*"High Performance Industrial Flooring"*

# 201c PumaESD™

High Build Conductive Coating System

## PRODUCT DESCRIPTION

**201c PumaESD®** is a high-build, low-odor, static conductive, abrasion- and chemical-resistant floor coating system. This four-coat system consists of a primer/sealer, a high-build coating, a black conductive coat, and a four-component, chemical-resistant, high-performance urethane topcoat.

The surface has a smooth finish or optional extra-fine glass bead finish, which imparts slip resistance but remains mop cleanable.

## USES

201c PumaESD® may be installed over new concrete and older areas with minimal substrate damage. It is recommended for areas where the damaging effects of electrostatic discharge (ESD) cannot be tolerated. Primary industries that use static conductive PumaESD flooring include energetics, munitions, and other hazardous industries (dust or explosion hazards).

## ADVANTAGES

- Cost-effective, reliable protection
- Abrasion resistant
- Chemical resistant
- Low, non-offensive odor during installation

## ELECTRICAL PROPERTIES

- Meets DoD 4145.26M requirements:
  - Minimum 40,000 ohms at 110–120 V
  - Minimum 75,000 ohms at 220–240 V
- NFPA 99 compliant

**To assure proper contact with the floor surface, persons in the area protected by the ESD floor coating must wear approved, quality ESD footwear.*

## DURABILITY

Resistant to abrasion and other physical aggression from foot traffic, hand carts, and occasional powered lifts commonly found in industrial facilities.

## APPLICATION

**Total thickness 30–40 mils**

| Coat | Product | Thickness |
|---|---|---|
| 1 | 103 PumaPOXY WB<br>*or optional 104 PumaPOXY MB moisture block (16 mils)* | 6 mils |
| 2 | 107 PumaPOXY | 16 mils |
| 3 | 105 PumaPOXY/c | 5 mils |
| 4 | 112 PumaESD/c | 3 mils |
| **Total, with 103 PumaPOXY WB primer** | | **30 mils** |
| **Total, with 104 PumaPOXY MB primer** | | **40 mils** |

PumaESD® flooring is installed by certified applicators throughout the U.S.A.

## APPEARANCE

**Sheen:** semi-gloss.

**Slip resistant:** meets ADA standard — coefficient of friction (0.6).

Surface is easy to clean.

## REPAIRABILITY / RE-COATING

PumaESD coatings may be repaired/re-coated by abrading the surface with 120-grit sandpaper and re-coating the damaged areas.

## SURFACE PREPARATION

To be assured of maximum adhesion and properties from any PumaCRETE® resin product, the correct surface is essential. Please refer to the technical data sheet "Surface Preparation."

## HIGH WEAR APPLICATIONS

For AGV (automated guided vehicle), AMR areas, and other applications requiring maximum abrasion resistance for heavy loads on hard plastic or metal wheels, the addition of PumaWEAR into the 112 product shall increase abrasion resistance by approximately 37%.

**Mix rate:** 16 oz (1.6 lb) of PumaWEAR added per gallon of 112 topcoat.

The addition of PumaWEAR shall reduce gloss to a satin finish.

**Do not use PumaWEAR in wet areas.**

## COMPOSITION

Proprietary, static conductive polyurethane resin system combined with glass bead aggregates. Compliant with VOC regulations for industrial maintenance coatings (CARB/SCAQMD) and the Ozone Transport Commission (OTC).

## MVT (MOISTURE VAPOR TRANSMISSION)

For areas with high moisture vapor transmission (over 5 lbs MVT), use the optional moisture-blocking primer (104 PumaPOXY MB). Applied at 16 mils, it will handle up to 25 lbs MVT.

## STORAGE, MIXING & APPLICATION TEMPERATURE

Storage, mixing, and application conditions can affect the quality of the finish produced. Optimum storage and application temperature is 70°F.

## CURE SCHEDULE (70°F)

| | |
|---|---|
| **Foot traffic** | 24 hours |
| **Full cure (heavy traffic)** | 48 hours |

## MAINTENANCE

Regular cleaning of the applied system is recommended to maintain slip-resistant properties and cosmetics. Use normal cleaning agents (such as Simple Green) with an auto floor scrubber.

## CHEMICAL RESISTANCE

Excellent resistance to organic and inorganic acids, alkalis, fuel and hydraulic oils, and aromatic and aliphatic solvents.

## COLORS AVAILABLE

Gray shades, plus additional colors — see the PumaESD color chart. Darker shades (<50 LRV light reflectance value) are recommended for the best long-term appearance.

### WARRANTY

5 years (refer to the PumaCRETE® ESD warranty terms and conditions).

### CONDITIONS OF USAGE

Installation of all products purchased must be by professional installers periodically published by PumaCRETE or otherwise approved by PumaCRETE in writing. Modification to any of PumaCRETE'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). PumaCRETE 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 to products or materials that have been paid for in full.

"High Performance Industrial Flooring"

# 103 PumaPOXY WB™

Waterborne, Two-Part Epoxy

TECHNICAL DATA SHEET

## PRODUCT DESCRIPTION

**103 PumaPOXY WB** is an easy-to-apply, polyamide, waterborne epoxy primer. It is semi-permeable, has good moisture tolerance, and offers excellent adhesion to properly prepared new or old concrete and to previously epoxy-coated surfaces.

It is applied easily by roller, or by a combination of squeegee and roller, and may be thinned with up to 1 part water. Non-toxic and very low in odor, it seals the concrete and provides a durable finish.

