3600-A/5
(1) 3600-B/5
(15 bags) 3000-Coarse Aggregate (750 lbs.)*
(10 bags) 3000-Fine Aggregate (500 lbs.)
OR
25 bags PIP COARSE Aggregate (1250 lbs.)

CHOICE OFF AGGREGATES OR BLENDING OF AGGREGATES IS INSTALLER CHOICE BASED ON PREVIOUS EXPERIENCE GROUTING PREFERENCES, ECONOMICS, AND PERSONAL PREFERENCE

** LEED MR 4.1 Qualification attainable with 15 bag substitution (750 lbs.) of PIP Glass for 15 bags of the 3000-Series Coarse Aggregate.*

5 Bag PIP 3600 EM Mortar 124 Cu.Ft (53 SINGLE MIXES) 7935 SF@ 3/16"

(2) 3600-A/55
(1) 3600-B/55
(159 bags) 3000-Coarse Aggregate (7950 lbs.)*
(106 bags) 3000-Fine Aggregate (5300 lbs.)
OR
265 bags PIP COARSE Aggregate (13250 lbs.)

CHOICE OFF AGGREGATES OR BLENDING OF AGGREGATES IS INSTALLER CHOICE BASED ON PREVIOUS EXPERIENCE, GROUTING PREFERENCES, ECONOMICS, AND PERSONAL PREFERENCE

** LEED MR 4.1 Qualification attainable with 159 bag substitution (7950 lbs.) of PIP Recycled Glass for 159 bags of the 3000-Series Coarse Aggregate.*

OPTIONS:

Product may be tinted when desired with the use of a PIP CPU color pack. Recommended use is 1 pint of CPU color pack per 4 or 5 bag mix:

Technical Data Sheet

PIP 3600 EM

Epoxy Mortar System

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

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 Protective Industrial Polymers' technical service for additional recommendations. PIP 3600 EM will amber over time from UV exposure. Top coating with an aliphatic urethane will provide UV stability.

MATERIAL PROPERTIES*: Based on 4 bag mix

Properties	Test Method	Results
Flash Point	ASTM D3278	≥215 °F (102°C)
Volume Solids (mixed)	ASTM D2369	100 %
Mixed Viscosity (resin only)	ASTM D2196	500 cPs
Dry Time	ASTM D5895	Tack Free 6-8 hr Dry 8-12 hr Full Cure 7 days
VOC-Volatile Organic Compound	ASTM D3960	0 g/l clear ≤50 g/l with pigment pack

CURED PROPERTIES*:

Properties	Test Method	Results
Abrasion Resistance TaborH10,mgLoss/1000 cycles/1000g mass	ASTM D4060	400 mg
Coefficient if Friction-COF James Test	ASTM D2047	0.55 0.65(w/NS-36)
Compressive Strength	ASTM C579A	12,000 psi
Compressive Strength	ASTM D695	11,500 psi
Modulus psi	ASTM D695	$2.6x10^5$ psi
Adhesion to Concrete	ASTM D4541	400 psi concrete failure
Impact	ASTM D2794	13in.lbs Direct & Reverse
Modulus of Elasticity	ASTM C580	$1.9x10^6$ psi
Minimum Applied Thickness		1/8"
Tensile Strength	ASTM C-307 (2000psi)	2100 psi
Impact Resistance	MIL-D-3134	<1/16"perm. Indentation; no chipping
Flammability	ASTM D635	Self-Extinguishing
Hardness	ASTM D2240 Shore D	>90

*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 3600 EM Binder Clear	1 Day	7 Days
ACIDS, INORGANIC		
10% Hydrochloric	E	E
30% Hydrochloric	F	P
10% Nitric	E	E
50% Phosphoric	G	F
37% Sulfuric	E	E
ACIDS, ORGANIC		
10% Acetic	G	F
10 % Citric	E	G
Oleic	E	E
ALKALIES		
10% Ammonium Hydroxide	E	E
50% Sodium Hydroxide	E	E
SOLVENTS		
Ethylene Glycol	G	G
Isopropanol	E	E
Methanol	P	P
d-Limonene	E	E
Jet Fuel	E	E
Gasoline	G	F
Mineral Spirits	E	E
Xylene	E	G
Methylene Chloride	P	P
MEK	P	P
PMA	G	G
MISCELLANEOUS		
20% Ammonium Nitrate	E	E
Brake Fluid	E	E

Technical Data Sheet

PIP 3600 EM

Epoxy Mortar System

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

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 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.

