



PERMA-SHIELD® PL SERIES 431

PRODUCT PROFILE

GENERIC DESCRIPTION Modified Polyamine Ceramic Epoxy

COMMON USAGE A 100% solids, abrasion-resistant lining specifically designed for wastewater immersion and fume environments. Provides low permeation to H₂S gas, protects against MIC and provides chemical resistance to steel and ductile iron pipe for severe wastewater.

COLORS 5024 Sewer Pipe Green. **Note:** Epoxies chalk with extended exposure to sunlight.

FINISH Gloss

COATING SYSTEM

PRIMERS Self-priming or Series 69. The topcoat must be applied to Series 69 within 7 days. Scarify the surface with fine abrasive before topcoating if exceeding this maximum recoat window.

SURFACE PREPARATION

Prepare surfaces by method suitable for exposure and service.

STEEL SSPC-SP5/NACE 1 White Metal Blast Cleaning with a minimum angular anchor profile of 3.0 mils (76.2 microns)

DUCTILE IRON All surfaces shall be inspected and pre-cleaned with suitable solvent to remove all traces of grease, oil, asphalt and other soluble contaminants. Abrasive blast all surfaces with fine abrasive to remove all loose annealing oxides, rust, dirt and other foreign matter. Only slight stains and tightly adhering oxides are allowed to remain on the surface. Any area where rust reappears before application shall be reblasted. Any dust or other contaminants remaining after blasting shall be removed with dry, oil free compressed air or by vacuum cleaning. A surface profile depth (anchor pattern) of at least 3.0 mils (76.2 microns) is required (Reference ASTM D 4417, Method C).

ALL SURFACES Must be clean, dry and free of oil, grease and other contaminants.

TECHNICAL DATA

VOLUME SOLIDS 100% (mixed)

RECOMMENDED DFT **Carbon Steel:** 30.0 to 50.0 mils (762 to 1270 microns) in one or two coats.
Ductile Iron: 40 mils (1015 microns) (nominal)
Note: Number of coats and thickness requirements will vary with substrate, application method and exposure. Contact your Tnemec representative.

CURING TIME

| Temperature | Max. Recoat | To Place in Service |
|-------------|-------------|---------------------|
| 75°F (24°C) | 7 days | 2 days |
| 55°F (13°C) | 7 days | 3 days |

If more than 7 days have elapsed between coats, the Perma-Shield PL coated surface must be mechanically abraded (scarified) before topcoating.

VOLATILE ORGANIC COMPOUNDS

0.75 lbs/gallon (90 grams/litre)

HAPS

0.00 lbs/gal solids

THEORETICAL COVERAGE

1,604 mil sq ft/gal (39.4 m²/L at 25 microns). See APPLICATION section for coverage rates.

NUMBER OF COMPONENTS

Two: Part A (amine) and Part B (epoxy)

MIXING RATIO

By volume: One (Part A) to one (Part B)

PACKAGING

| | PART A (partially filled) | PART B (partially filled) | When Mixed |
|-----------------------|---------------------------|---------------------------|---------------------|
| Large Kit † | 5 gallon pail | 5 gallon pail | 8 gallons (30.28 L) |
| Touch-Up Kit (1 tube) | 4 ounces | 4 ounces | 8 ounces (236 mL) |

† Plural Component application only.

Note: Touch-Up Kit consists of six (6) tubes along with seven (7) disposable static mixers.

NET WEIGHT PER GALLON

9.48 ± 0.25 lbs (4.3 ± .11 kg) (mixed)

STORAGE TEMPERATURE

Minimum 40°F (4°C) Maximum 110°F (43°C)
 Prior to application, the material temperature should be conditioned to a minimum of 80°F (27°C).

TEMPERATURE RESISTANCE

(Dry) Continuous 275°F (135°C) Intermittent 300°F (149°C)

SHELF LIFE

12 months at recommended storage temperature.

FLASH POINT - SETA

Part A: N/A Part B: 200°F (93°C)

HEALTH & SAFETY

This product contains chemical ingredients which are considered hazardous. Read container label warning and Material Safety Data Sheet for important health and safety information prior to the use of this product.
Keep out of the reach of children.

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APPLICATION

COVERAGE RATES

Before commencing, obtain and thoroughly read the Series 431 *Surface Preparation and Application Guide*.

| | Dry Mils (Microns) | Wet Mils (Microns) | Sq Ft/Gal (m ² /Gal) |
|---------|--------------------|--------------------|---------------------------------|
| Minimum | 30.0 (762) | 30.0 (762) | 53 (4.9) |
| Maximum | 50.0 (1270) | 50.0 (1270) | 32 (3.0) |

Note: Recommended DFT will depend on substrate condition and system design.

Allow for overspray and surface irregularities. Film thickness is rounded to the nearest 0.5 mil or 5 microns. Application of coating below minimum or above maximum recommended dry film thicknesses may adversely affect coating performance.

MIXING

Large Kit: Agitate Parts A & B separately making sure no pigment or solids remain on the bottom of the can. **DO NOT MIX PART A WITH PART B.** Use a 1 (Part A amine) to 1 (Part B epoxy) mix ratio heated plural component airless spray unit. **Note:** Product component A (amine) must be heated to 110°F to 120°F (43°C to 49°C) and component B (epoxy) must be heated to 100°F to 110°F (38°C to 43°C) prior to and during plural component application. Do not exceed 120°F (49°C) for component A (amine) or above 130°F (54°C) for component B (epoxy). Keep containers tightly sealed prior to use.

Touch-Up Kit: Equipment: A dispensing gun with a thrust ratio of 26:1 is required (F100-TKAP). Material tube must be used in conjunction with provided disposable static mixer in order to ensure proper mixing.

Usage: Unscrew retaining ring and remove plug. Save plug in case entire tube is not used. Install static mixing element, replace retaining screw ring, and install tube in gun. Point assembly up and slowly pull the trigger to de-air the mixer. Dispense approximately 1 fluid ounce of material to waste and continue to pump until material is of uniform color with the Part A completely blended with the Part B. Use a putty knife or spatula to ensure adequate coverage and mixing.

For complete instructions on application, please refer to the Series 431 *Surface Preparation & Application Guide*.

THINNING

DO NOT THIN

APPLICATION EQUIPMENT

PLURAL COMPONENT AIRLESS EQUIPMENT ONLY. Please refer to the Series 431 *Surface Preparation & Application Guide* for plural component equipment specification and configuration. Contact Tnemec Technical Service for equipment recommendations.

| Primary Heat Part A | Primary Heat Part B | Material Temp at Gun | Static Mixers | Rotary Coater | Dynamic Pressure |
|-------------------------|-------------------------|-------------------------|---------------------------------------|--|-----------------------------|
| 110°F-120°F (43°C-49°C) | 100°F-110°F (38°C-43°C) | 100°F-110°F (38°C-43°C) | 2-12" L x 3/8" I.D. 12 fold stainless | High-speed pneumatic internal pipe rotary coater | 1500-2500 psi (103-172 bar) |

Brush: Recommended for bell sockets, spigot ends, and small areas and repairs.

SURFACE TEMPERATURE

Minimum of 50°F (10°C) Maximum of 130°F (54°C).

The surface temperature should be dry and at least 5°F (3°C) above the dew point. The coating will not cure properly below minimum surface temperature.

HOLIDAY TESTING

High Voltage Discontinuity (spark) testing shall be performed in accordance with NACE International SP0188 using a Tinker & Rasor AP/W High Voltage Holiday Tester.

CLEANUP

Flush and clean all equipment immediately after use with Tnemec's No. 4 Thinner or MEK.

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