## ADVANTAGES

- Excellent adhesion to most substrates
- Primer, sealer, or base/grout coat
- Water-reducible for lower viscosity
- Semi-gloss finish
- Up to 20+ minutes working time; fast dry and recoat time
- **Moisture tolerant** — can be applied to green concrete in as little as 2–3 days as a concrete sealer
- **Semi-permeable** — allows concrete moisture vapor to pass through the coating without failure

## TYPICAL USES

- Industrial production facilities that typically have rubber-wheeled cart and lift traffic
- When topcoated with PumaPOXY or PumaTHANE, provides a high-gloss, easy-to-clean, abrasion-resistant surface

## LIMITATIONS

- Substrate must be structurally sound, cured, and free of bond-inhibiting contaminants.
- During installation and the initial cure cycle, substrate and ambient air temperature must be 50–90°F (10–32°C).
- Relative humidity above 75% will significantly reduce evaporation rates and overall cure. With higher humidity, proper air movement is recommended.

## PERFORMANCE CHARACTERISTICS

| | |
|---|---|
| Adhesion to Concrete | **Excellent** |
| Resistance to Moisture | **Excellent** |
| Thermal Shock | **Excellent** |

## PRODUCT CHARACTERISTICS

| | |
|---|---|
| **Color** | Clear; may be tinted (light to medium shades) — add 4 oz PumaCOLOR WB per gal |
| **Appearance** | Semi-gloss |
| **Mix Ratio** | 1 Resin : 3 Hardener |
| **Reducer** | Water (up to 1 part, or 20%) |
| **Viscosity** | 20,000 cps |
| **Volume Solids** | 48% ± 2%, mixed |
| **Weight Solids** | 59% ± 2%, mixed |
| **VOC (EPA 24)** | Unreduced, mixed: <0 g/L; 0.0 lb/gal |

## SPREADING RATE PER COAT

| | Min | Max |
|---|---|---|
| **Wet mils (µm)** | 4.5 (100) | 8 (200) |
| **ft²/gal (m²/L)** | 350 (8.9) | 200 (5.1) |

## DRYING SCHEDULE

@ 6 mils (150 µm) wet, 73°F (23°C)

| | |
|---|---|
| **To touch** | 2–4 hrs |
| **To recoat** | 3–24 hrs |
| **Pot life** | 45 min, 1 gal mass @ 73°F (23°C) |

*If maximum recoat time is exceeded, abrade surface before recoating. Drying time is temperature, humidity, and film thickness dependent.*

## SHELF LIFE & STORAGE

| | |
|---|---|
| **Part A** | 12 months, unopened |
| **Part B** | 12 months, unopened |
| **Storage** | Indoors at 50–90°F (10–32°C). Do not allow to freeze. |

## SURFACE PREPARATION

Proper inspection and preparation of the substrate to receive resinous material is critical. A clean, profiled substrate is required. Read and follow PumaCRETE's "Instructions for Concrete Surface Preparation" for details.

103 PumaPOXY WB performs best on an unpainted, porous surface. If the surface is painted with a well-adhered epoxy coating, clean and abrade the surface thoroughly, then apply the coat.

## MIXING & APPLICATION

**Strictly follow mix ratio recommendations.**

1. Premix 103 resin and 103 hardener separately, using a low-speed drill and a separate Jiffy "spiral" paint mixer. Mix for one minute, until uniform, taking care not to whip air into the materials.
2. Add 3 parts 103 PumaPOXY WB hardener to 1 part 103 PumaPOXY WB resin. Mix with a low-speed drill and Jiffy blade for two minutes, until uniform.
3. Add up to 25% (1 part) water to thin the product and extend working time.
4. If tinting, add PumaCOLOR tint at 2–4 oz per mixed gallon.
5. Apply using the "dunk & roll" method. Pour material into a roller tray and apply with a 3/8" nap roller at 300–350 sq ft per gallon.

Allow to cure a minimum of 3–4 hours, depending on air movement, before applying the next coat.

## INSTRUCTIONS FOR TINTING

Clear 103 PumaPOXY WB may be tinted with PumaCOLOR pigment (up to 4 oz per mixed gallon).

**Note:** Adding pigment will reduce working time. If pigment is added, it is recommended to thin the mix with 25% water.

## ORDERING INFORMATION

| | |
|---|---|
| **Resin** | 1 gal (3.8 L) and 5 gal (18.9 L) containers |
| **Hardener** | 1 gal (3.8 L) and 5 gal (18.9 L) containers |
| **Weight** | 10.4 ± 0.2 lb/gal; 1.25 kg/L, mixed |

## CLEANUP

Clean up mixing and application equipment immediately after use with soap and water.

## SAFETY

Refer to the SDS before use.

Published technical data and instructions are subject to change without notice. Contact your PumaCRETE representative for additional technical data and instructions.

## MAINTENANCE

Occasional inspection of the installed material and spot repair can prolong system life. For specific information, contact the Technical Service Department.

### DISCLAIMER

The information and recommendations set forth in this Technical Data Sheet are based upon tests conducted by or on behalf of PumaCRETE. Such information and recommendations are subject to change and pertain to the product offered at the time of publication. Consult your PumaCRETE representative to obtain the most recent Product Data Information and Application Bulletin.

### WARRANTY

PumaCRETE Corp. warrants its products to be free of manufacturing defects in accord with applicable PumaCRETE quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or refund of the purchase price paid, as determined by PumaCRETE. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY PumaCRETE, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

# 104 PumaPOXY MB™

100% Solids Moisture Mitigation Epoxy

## PRODUCT DESCRIPTION

**104 PumaPOXY MB** is a MoistureBLOK system: a clear, two-component, 100% solids epoxy hybrid for on- or below-grade concrete slabs. It is specially designed for faster cure and maximum moisture vapor protection, while reducing the risk of outgassing and "fish eyes" typically associated with porous and contaminated concrete. The 104 PumaPOXY MB primer system can be used under all PumaCRETE seamless flooring materials.

104 PumaPOXY MB can be applied to concrete slabs with relative humidity as high as 99% RH and provides protection from sustained exposure to pH 14. It is engineered to reduce moisture vapor emission levels from up to 25 lbs/1,000 sq ft/24 hrs to 3 lbs/1,000 sq ft/24 hrs or less, or from 99% RH to ≤75% RH. It is an excellent and extremely effective long-term moisture blocker, with good surface contaminant resistance for both resinous and resilient flooring systems.