CHECK THE SUBSTRATE CONCRETE: Substrate concrete must be free of curing membrane, silicate surface hardener, paint, or sealer and be structurally sound. If you suspect the concrete has been treated or sealed, prepare substrate for complete removal of treatment.

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.

EXCLUSION: Testing for MVT is effective, however it does not guarantee against future problems. If there is no vapor barrier or the vapor barrier is damaged, vapor transfer can contribute to floor failure. Contamination to concrete from oils, chemicals, excessive salts or Alkali Silica Reaction (ASR) may also contribute to floor failure. Contact your PIP technical representative for additional information.

CHECK THE TEMPERATURE AND HUMIDITY*:* During the application and cure of the coating, the substrate temperature, material temperature and room conditions should 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 floor temperature is more than five degree over the dew point.

APPLICATION EQUIPMENT:

- Protective equipment and clothing – Refer to SDS (Safety Data Sheet)
- Motorized mortar mixer.
- Screed Box.
- Hand Trowel.
- Power Trowel.

PREPARATION:

Surface dirt, grease, oil and contaminates 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. A minimum surface profile of ICRI CSP 5 is recommended.

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.

PRIME*:* PIP 3600 EM should be applied over a wet or seeded primer for maximum performance. PIP 3600 EM liquids may be used for this primer. PIP 1000 series (FS, CR and HB) are also suitable primers. Care should be taken not to excessively puddle primers as this may cause uneven grout coat consumption and appearance.

MIXING: ***(4 bag mix design)*** Pour 2 gallons of 3600-A, 1 gallon of 3600-B and 1 pint (optional) of CPU-xxx Color into the running mortar mixer. Mix for a minimum of 1 minute. Add 100 lbs. (2 bags) of 3000 Fine Aggregate and 100 lbs (2 bags) of 3000-Series Coarse aggregate.

(If using only the 3000 COARSE aggregate, add 4 bags in place of the blend of 3000 Coarse and 3000 Fine aggregates). Mix for 3 minutes. Transfer to screed box to apply to the floor. **NOTE: ANY MORTAR LEFT IN THE MIXER FOR EXTENDED PERIODS OF TIME WILL HARDEN!**

MIX*:* It is important to mix all components together for 3 minutes.

APPLY: PIP 3600 EM is installed at a rate of 120 square feet per mix using a screed box. Power trowel the wet mortar to compact, densify, level and smooth the material. Care should be taken not to over-trowel to avoid friction blisters.

GROUTING

PIP 1000 Gel-A and 1000ST-B combination is recommended as a grout coating to fill and smooth the surface of the mortar before final finish or top coat application. Apply a tight coat with a flat blade squeegee. Push material in crossing directions minimizing and removing squeegee lines.

Other suitable grouting combinations depending on contractor preference, degree of mortar density, and porosity of mortar are (listed in degree of thixotropy index or body are:

1000 A and 1000 ST-B
1000 Gel-A and 1000HB-B.

The three combinations listed above are all 2A to 1B by volume. Any combination of the three will cure properly and are acceptable.

Note: The 5-bag mix design will require additional grout coat consumption.

COATING*:* PIP 3600 EM can be top coated with other Protective Industrial Polymer systems after cure. Proper recoat limitations and directions must be honored. If sanding is required, remove all sanding debris with a vacuum. If contaminated with traffic, scrub with detergent and rinse with clean water. Surface must be allowed to dry before coating.

CURING (DRYING*):* Allow the mortar to cure (dry) for a minimum 12 hours after application at 75°F (24°C) and 50% RH before

Technical Data Sheet

PIP 3600 EM

Epoxy Mortar System

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

grinding and applying the grouting resins and finishing with the final desired top coats. Only open the floor to light traffic after sufficient cure, allow more time for low temperatures and higher humidity or for heavier 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.

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.

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.