



# PERMA-SHIELD® FR SERIES 436

## PRODUCT PROFILE

**GENERIC DESCRIPTION** Fiber-Reinforced Modified Polyamine Epoxy

**COMMON USAGE** A thick film, 100% solids, spray-applied, abrasion-resistant coating designed for wastewater immersion and fume environments. Provides excellent resistance to H<sub>2</sub>S gas permeation, protects against MIC and provides chemical resistance to severe wastewater environments. Fiber-reinforcement provides superior physical strength and higher film build.

**COLORS** 5021 Gray. **Note:** Epoxies chalk with extended exposure to sunlight.

**FINISH** Gloss

## COATING SYSTEM

**SURFACER/FILLER/PATCHER** Series 63-1500, 218, 219, 434.

**PRIMERS** **Concrete:** Self-priming or Series 201.

**TOPCOATS** Series 435 (optional)

## SURFACE PREPARATION

Prepare surfaces by method suitable for exposure and service. Refer to the appropriate primer data sheet for specific recommendations.

**CONCRETE** Allow new concrete to cure a minimum of 28 days. Verify dryness by testing for moisture with a “plastic film tape-down test” (Reference ASTM D 4263). If necessary for testing horizontal surfaces, perform “Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride” (Reference ASTM F 1869). Moisture content not to exceed three pounds per 1,000 sq ft in a 24 hour period. Abrasive blast or equivalent to remove laitance, form release agents, curing compounds, sealers and other contaminants and to provide surface profile (Reference SSPC-SP13/NACE 6, ICRI CSP5 or greater). Large voids, bugholes and other cavities should be filled with recommended filler or surfacer.

**OTHER SUBSTRATES** Contact your Tnemec representative or Tnemec Technical Services.

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

## TECHNICAL DATA

**VOLUME SOLIDS** 100% (mixed)

**RECOMMENDED DFT** **Concrete:** 50.0 to 125.0 mils (1270 to 3175 microns) per coat. **Note:** Number of coats and thickness requirements will vary with substrate, application method and exposure. Contact your Tnemec representative.

CURING TIME	Temperature	To Topcoat	To Place in Service	Max. Recoat
	75°F (24°C)	8-24 hours	2 days	7 days
55°F (13°C)	10-24 hours	3 days	7 days	

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

**VOLATILE ORGANIC COMPOUNDS** EPA Method 24: 0.23 lbs/gallon (28 grams/litre)

**THEORETICAL COVERAGE** 1,604 mil sq ft/gal (39.4 m<sup>2</sup>/L at 25 microns). See APPLICATION for coverage rates.

**NUMBER OF COMPONENTS** Two: Part A and Part B

**MIXING RATIO** By volume: One (Part A) to one (Part B)

	PART A (Partially filled)	PART B (Partially filled)	Mixed Yield
Medium Kit	1-6 gallon pail	1-3 gallon pail	5 gallons
Small Kit	1-1 gallon can	1-1 gallon can	1 gallon

**NET WEIGHT PER GALLON** 10.87 ± 0.25 lbs (4.9 ± .11 kg) (mixed)

**STORAGE TEMPERATURE** Minimum 40°F (4°C) Maximum 110°F (32°C)  
Prior to application, the material temperature must be between 70°F and 80°F (21°C and 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: 170°F (77°C) Part B: 170°F (77°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 436 Surface Preparation and Application Guide.

	Dry Mills (Microns)	Wet Mills (Microns)	Sq Ft/Gal (m <sup>2</sup> /Gal)
Minimum	50.0 (1270)	50.0 (1270)	32 (3.0)
Maximum	125.0 (3175)	125.0 (3175)	13 (1.2)

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

Mix the entire contents of Part A and Part B separately. Scrape all of the Part B into the Part A by using a flexible spatula. **Note:** Small kit will require the use of a separate container large enough to hold both components. Use a variable speed drill with a PS Jiffy blade and mix the blended components for a minimum of two minutes. During the mixing process, scrape the sides and bottom of the container to ensure all of Parts A and B are blended together. Apply the mixed material within pot life limits after agitation. **Note:** A large volume of material will set up quickly if not applied or reduced in volume.

**Caution: Do not reseal mixed material. An explosion hazard may be created. Do not attempt to split kits.** Mixing ratio is one to one by volume.

### THINNING

**DO NOT THIN**

### POT LIFE

25 to 30 minutes at 70°F (21°C)    15 to 20 minutes at 80°F (27°C)    8 to 10 minutes at 90°F (32°C)  
 Material temperatures above 90°F (32°C) will significantly reduce the spray and pot life.

### SPRAY LIFE

15 to 20 minutes at 70°F (21°C)    5 to 10 minutes at 80°F (27°C)

### APPLICATION EQUIPMENT

#### Airless spray.

Pump assembly should include a moisture trap and oiler, air regulator with gauge, fluid outlet drain (dump) valve, and outfitted with an attached gravity fed material hopper. Use a 1/2" I.D. material hose (maximum 50 ft, minimum 5,000 psi working pressure rating). For better control use 6 ft to 10 ft of 3/8" whip line. A WIWA 500F, a Graco XTR-7 or a Graco Pistol Grip Mastic Flo-Gun (Model 207-945) with a Graco H.D. RAC Housing/Guard assembly and H.D. tip sizes ranging from 0.035" to 0.047" may be used.

#### Airless Spray

Pump Size	Tip Orifice	Atomizing Pressure	Mat'l Hose ID	Manifold Filter
45:1, 56:1, X50 or X60	0.035"-0.047" (890-1194 microns)	3000-4500 psi (207-310 bar)	1/2" (12.7 mm)	N/R

**Note:** Material needs to be gravity fed through an attached material hopper. Material will not feed through a suction tube. Contact Tnemec Technical Service for more information.

**Brush or Trowel:** Recommended for small areas only.

### SURFACE TEMPERATURE

Minimum of 50°F (10°C), optimum 65°F to 80°F (18°C to 27°C), maximum of 130°F (54°C). The substrate temperature should be at least 5°F (3°C) above the dew point.

### MATERIAL TEMPERATURE

For optimum application, handling and performance, the material temperature during application must be between 70°F and 80°F (21°C and 27°C). Material will not atomize properly below 70°F (21°C). Temperature will affect the workability. Cool temperatures increase viscosity and decrease workability. Warm temperatures will decrease viscosity and shorten the spray and pot life.

### HOLIDAY TESTING

If required by project specifications, High Voltage Discontinuity (spark) testing shall be performed using a Tinker & Razor AP/W High Voltage Holiday Tester. Contact Tnemec Technical Service for voltage recommendations.

### CLEANUP

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

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