104 PumaPOXY MB is compliant with all state and federal VOC regulations. Its VOC content of <5 g/L allows installation in sensitive areas such as hospitals, schools, retail stores, and other occupied spaces.

## FEATURES & BENEFITS

- Single-coat application
- Minimal downtime — 4-hour tack-free cure
- Built-in adhesion promoter
- Excellent inter-coat adhesion
- Low-temperature curable (45°F)
- Zero VOCs
- Green concrete primer (min. 7 days old)
- **Moisture tolerant** — reduces moisture vapor emission levels from up to 25 lbs/1,000 sq ft/24 hrs to 3 lbs or less (or 99% RH to ≤75% RH)

## TYPICAL USES

- Moisture mitigation system applied under all PumaCRETE seamless flooring materials
- Concrete slabs on or below grade without a vapor barrier or retarder
- "Green concrete" slabs 7 days or older
- Industrial, commercial, institutional, and residential applications

## LIMITATIONS

- Best suited for application at temperatures between 50°F and 90°F (10–32°C).
- Designed as a moisture mitigation primer system for indoor use.
- Apply only to properly prepared, sound, and stable concrete.

## PHYSICAL CHARACTERISTICS

| | |
|---|---|
| **Solids (by wt.)** | 100% |
| **Mix Ratio (by vol.)** | 2 parts Resin : 1 part Hardener |
| **Viscosity @ 70°F** | 1,600 cps |
| **Pot Life @ 70°F** | 15 minutes |
| **Working Time @ 70°F** | 15 minutes |
| **Cure Time, Tack-Free @ 70°F** | 4–5 hrs foot traffic; 12–18 hrs normal operation |
| **Recoat Window** | Maximum of 36 hours |
| **Coverage Rate** | 16 mils, 100 sq ft/US gal |
| **VOC** | Nil |

## COVERAGE RATE PER GALLON

| | Min | Max |
|---|---|---|
| **Thickness (mils)** | 10 | 16 |
| **Coverage (sq ft/gal)** | 160 | 100 |

*A nominal thickness of 16 mils is required for mitigating moisture vapor emissions greater than 16 lbs/1,000 sq ft/24 hrs or 92% internal RH.*

## COLORS & OPTIONS

| | |
|---|---|
| **Color** | Clear; see "Color Guide" |
| **Optional** | 120-PumaCOLOR colorants for on-site pigmenting |

## PACKAGING & STORAGE

| | |
|---|---|
| **Resin** | 5 gal & 1 gal white pails |
| **Hardener** | 5 gal & 1 gal black pails |
| **Storage** | Indoors, 50°F (10°C) to 90°F (32°C) |
| **Shelf Life** | One (1) year from date of manufacture |

## PHYSICAL PROPERTIES

| Property | Test Method | Result |
|---|---|---|
| Hardness (Shore D) | ASTM D-2240 | 70–75 D |
| Compressive Strength | ASTM D-695 | 15,000 psi |
| Tensile Strength | ASTM D-638 | 5,000 psi |
| Tensile Elongation | ASTM D-638 | 7.50% |
| Adhesion to Concrete | ASTM D-7234 | >400 psi, substrate fails |
| Impact Resistance | ASTM D-2794 | >160 in/lb |
| Water Absorption | ASTM D-570 | <0.1% |
| Flame Spread / NFPA 101 (3 mils over cement board) | ASTM E-684 | Class 1 |
| Abrasion Resistance (CS-17 wheel, 1,000 g load, 1,000 cycles) | ASTM D-4060 | 30 mg loss |
| Coefficient of Friction (James Friction Tester) | ASTM D-2047 (ADA 0.6 min. req.) | Wet 0.7 · Dry 0.8 |
| Perm Rating, Water Method @ 73°F / 50% RH | ASTM E-96 | 0.085 grains/hr/ft²/in Hg |

## TYPICAL SLAB TESTING PRIOR TO APPLICATION

It is recommended that the facility owner or a certified PumaCRETE applicator test slabs with unknown history for contaminants (e.g., hydrocarbons, other organic compounds, water-soluble ions, ASR, sulfurous compounds) to determine suitability for 104 PumaPOXY MB. PumaCRETE strongly recommends the anhydrous calcium chloride test per ASTM F1869-11 to determine the MVER (moisture vapor emission rate) in lbs/1,000 sq ft/24 hrs, or the in-situ test per ASTM F2170-11 to determine the internal relative humidity of slabs to be treated.

Low-permeability flooring finishes such as seamless polymer coatings require an MVER below 3 lbs/1,000 sq ft/24 hrs or 75% internal relative humidity (RH). Internal RH is the test method preferred by most floor covering and coating manufacturers. MVER fluctuates within slab areas and can vary significantly by season. **Testing must be carried out before application of 104 PumaPOXY MB to obtain the manufacturer's warranty.** Contact PumaCRETE for additional details and guidelines on pre-installation concrete testing.

## EXAMINING CONCRETE SUBSTRATES

PumaCRETE recommends taking core samples of older, existing concrete slabs for analysis, especially when the building's history is unknown. Cores should be analyzed by a qualified laboratory for compounds that may cause floor failures, such as soluble salts, ASR (alkali-silica reaction), unreacted water-soluble silicates, and organic substances. Water-soluble silicates are found in some curing compounds, floor hardeners, and some manufacturers' vapor reduction products.

## SURFACE PREPARATION

Concrete substrate must be clean and sound, with a properly abraded surface. Do not apply to surfaces previously treated with any kind of penetrating sealer.

Remove existing floor coverings, coatings, adhesives, curing compounds, efflorescence, dust, grease, laitance, etc. down to bare concrete by steel shot blasting, scarifying, or aggressive diamond grinding. The recommended surface profile, using ICRI baseline configurations, is **CSP 4–5**.

