



## Technical Datasheet

**DESCRIPTION**

**301-d AGV PumaESD®** is a heavy duty, anti-static, highly flowable, urethane resurfacer. This 3-coat system is suitable for new or damaged concrete surfaces, and has a satin, anti-slip finish. There are no objectionable odors during installation. This easy-to-clean floor is provides excellent resistance to abrasion and other physical aggression in manufacturing and warehouse facilities with AGV (automatic guided vehicles) or AMR (autonomous mobile robots). It handles high levels of concrete vapor emissions.

**COMPOSITION**

Base Coat: 301-SL urethane concrete.

Mid-Coat: 107-PumaPOXY polymeric epoxy. Top Coat: 112-d AGV PumaESD high performance urethane.

**APPEARANCE**

Satin finish. Surface is watertight and easy-to-clean. Textures available include smooth or light texture. Meets ADA Standard: Coefficient of Friction (.6)

**DURABILITY**

Resistant to abrasion from fork trucks, pallet jacks, AGV and AMR vehicles/equipment.

**WATER AND MOISTURE TOLERANCE (MVR)**

1/8-inch. Handles up to 15 lbs MVR.

1/4-inch Handles up to 25 lbs MVR and 97% concrete internal RH.

**THICKNESS**

Typical 1/8 to 3/16 inch (3-4 mm)

**SUBSTRATES**

Concrete, structurally sound toppings including ceramic, quarry tile, brick, and polymer modified screeds such as Rapid Set (cement-all).

**ELECTRICAL RANGE AND CERTIFICATIONS**

/D (dissipative): 1.0 X 10e5 to 1.0 x 10e9 ohms

Compliant with ANSI ESD S20.20-2014.

For custom resistance ranges, please contact PumaCRETE technical support.

**APPLICATION CONDITIONS**

60-85°F (16°-29°C) Best results are achieved at 70°F (21°C). For job site temperature below 60°F, or above 80°F, consult Puma-Crete® tech support for information on extending working time.

**APPLICATION**

301-PumaESD PumaCRETE® is a three coat system. It includes a self-leveling, cementitious urethane slurry (base coat), and a polymeric intermediate coat, and an easy to clean, satin top coat. Apply using trowels or cam rake (#1 or #2 cams). Intermediate coat of 107-PumaPOXY is a squeegee/roll application. 112-pumaESD (c or d) is a roller-applied top coat.

**GROUNDING**

System may be easily grounded, every 1000 sf, by means of conductive copper ground tape, applied before or after final coat.

**PACKAGING**

Manufactured in pre-measured, easy to use units.

**BASE COAT/SLURRY:****301-resin, 301-hardener, 301-SL aggregate (25 lb bag)**

Up to 1 gal of quartz silica may be added per unit, for enhanced body and increased coverage, if desired.

**COVERAGE:****BASE COAT/SLURRY:**

1/8 inch 50 ft² /unit (use #2 cam or 1/2" notch squeegee)

3/16 inch 35 ft² /unit (use #3 cam rake)

**MID-COAT** 107-PumaPOXY Part A/B: 1 or 5 gal containers  
250-300 sf/gal

**TOP COAT** 112-d AGV PumaESD 3-component pre-measured unit  
1000 sf/unit

**MAINTENANCE**

Regular cleaning of the applied system is recommended in order to maintain slip resistant properties and cosmetics. Normal cleaning agents (such as Simple Green) w/ standard auto floor scrubber.

\* Use brush or high pressure hose for rough texture finishes..

**COLORS AVAILABLE**

7 standard Colors (see PumaCRETE ESD color chart)

**TECHNICAL DATA**

Compressive Strength	ASTM C579	8,820 psi
Thermal Distortion	Passing up to	270 dF
Therm. Coeff. of Therm. Expansion	ASTM C531	1.5x10e5
Density	ASTM C905	130 pcf
Water Absorption	MIL-PRF-3134	0.64%
Surface Hardness	85-90 Durometer "D"	ASTM D2240
Adhesion	100% failure in concrete	ASTM D4541 400psi
Flammability-Critical Radiant Flux	ASTM E648	1.07 watts/sq cm
Flammability	ASTM D635	Self Extinguishing
Tensile strength:	ASTM C307	4,785 psi
Flexural strength:	ASTM C580	9,840 psi
Shear Strength	ASTM D732	4,965 psi
Abrasion resistance (method A)	ASTM C779	.020 in @ 60 min
Impact Strength	ASTM D4226	>160 in-lb
VOC	ASTM D3960	.083 lb/gal
Resistance to Fungi Growth	ASTM G21	Rating of 1, passes
Coefficient of Friction		> 0.60

**HEALTH AND SAFETY**

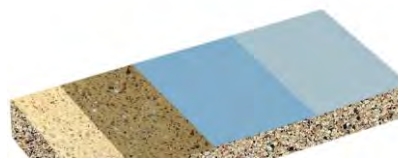
Water based and 0 gram VOC/Liter product system. Please read the safety data sheets, for further detailed information on safe handling and use of this product.

