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 H2S gas permeation, protects against MIC and provides chemical resistance to severe wastewater environments. Fiber-reinforcement provides superior physical strength and higher film build.

COLORS
5020 Gray. Note: Epoxies chalk with extended exposure to sunlight.

FINISH
Gloss

COATING SYSTEM

SURFACER/FILLER/PATCHER
Series 215, 217, 218

PRIMERS
Concrete: Self-priming or Series 201.

TOPCOATS
Series 435 (optional)

SURFACE PREPARATION

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

Allow new cast-in-place concrete to cure a minimum of 28 days at 75°F (24°C). Verify concrete dryness and prepare concrete surfaces in accordance with NACE No. 6/SSPC-SP15 Joint Surface Preparation Standards and ICRI Technical Guidelines. Moisture vapor transmission should not exceed three lbs per 1,000 sq ft in a 24 hour period. (Reference ASTM F 1869 "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.") Relative humidity should not exceed 80%. (Reference ASTM F 2170 "Standard Test Method for Determining Relative Humidity in Concrete using in situ Probes.") Abrasive blast, shot-blast or mechanically abrade concrete surfaces to remove laitance, curing compounds, hardeners, sealers and other contaminants and to provide a minimum ICRI-CSP 5 or greater surface profile. Large cracks, voids and other surface imperfections should be filled with a 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) in one or two coats. Note: Number of coats and thickness requirements will vary with substrate, application method and exposure. Contact your Tnemec representative.

CURING TIME

<table>
<thead>
<tr>
<th>Temperature</th>
<th>To Touch</th>
<th>Dry Through</th>
<th>To Place in Service</th>
<th>Max. Recoat</th>
</tr>
</thead>
<tbody>
<tr>
<td>75°F (24°C)</td>
<td>3 hours</td>
<td>14 hours</td>
<td>2 days</td>
<td>7 days</td>
</tr>
<tr>
<td>55°F (13°C)</td>
<td>7 hours</td>
<td>30 hours</td>
<td>3 days</td>
<td>7 days</td>
</tr>
</tbody>
</table>

Note: If more than 7 days have elapsed between coats, the Series 436 coated surface must be mechanically abraded before topcoating. Curing time will vary with surface temperature, air movement, humidity and film thickness.

VOLATILE ORGANIC COMPOUNDS
EPA Method 24: 0.25 lbs/gallon (28 grams/litre)

THEORETICAL COVERAGE
1,604 mil sq ft/gal (39.4 m²/L at 25 microns). See APPLICATION 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

<table>
<thead>
<tr>
<th>PART A (Partially filled)</th>
<th>PART B (Partially filled)</th>
<th>Mixed Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium Kit</td>
<td>1-6 gallon pail</td>
<td>1-3 gallon pail</td>
</tr>
<tr>
<td>Small Kit</td>
<td>1-1 gallon can</td>
<td>1-1 gallon can</td>
</tr>
</tbody>
</table>

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)

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

Before commencing, obtain and thoroughly read the Series 436 Surface Preparation and Application Guide.

<table>
<thead>
<tr>
<th>COVERAGE RATES</th>
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</thead>
<tbody>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
</tbody>
</table>

Note: Recommended DFT will depend on substrate condition and system design. Refer to Recommended DFT section on page 1. 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 thickness 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. Mixing ratio is one to one by volume. Caution: Do not reseal mixed material. An explosion hazard may be created. Do not attempt to split kits.

THINNING

DO NOT THIN

POT LIFE

25 to 30 minutes at 70°F (21°C)  15 to 20 minutes at 80°F (27°C)

Spray Life

Material, equipment, and ambient temperatures above 80°F (27°C) will significantly reduce the spray and pot life.

25 to 30 minutes at 70°F (21°C)  15 to 20 minutes at 80°F (27°C)

APPLICATION EQUIPMENT

Airless Spray

<table>
<thead>
<tr>
<th>Spray Gun</th>
<th>Pump Size</th>
<th>Tip Orifice</th>
<th>Atomizing Pressure</th>
<th>Mat'l Hose ID</th>
<th>Manifold Filter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graco XHF, XTR-7</td>
<td>45.1, 56.1, X50 or X60</td>
<td>0.045&quot;-0.051&quot; (1143-1295 microns)</td>
<td>4000-4500 psi (276-310 bar)</td>
<td>See below</td>
<td>N/R</td>
</tr>
</tbody>
</table>

Note: Graco H.D. RAC Housing/Guard assembly and H.D. tip sizes ranging from 0.045" to 0.051" should be used. Material needs to be gravity fed through an attached material hopper. Material will not feed through a suction tube.

Material Hose ID: Attach (1) 25' x 3/4" hose to the pump. Attach (1) 25' x 1/2" hose to the 3/4" line. Attach (1) 6-10' x 3/8" hose to the 1/2" line and gun.

Brush or Trowel: Recommended for small areas only.

Note: The Series 436 Surface Preparation and Application Guide contains important information regarding detailed equipment recommendations. Read carefully prior to application to ensure equipment is configured correctly. Contact Tnemec Technical Service for more information.

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 handling and application characteristics, both material components should be stored or conditioned between 70°F and 80°F (21°C and 27°C) 48 hours prior to use. 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 & Rasor 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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