Once preparation is complete, vacuum the concrete surface so it is free of all dust, dirt, and debris before applying 104 PumaPOXY MB.

## TECHNICAL SUPPORT

For any application questions, please call PumaCRETE technical support.

## DISPOSAL

Dispose of in accordance with federal, state, and local regulations.

## JOINT GUIDELINES

### Static, non-moving joints, cracks, and voids

Treat with 104 PumaPOXY MB thickened with ProThickener aerosil additive. Non-moving joints and cracks can be reinforced with FibaTape™ 6" fiberglass tape. Hairline cracks may be flooded directly with 104 PumaPOXY MB during installation.

Treat wider or deeper voids and cracks after surface preparation is complete. Clean cracks with a wire brush, then vacuum. Cracks may be cut 1/8" wide × 1/8" deep with a thin, diamond-rimmed abrasive blade on an angle grinder; brush and vacuum to remove dust and debris. Spackle deep voids and cracks with 104 PumaPOXY MB thickened with Cab-O-Sil aerosil additive to a spreadable consistency, using a flat spackle knife.

Treat larger voids, spalls, and wider cracks before shot blasting or diamond grinding. Remove all debris, loose particles, dust, and contaminants, and fill the voids with a suitable moisture-tolerant repair mortar. Allow the mortar to cure sufficiently before shot blasting to CSP 4–5.

### Dynamic, moving joints and cracks

Must be honored through the entire flooring system and filled with an elastomeric material suited to the general conditions, the use of the facility, and the anticipated type and amount of movement. If there is any doubt about the integrity of existing backing materials, remove, clean, and refill the joint, removing all remnants of old elastomeric material from the side walls.

Joints or cracks with dirt, residue from previous coatings, or other contaminants should be cut 1/4" wide × 1/2" deep and cleaned until free of dust and debris. Coat the side walls with 104 PumaPOXY MB where the joint sealant will bond; do not flood the joint. The elastic joint must run through the entire flooring system, including all final floor coatings or coverings. Then fit the joint with a backer rod and install a suitable elastic joint sealant.

## MIXING INSTRUCTIONS

**Application equipment**

- PPE and clothing per SDS
- Jiffy® mixer blade (ES model)
- Clean mixing container
- Low-speed / high-torque drill
- Shed-resistant roller cover, 3/8" nap
- Application squeegee

**Mix ratio: 2 parts Resin : 1 part Hardener by volume**

8–14 oz of 120-PumaCOLOR colorant is recommended per gallon. When field pigmenting, mix it homogeneously into the resin before adding the hardener.

Add the hardener to the clean mixing container first, then the resin (clear or pigmented), scraping out the container. Always pour into the center. Mix thoroughly for 1–2 minutes with a spiral-style blade. Mix only as much as can be applied without exceeding the pot life.

## SPECIAL NOTES

Aggressive surface preparation and concrete quality may create surface voids. 104 PumaPOXY MB may flow into them, displacing air and causing "outgassing." **If excessive voids, pinholes, or bubbles appear, STOP and contact a PumaCRETE representative.**

Sanding is not required within the recoat window. When installing epoxy or polyurethane coatings over 104 PumaPOXY MB, the recoat window is 48–72 hours. If the system will remain uncovered for an extended period, contact a PumaCRETE representative before installing subsequent floor coatings or coverings.

### SAFETY (SDS)

Please see the Safety Data Sheet (SDS) for safety and precautions. Use product as directed. **Keep out of the reach of children.**

### WARRANTY

Seller warrants that its goods, as described on the face hereof, are free from any defects in material or workmanship. Seller makes no other warranty, express or implied, and all implied warranties of merchantability and fitness for a particular purpose are hereby disclaimed. Seller shall not be liable for prospective profits or special, indirect, or consequential damages. Seller's sole liability and buyer's exclusive remedy for breach of any warranty is expressly limited, at seller's option, to replacement at the original F.O.B. point or refund of the purchase price. Seller shall not be responsible for any claim resulting from failure to use the product in the manner in which it was intended and in accordance with the instructions provided for its use. Any claim for breach of warranty shall be deemed waived unless buyer gives seller written notice of such claim within sixty (60) days after delivery and allows seller reasonable opportunity to investigate the claim and inspect the product.

*"High Performance Industrial Flooring"*

# 107 PumaPOXY™

100% Solids, 3:1 Epoxy Coating System

## PRODUCT DESCRIPTION

**107 PumaPOXY** is a uniquely versatile 3:1 epoxy coating system that balances working and cure time. It is a clear, two-component, thermosetting, low-odor, 100% solids epoxy designed as a coating system for various conditions and substrates.

## FEATURES & BENEFITS

- Up to 30+ minute working time
- Hard cure — sanding-ready next day
- Lower-temperature cure
- Primer, binder, and grout coat
- 3 hardeners — Standard, Fast Setting, and Long Working Time (LWT)
- 2 resins — Standard and Cove
- 120-PumaCOLOR tint — 6 gal resin pails for in-field tinting
- MicrobeBLOK antimicrobial
- Can be applied to concrete with moisture vapor emission levels up to 6 lbs/1,000 sq ft/24 hrs, or 82% internal RH
- Meets USDA and FDA standards
- OSHA and ADA compliant
- Complies with EPA VOC regulations for AIM coatings

## TYPICAL USES

- Manufacturing
- Food processing
- Laboratories
- Garages
- Pharmaceutical plants
- Kennels
- Schools
- Hospitals
- Retail

## LIMITATIONS

- Best suited for application at temperatures between 45°F and 90°F.
- Epoxy is light-sensitive and will amber over time; it requires a UV-stable topcoat.
- Some light colors may require multiple coats for adequate hiding power. Certain colors appear white when scratched.
- Slight batch-to-batch color variations may occur. When ordering to match a previous color, ask whether the same batch number or quality control number is still available.