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

**CONDITIONS OF USAGE:**

Installation of all products purchased must be by professional installers periodically published by PUMA-CRETE or otherwise approved by PUMA-CRETE in writing. Modification to any of PUMA-CRETE'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). PUMA-CRETE 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 full. This writing constitutes the sole and only agreement of warranty relating to PUMA-CRETE products.

## Technical Data Sheet



### PRODUCT DESCRIPTION

**107 pumaPOXY** is an extremely versatile, 2 component epoxy. It may be used as a concrete primer, binder, lock coat or as a gloss seal coat and top coat for coating systems, slurry and mortars. 107 pumaPOXY advantages include extremely hard wearing, chemical, impact and abrasion resistance.

### ADVANTAGES

- Abrasion resistant
- Durable, easy to clean
- Good all-around chemical resistance.
- Suitable for use in dry or wet production facilities or warehouses.
- High Gloss.
- Texture may be added for non slip applications.
- Long wearing for production areas with rubber wheeled lifts.
- Clear- can be tinted to custom colors.

### TYPICAL USES

**107 pumaPOXY** should be used in areas where maintenance of a high performance, aesthetically appealing and chemical resistant epoxy system is required. 107 pumaPOXY is suited for use in all manufacturing, distribution, and processing areas.

### LIMITATIONS

- 28 days cure required on new concrete, before coating.
  - Slab on grade concrete requires moisture vapor barrier.
  - Substrate must be structurally sound, dry and free of bond inhibiting contaminants.
- Substrate temperature must be at a minimum of 55°F (12°C) for entire curing cycle, and at least 5°F (3°C) above the dew point.

Apply at 6 mils (267 sf/gal) to 20 mils (80 sf/gal) per coat.

### SURFACE PREPARATION

Proper inspection and preparation of the substrate to receive resinous material is critical. Read and follow the "Instructions for Concrete Surface Preparation" for complete details.

### PRODUCT CHARACTERISTICS

**Finish:** gloss  
**Color:** Clear.

pumaCOLOR colorant may be added (8 oz/mixed gal)

**Mix Ratio:** 3R: 1 H

**Volume Solids:** 100%

**Weight Solids:** 100%

**VOC (EPA Method 24):** <100 g/L: .83 lbs/gal (as applied)

**Spreading Rate per coat:**

**Wet mils:** 6-20 mils (80-267 sf/gal)

### PRODUCT CHARACTERISTICS (CONT'D)

#### Drying Schedule Standard (S) Cure Hardener:

	@ 55°F (13°C)	@ 72°F(22°C)
<b>Standard Hardener:</b>		50% RH
<b>To touch:</b>	24-36 hours	6-8 hours
<b>To recoat:</b>		
<b>minimum</b>	48 hours	8 hours
<b>maximum</b>	3 days	24 hours
<b>Foot traffic:</b>	2 days	8-10 hours
<b>Heavy traffic:</b>	3-4 days	24 hours
<b>Full cure:</b>	7-10 days	3 days

#### Fast Cure Hardener (F):

<b>To touch:</b>	3-4 hours
<b>To recoat:</b>	6-12 hrs
<b>Foot traffic:</b>	4-5 hrs
<b>Heavy traffic:</b>	12-18 hours
<b>Full cure:</b>	1 day

<b>Working Time</b>	(F) Fast Hardener	15 min
	(S) Standard hardener	25 min

*If maximum recoat time is exceeded, abrade surface before recoating.*

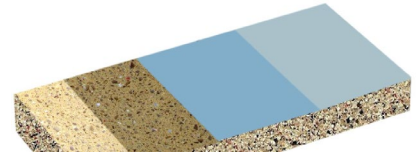
*Drying time is temperature, humidity, and ilm thickness dependent.*

<b>Shelf Life:</b>	Resin	18 months, unopened
	Hardener (Standard):	12 months, unopened
	Hardener (Fast Cure):	12 months, unopened
	Store indoors at 40°F (4.5°C) to 100°F (38°C)	