## PHYSICAL CHARACTERISTICS

| | |
|---|---|
| **Solids (by wt.)** | 100% |
| **Mix Ratio (by vol.)** | 3 parts Resin : 1 part Hardener |
| **Viscosity @ 70°F** | 500 cps |
| **Pot Life @ 70°F** | 20 min (S-Hardener); 10 min (F-Hardener) |
| **Cure Time, Tack-Free @ 70°F** | LWT-Hardener: 18 hrs foot traffic<br>S-Hardener: 8–10 hrs foot traffic<br>F-Hardener: 4–5 hrs foot traffic; 12–18 hrs normal operation |
| **Working Time @ 70°F** | 15 min (S-Hardener); 15 min (F-Hardener) |
| **Recoat Window** | Maximum of 36 hours |
| **Coverage Rate** | 10 mils, 160 sq ft/US gal; can be applied at 6 mils, 267 sq ft/US gal |
| **VOC** | Nil |

## COVERAGE RATE

A gallon of 107 PumaPOXY covers at a standard spread rate of **6–20 mils, or 80–267 sq ft per gallon**.

*Primer, body, and topcoats vary in thickness depending on the condition of the substrate and the type of system.*

## PRELIMINARY FLOOR INSPECTIONS

### Check the concrete

Concrete must be structurally sound and free of curing membrane, paint, or other sealer. If you suspect the concrete has been previously sealed, call PumaCRETE technical support for further instructions.

### Check for moisture

Concrete must be dry before application of PumaCRETE floor coating materials, and concrete moisture testing must occur. Calcium chloride testing (ASTM F1869-11) or in-situ relative humidity testing (ASTM F2170-11) is recommended; test methods can be purchased at www.astm.org, or follow the manufacturer's instructions. Readings must be below 6 lbs/1,000 sq ft/24 hrs (ASTM F1869-11) or 82% internal relative humidity (ASTM F2170-11).

*Although testing is critical, it is not a guarantee against future problems — especially if there is no vapor barrier, the vapor barrier is not functioning properly, or you suspect concrete contamination from oils, chemical spills, or excessive salts.*

### Check the temperature and humidity

Floor and material temperatures should be between 55°F and 85°F. Humidity must be less than 95%. **Do not coat unless the floor temperature is more than five degrees above the dew point.**

## SURFACE PREPARATION

This product requires preparation in order to perform as expected. The substrate must be mechanically profiled (ASTM D4259-83), clean, sound, and dry.

## JOINT GUIDELINES

Depending on preference, joints may or may not be filled. If joints are filled, moving joints (i.e., contraction or control joints) can be treated with 115 PumaFLEX with PumaTHICKENER, or Sikaflex 2c for expansion joints.

*Coating applied over filled joints may crack if there is concrete movement.*

## MIXING INSTRUCTIONS

### Application equipment

- PPE and clothing per SDS
- Jiffy® mixer blade (ES model)
- Clean mixing container
- Low-speed / high-torque drill
- Shed-resistant roller cover, 3/8" nap
- Application squeegee

**Mix ratio: 3 parts Resin : 1 part Hardener by volume**

8–16 oz of PumaCOLOR colorant is recommended per gallon of material (see product label). When field pigmenting, mix it homogeneously into the resin before adding the hardener.

## COLORS & OPTIONS

| | |
|---|---|
| **Colors** | See "Color Guide" for 120-PumaCOLOR tint |
| **Optional** | PumaTHICKENER (aerosil thickener); PumaCOLOR tint (factory tinting available); MicrobeBLOK (antimicrobial); PumaPOXY Accelerator (on-site accelerator) |

## PRODUCTS GUIDE

### 1. 107 PumaPOXY S Resin

A well-rounded, versatile 3:1 epoxy for use as a primer, body, self-level, or grout/topcoat. As a self-level system from 30–100 mils, combine with PumaFill SL Filler.

### 2. 107 PumaPOXY Hardener

A versatile epoxy hardener that balances longer working time with an 8-hour cure (70°F) when combined with 107 PumaPOXY resins.

### 3. 107 PumaPOXY F-Hardener

An accelerated hardener for use with either 107 PumaPOXY resin, designed for quicker turnaround and recoat with a 4-hour cure (70°F).

### 117 PumaCove/Patch Resin

A thickened resin with a paste consistency. With 107 PumaPOXY hardener, it may be used to fill non-moving cracks and small holes less than 1 inch in diameter, and as a grout coat over epoxy troweled mortars.

**Cove:** can be used as a vertical primer and as the binder resin for cove mix when mixed with 20/40 or 40/60 silica quartz aggregates.

## PACKAGING

| | |
|---|---|
| **Resin** | 6 gal white pail; 1 gal metal pail |
| **Hardener** | 5 gal black pail; 1 gal black pail |

## PHYSICAL PROPERTIES

| Property | Test Method | Result |
|---|---|---|
| Hardness (Shore D) | ASTM D-2240 | 70–80 D |
| Compressive Strength | ASTM D-695 | 13,100 psi |
| Tensile Strength | ASTM D-638 | 5,780 psi |
| Tensile Elongation | ASTM D-638 | 7.50% |
| Adhesion to Concrete | ASTM D-7234 | >400 psi, substrate fails |
| Impact Resistance | ASTM D-2794 | >160 in/lb |
| Water Absorption | ASTM D-570 | <0.1% |
| Flame Spread / NFPA 101 (3 mils over cement board) | ASTM E-684 | Class 1 |
| Abrasion Resistance (CS-17 wheel, 1,000 g load, 1,000 cycles) | ASTM D-4060 | 30 mg loss |
| Coefficient of Friction (James Friction Tester) | ASTM D-2047 | Wet 0.7 · Dry 0.8 (smooth) |
| **Heat Resistance Limitation** | | |
| Thermal Cycling (5 min interval) | Hot oil (200°F) to ice water (25°F) | 20 cycles — no effect |
| Thermal Cycling (10 min interval) | Hot oil (200°F) to ice water (25°F) | 20 cycles — no effect |
| Continuous Heat | 1 hr 160°F hot oil submersion | No effects |
| **Other Tests: Mortar Mix** | | |
| Compressive Strength | ASTM C-579 | 15,000 psi |
| Tensile Strength | ASTM C-307 | 2,400 psi |
| Flexural Strength | ASTM C-580 | 4,000 psi |
| Flexural Modulus of Elasticity | ASTM C-580 | $1.0 \times 10^{6}$ |
| Thermal Coefficient of Linear Expansion | ASTM C-531 | $1.1 \times 10^{-5}$ in/in/°C |
| Water Absorption | ASTM C-413 | <0.1% |

## MIXING INSTRUCTIONS (CONTINUED)

When combining, add the hardener to the clean mixing container first, then add the resin (clear or pigmented), scraping out the container. Always pour into the center of the mixing container. Mix the components thoroughly for 1–2 minutes with a Jiffy ES-style mixing blade. Mix only as much material as can be applied without exceeding the pot life.

## STORAGE & SHELF LIFE

| | |
|---|---|
| **Storage** | Indoors, 60°F (16°C) to 90°F (32°C) |
| **Shelf Life** | One (1) year from date of manufacture |

## TECHNICAL SUPPORT

For any application questions, please call PumaCRETE technical support at 857-226-8247.

## CARE & MAINTENANCE

### Cleaning guidelines

Allow the floor coating to cure at least 3 days before cleaning by mechanical means (e.g., sweeper, scrubber, disc machine).

### Care

Proper maintenance will increase the service life and help maintain the appearance of your new PumaCRETE floor coating system. This is considered a low-maintenance coating system; however, certain textures and service environments require specific procedures. See the PumaCRETE "Cleaning Guidelines" for more information.

### Caution

Avoid scratching or gouging the surface — all floor coatings will scratch if heavy or sharp objects are dragged across them. Do not drop heavy or pointed items on the floor, as this may cause chipping or concrete pop-outs where the substrate cap is weak.

Rubber tires can permanently stain the floor coating through plasticizer migration; in warehouse and industrial settings, non-marking tires are highly recommended. Rubber burns from quick stops and starts can heat the coating to its softening temperature, causing permanent marking.

### Repairs

Repair gouges, scratches, or chip-outs as soon as possible to prevent moisture or chemical contamination.

## DISPOSAL

Dispose of in accordance with federal, state, and local regulations.

## SAFETY (SDS)

Please see the Safety Data Sheet (SDS) for safety and precautions. Use product as directed. **Keep out of the reach of children.**

## WARRANTY

Seller warrants that its goods, as described on the face hereof, are free from any defects in material or workmanship. Seller makes no other warranty, express or implied, and all implied warranties of merchantability and fitness for a particular purpose are hereby disclaimed. Seller shall not be liable for prospective profits or special, indirect, or consequential damages. Seller's sole liability and buyer's exclusive remedy for breach of any warranty is expressly limited, at seller's option, to replacement at the original F.O.B. point or refund of the purchase price. Seller shall not be responsible for any claim resulting from failure to use the product in the manner in which it was intended and in accordance with the instructions provided for its use. Any claim for breach of warranty shall be deemed waived unless buyer gives seller written notice of such claim within sixty (60) days after delivery and allows seller reasonable opportunity to investigate the claim and inspect the product.

# 105 PumaPOXY/c™

Water-Based ESD Epoxy Ground Plane

## PRODUCT DESCRIPTION

**105 PumaPOXY/c** is a high solids, water-based ESD epoxy ground plane coating. It is used as a standalone system or as a base coat for the 112 PumaESD/c topcoat.

105 PumaPOXY/c is installed in many environments where the damaging effects of electrostatic discharge (ESD) cannot be tolerated. Primary industries include electronic assembly, data processing, military/aerospace, and hazardous industries (dust or explosion hazards, EEDs).

105 PumaPOXY/c is intended for application over a PumaCRETE insulating epoxy primer or build coat, such as 104 PumaPOXY MB, 103 PumaPOXY WB, or 107 PumaPOXY.

Typical electrical readings are under 100k ohms. If used as a primer for 112 PumaESD, final electrical readings under 300k ohms may be achieved.

## FEATURES & BENEFITS

- 4–6 mils (400–267 sq ft/gal) over previously primed concrete
- Water-reducible for lower viscosity
- Matte black finish
- Up to 20+ minutes working time, with fast dry and recoat time
- **Moisture tolerant** — can be applied to green concrete in as little as 2–3 days as a concrete sealer
- **Semi-permeable** — allows moisture through the concrete coating without failure

## TYPICAL USES

- Warehouses
- Military
- EED manufacturing
- Aerospace
- Electronics manufacturing
- Energetics manufacturing

## LIMITATIONS

- Best suited for application at temperatures between 50°F and 90°F.
- Surface contaminants such as oil, silicones, or other agents may cause 105 PumaPOXY/c to fisheye or crawl. Remove them with a suitable detergent and/or mechanical preparation before application.
- 105 PumaPOXY/c cures faster in drier conditions — relative humidity below 50% at 70°F — with some air movement to aid evaporation. It cures more slowly at higher humidity, lower temperature, and with little or no air movement.

## PHYSICAL CHARACTERISTICS

| | |
|---|---|
| **Appearance (cured)** | Clear |
| **Solids (by wt.)** | 74% undiluted; 60% diluted with 1 part water |
| **Mix Ratio (by vol.)** | 3 parts Hardener : 1 part Resin (optional: 1 part water) |
| **Mixed Viscosity @ 70°F** | 1,850 cps |
| **Pot Life @ 70°F, 50% RH** | 60 minutes (with 1 part water); 40 minutes (neat) |
| **Cure Time, Tack-Free @ 70°F, 50% RH** | 3–4 hrs foot traffic; 18–24 hrs normal operation |
| **Working Time @ 70°F, 50% RH** | 20+ minutes |
| **Recoat Window** | Maximum of 36 hours |
| **Coverage Rate** | 5 mils WFT, 320 sq ft/US gal |
| **VOC** | <50 g/L, mixed |

## COVERAGE RATE

Applied as a base coat for 112 PumaESD, a gallon of 105 PumaPOXY/c has a spread rate of **4–6 mils (400–267 sq ft/gal)**.