### PERFORMANCE CHARACTERISTICS

Test Name	Test Method	Results
<b>Abrasion Resistance</b>	ASTM D4060, CS17 wheel, 1000 cycles	76 mg loss
<b>Adhesion</b>	ACI 503R	300 psi, concrete failure
<b>Flammability</b>		Self-extinguishing over concrete
<b>Flexural Strength</b>	ASTM D 790	~12,400 psi
<b>Hardness, Shore D</b>	ASTM D 2240	77
<b>Impact Resistance</b>	MIL-D-3134J	Direct: 160 in-lb Reverse: 20 in-lb
<b>*Surface Burning</b>	ASTME84/ NFPA 255	Flame Spread Index 20; Smoke Development Index 90
<b>Tensile Strength</b>	ASTM D 638	3527.4 psi

\*



## DESCRIPTION

112-pumaESD is very low odor, static dissipative, high performance urethane coating. 112-pumaESD features a non-yellowing, satin finish, and is available in a variety of colors and textures. The **112-pumaESD SYSTEM** typically consists of a 2-coat system of 103-pumaPOXY WB primer, and 112-pumaESD topcoat. For the ultimate in durability, 112-pumaESD is applied over a base layer/topping of 301-SLB, with 107-pumaPOXY top coat.

## USES:

112-pumaESD is available in 2 resistance ranges (dissipative and conductive). It can be installed in several different environments where the damaging effects of electrostatic discharge (ESD) cannot be tolerated. Primary industries that use ESD flooring include Electronic Assembly, Data processing, Military/ Aerospace, Hazardous Industries (dust or explosion hazards), and AGV areas. It is applied over an insulative epoxy primer, and optional intermediate coat.

## ADVANTAGES:

- Extremely low, non-offensive odor.
- Consistent resistance to ground without the need of a ground plane primer utilizing conductive particulates and polymers

## ELECTRICAL PROPERTIES: AVAILABLE in 2 RESISTANCE RANGES

**CONDUCTIVE:** 25,000-1,000,000 ohms resistance 112 pumaESD-c  
NFPA99 and DoD 4145.26M compliant

**DISSIPATIVE:** 10<sup>5</sup> to 10<sup>9</sup> ohms resistance \* 112 pumaESD-d  
\*available in 10 to 10 upon request

### Meets all recommendations set forth in ANSI/S20.20-2014 including:

- Static dissipative and conductive ranges in accordance to 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 5000-volt charge to 0 volts in less than 0.1 seconds
- Maintains ESD properties throughout the thickness of the applied coating and is not dependent humidity for proper conductivity (unlike carbon fiber systems)

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

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

## DURABILITY

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

## COMPOSITION

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

## APPEARANCE

Satin finish, Surface is easy to clean.

Slip Resistant: Meets ADA Standard - Coefficient of Friction (.6)

## APPLICATION

112-pumaESD is installed by certified applicators throughout the U.S.A.

## SURFACE PREPARATION

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

## STORAGE, MIXING & APPLICATION TEMPERATURE

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

## CURE SCHEDULE (70 deg F)

24 hours (foot traffic), 36 hrs Full cure (heavy traffic)

## MAINTENANCE

Regular cleaning of the applied system is recommended in order to maintain slip resistant properties and cosmetics. Normal cleaning agents (such as Simple Green) w/ auto floor scrubber.

## CHEMICAL RESISTANCE

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

## COLORS AVAILABLE

Standard colors: Std color is Medium Gray (also available in 7 additional colors—see Puma-Crete color chart.

## WARRANTY

5 years (refer to PUMA-CRETE® ESD warranty terms and conditions)

## MATERIAL PROPERTIES\*:

Properties	Test Method	Results
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 hr Dry 16-24 hr Full Cure 7-14 days
VOC	ASTM D3960	< 250 g/l Pigmented

## CURED PROPERTIES\*:

Properties	Test Method	Results
Abrasion Resistance Tabor 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/GLOSS GRIP)
Tensile Strength	ASTM D2370	6160 PSI
Elongation	ASTM D2370	8%
Impact	ASTM D2794	140 in. lbs Direct & Reverse
Hardness (Pencil)	ASTM D3363	2H
Dry Film Thickness	at 4 mils WFT	3 mils

**CONDITIONS OF USAGE:** Installation of all products purchased must be by professional installers periodically published by PUMA-CRETE or otherwise approved by PUMA-CRETE in writing. Modification to any of PUMA-CRETE'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). PUMA-CRETE 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.