## PRODUCT GUIDE

**1. Resin**

A water-based epoxy resin offering good viscosity for body and flow, so it can be easily applied when combined at 1 part resin and 3 parts hardener.

**2. Hardener**

A water-based epoxy hardener balancing reasonable working time with a 3–4 hour cure (70°F, 50% RH) when combined with the resin.

## PRELIMINARY FLOOR INSPECTIONS

**Check the concrete**

Concrete must be structurally sound, dry, and free of dust, laitance, curing compounds, paint, sealers, or other contaminants. If you suspect the concrete has been previously sealed, call PumaCRETE technical support for further instructions.

**Check the temperature and humidity**

Floor and material temperatures should be between 55°F and 90°F. Humidity above 75% will significantly reduce evaporation rates and overall cure of the material; with higher humidity, proper air movement is recommended.

## SURFACE PREPARATION

This product requires preparation in order to perform as expected. The substrate must be mechanically profiled (ASTM D4259-83), clean, sound, and dry. Removing any residual dust will help ensure a tenacious bond between 105 PumaPOXY/c and the substrate.

## ELECTRICAL GROUNDING

The ground plane must be grounded to an earth ground to function properly. Install conductive copper tape below the ground plane every 1,000 sq ft, or use approved contact points. The copper tape and/or contact points must be connected to the building's 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.

## JOINT GUIDELINES

Depending on preference, joints may or may not be filled. If joints are filled, non-moving joints (i.e., construction or control joints) can be treated with 115 PumaFLEX with PumaTHICKENER.

*Coating applied over filled joints may crack if there is concrete movement.*

## PACKAGING

| | |
|---|---|
| **Resin** | 1.5 gal white pail |
| **Hardener** | 1/2 gal can |

*The addition of 1/2 gallon of water is required AFTER the resin and hardener are mixed together.*

## STORAGE & SHELF LIFE

| | |
|---|---|
| **Storage** | Indoors, 60°F (16°C) to 90°F (32°C) |
| **Shelf Life** | One (1) year from date of manufacture |

## TECHNICAL SUPPORT

For any application questions, please call PumaCRETE technical support at 857-226-8247.

## DISPOSAL

Dispose of in accordance with federal, state, and local regulations.

## MIXING INSTRUCTIONS

**Application equipment**

- PPE and clothing per SDS
- Jiffy® mixer blade (ES model)
- Clean mixing container
- Low-speed / high-torque drill
- Shed-resistant roller cover, 3/8" nap
- Application squeegee

**Mix ratio: 4 parts Resin : 1 part Hardener by volume**

When combining, add the hardener to the clean mixing container first, then add the resin, scraping out the container. Always pour into the center of the mixing container. Add 1 part clean, potable water to reduce viscosity, if desired.

Mix the components thoroughly for 1–2 minutes with a Jiffy ES-style mixing blade. 105 PumaPOXY/c has an extended pot life of 1 hour at 70°F, 50% RH, in a 1-gallon volume.

## PHYSICAL PROPERTIES

| Property | Test Method | Result |
|---|---|---|
| Hardness (Pencil) | ASTM D-3363 | 2H |
| Tensile Strength | ASTM D-2370 | 3,300 psi |
| Percent Elongation | ASTM D-2370 | 15% |
| Adhesion to Concrete | ASTM D-4541 | 400 psi, concrete failure |
| Impact Resistance | ASTM D-2794 | >160 in/lb |
| Abrasion Resistance (CS-17 wheel, 1,000 g load, 1,000 cycles) | ASTM D-4060 | 35 mg loss |
| Coefficient of Friction (James Friction Tester) | ASTM D-2047 | Wet 0.55 · Dry 0.65 (smooth) |

## CARE & MAINTENANCE

### Cleaning guidelines

Allow the floor coating to cure at least 3 days before cleaning by mechanical means (e.g., sweeper, scrubber, disc machine).

### Care

Proper maintenance will increase the service life and help maintain the appearance of your new PumaCRETE floor coating system. This is considered a low-maintenance coating system; however, certain textures and service environments require specific procedures. See the PumaCRETE “Cleaning Guidelines” for more information.

### Caution

Avoid scratching or gouging the surface — all floor coatings will scratch if heavy or sharp objects are dragged across them. Do not drop heavy or pointed items on the floor, as this may cause chipping or concrete pop-outs where the substrate cap is weak.

Rubber tires can permanently stain the floor coating through plasticizer migration; in warehouse and industrial settings, non-marking tires are highly recommended. Rubber burns from quick stops and starts can heat the coating to its softening temperature, causing permanent marking.

### Repairs

Repair gouges, scratches, or chip-outs as soon as possible to prevent potential chemical contamination.

### SAFETY (SDS)

Please see the Safety Data Sheet (SDS) for safety and precautions. Use product as directed. **Keep out of the reach of children.**

### WARRANTY

Seller warrants that its goods, as described on the face hereof, are free from any defects in material or workmanship. Seller makes no other warranty, express or implied, and all implied warranties of merchantability and fitness for a particular purpose are hereby disclaimed. Seller shall not be liable for prospective profits or special, indirect, or consequential damages. Seller’s sole liability and buyer’s exclusive remedy for breach of any warranty is expressly limited, at seller’s option, to replacement at the original F.O.B. point or refund of the purchase price. Seller shall not be responsible for any claim resulting from failure to use the product in the manner in which it was intended and in accordance with the instructions provided for its use. Any claim for breach of warranty shall be deemed waived unless buyer gives seller written notice of such claim within sixty (60) days after delivery and allows seller reasonable opportunity to investigate the claim and inspect the product.

*"High Performance Industrial Flooring"*

# 112 PumaESD/c™

Conductive Polyurethane ESD Coating

## PRODUCT DESCRIPTION

**112 PumaESD/c** is a 3rd-generation, low-odor, static dissipative, high-performance urethane coating. It features a non-yellowing satin finish and is available in a variety of colors and textures.

For new concrete (or concrete in "new-like" condition), the 112 PumaESD/c system typically consists of a 2-coat system: 104 PumaPOXY MB (moisture block) primer with the 112 PumaESD/c topcoat. For higher conductivity requirements (under 200,000 ohms), an additional mid coat of 105 primer is required.

## USES

112 PumaESD/c is conductive. It can be installed in many environments where the damaging effects of electrostatic discharge (ESD) cannot be tolerated, including electronic assembly, data processing, military/aerospace, hazardous industries (dust or explosion hazards), and AGV areas.

## ADVANTAGES

- Extremely low, non-offensive odor
- Resistance is not affected by concrete moisture levels
- Consistent resistance to ground, without requiring a conductive ground plane primer

## ELECTRICAL PROPERTIES

| | |
|---|---|
| **Static conductive** | <500,000000 ohms |
| **With 105 PumaPOXY mid coat** | <200,000 ohms |
| **Compliance** | NFPA 99 and DoD 4145.26M compliant |

**Meets all recommendations set forth in ANSI/ESD S20.20-2021, including:**

- Static conductive range in accordance with values defined in test method EOS/ESD Association ESD STM S7.1-2005 and ANSI/ESD STM 97.1 and STM 97.2
- Body Voltage Generation (BVG) <15 volts with conductive footwear
- Dissipates a 5,000-volt charge to 0 volts in less than 0.1 seconds
- Maintains ESD properties throughout the thickness of the applied coating and does not depend on humidity for proper conductivity (unlike carbon fiber systems)

*To assure proper contact with the floor surface, persons or vehicles in the area must be protected with ESD footwear and/or ground straps.*

## DURABILITY

Resistant to abrasion and other physical aggression from pallet jacks and carts commonly found in testing and assembly facilities.

## APPLICATION

112 PumaESD/c is installed by certified applicators throughout the U.S.A. On-site training is available for new applicators or DIY application.

## SURFACE PREPARATION

To be assured of maximum adhesion and properties from any PumaCRETE® resin product, the correct surface is essential. Please refer to the technical data sheet "Surface Preparation."

## COMPOSITION

Non-toxic, static-dissipating polyurethane resin system combined with glass bead aggregates.

## APPEARANCE

Satin finish; the surface is easy to clean.

**Slip resistant:** meets ADA standard — coefficient of friction (0.6).

## STORAGE, MIXING & APPLICATION TEMPERATURE

Storage, mixing, and application conditions can affect the quality of the finish produced. Optimum storage and application temperature is 70°F.

## CURE SCHEDULE (70°F)

| | |
|---|---|
| **Foot traffic** | 24 hours |
| **Full cure (heavy traffic)** | 36 hours |

## MAINTENANCE

Regular cleaning of the applied system is recommended to maintain slip-resistant properties and cosmetics. Use normal cleaning agents (such as Simple Green) with an auto floor scrubber. See the PumaCRETE® cleaning guide.

## CHEMICAL RESISTANCE

Excellent resistance to organic and inorganic acids, alkalis, fuel and hydraulic oils, and aromatic and aliphatic solvents.

## HIGH WEAR APPLICATIONS

For AGV (automated guided vehicle), AMR areas, and other applications requiring maximum abrasion resistance for heavy loads on hard plastic or metal wheels, the addition of PumaWEAR into the 112 product shall increase abrasion resistance by approximately 37%.

**Mix rate:** 16 oz (1.6 lb) of PumaWEAR added per gallon of 112 topcoat.

The addition of PumaWEAR shall reduce gloss to a satin finish.

**Do not use PumaWEAR in wet areas.**

## REPAIRABILITY

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

## COLORS AVAILABLE

**Standard colors:** Light Gray, Medium Gray, Dark Gray (plus 6 premium colors). Refer to the PumaCRETE® color chart. Custom colors are available upon request.

## MATERIAL & CURED PROPERTIES

| Property | Test Method | Result |
|---|---|---|
| **Material Properties** | | |
| Flash Point | ASTM D3278 | 187°F (86°C) |
| Volume Solids (mixed) | ASTM D2369 | 75% |
| Mixed Viscosity | ASTM D2196 | 300–500 cps |
| Dry Time | ASTM D5895 | Tack-free 8 hrs; dry 16–24 hrs; full cure 7–14 days |
| VOC | ASTM D3960 | <250 g/L, pigmented |
| **Cured Properties** | | |
| Abrasion Resistance, Taber (CS-17, mg loss/1,000 cycles/1,000 g mass) | ASTM D4060 | 25 mg |
| Coefficient of Friction (James Test) | ASTM D2047 | 0.55; 0.65 (with Gloss Grip) |
| Tensile Strength | ASTM D2370 | 6,160 psi |
| Elongation | ASTM D2370 | 8% |
| Impact | ASTM D2794 | 140 in-lbs direct and reverse |
| Hardness (Pencil) | ASTM D3363 | 2H |
| Dry Film Thickness | At 4 mils WFT | 3 mils |

### WARRANTY

5 years (refer to the PumaCRETE® ESD warranty terms and conditions).

### CONDITIONS OF USAGE

Installation of all products purchased must be by professional installers periodically published by PumaCRETE or otherwise approved by PumaCRETE in writing. Modification to any of PumaCRETE'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). PumaCRETE 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 to products or materials that have been paid for in full.