SURFACE PREPARATION AND APPLICATION GUIDE

SERIES G436
PERMA-GLAZE® FR

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INNOVATION IN EVERY COAT.™

1.0 INTRODUCTION

The purpose of this guide is to acquaint applicators with the basic information necessary for properly ordering, storing, and installing Tnemec's Series G436 Perma-Shield FR epoxy wastewater system. Prior to starting work, please read this entire guide carefully. If you have questions, contact your Tnemec representative or call +1 816-483-3400. It is important that you obtain answers to any questions before work begins.

Also, reference the project specifications and compare them with this guide and the product data sheet. Resolve any inconsistencies prior to starting work.

This application guide cannot cover every issue that may be encountered in the field. If issues arise that are not addressed in this guide or the product data sheet, please contact your Tnemec representative or call +1 816-483-3400 for assistance.

2.0 PRODUCT AND PACKAGING

The following contains information on the core components of this product.

2.1 SERIES G436 PERMA-SHIELD FR

Series G436 Perma-Shield FR is a fiber-reinforced, modified polyamine epoxy. A thick film, 100% solids, spray-applied, abrasion-resistant coating designed for wastewater immersion and fume environments. It provides excellent resistance to H_2S gas permeation, protects against MIC and provides chemical resistance to severe wastewater environments. Fiber-reinforcement provides superior physical strength and higher film build.

2.2 SERIES G436 PACKAGING

KIT SIZE	PART A (PARTIALLY FILLED)	PART B (PARTIALLY FILLED)	YIELD (MIXED)
Small Kit	1 gal. can	1 gal. can	1.0 gal. (3.78 L)
Medium Kit	3 gal. pail	6 gal. pail	5.0 gal. (18.9 L)

2.3 SERIES G436 COVERAGE RATES

	Dry Mils (Microns)	Wet Mils (Microns)	Sq. Ft./Gal. (m^2/gal.)
Minimum	50.0 (1270)	50.0 (1270)	32 (3.0)
Maximum	125.0 (3175)	125.0 (3175)	13 (1.2)

Note: Recommended DFT will depend on substrate condition and system design. Refer to Recommended DFT section on page 1 of the product data sheet. Allow for overspray and surface irregularities. Film thickness is rounded to the nearest 0.5 mil or 5 microns and can be achieved in one or two coats. Application of coating below minimum or above maximum recommended dry film thickness may adversely affect coating performance.

2.4 SERIES G436 STORAGE AND MATERIAL TEMPERATURE

Minimum storage temperature is 40°F (4°C) and maximum is 110°F (43°C). For optimal handling and application characteristics, both material components should be stored or conditioned between 70°F (21°C) to 80°F (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 pot life.

3.0 SURFACE PREPARATION

3.1 PREPARATION OF EMBEDDED MISCELLANEOUS METALS

When encountering miscellaneous metals embedded into concrete, the surface must be prepared in accordance with SSPC-SP5/NACE 1 White Metal Blast Cleaning with a 3.0 mil minimum angular anchor profile.

3.2 PREPARATION OF CONCRETE

Allow new cast-in-place concrete to cure a minimum of 28 days at 75°F (24°C). Verify concrete dryness in accordance with ASTM F 1869 "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride" (moisture vapor transmission should not exceed three pounds per 1,000 square feet in a 24 hour period), F 2170 "Standard Test Method for Determining Relative Humidity in Concrete using in situ Probes" (relative humidity should not exceed 80%), or D 4263 "Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method" (no moisture present). Prepare concrete surfaces in accordance with NACE No. 6/SSPC-SP13 Joint Surface

Preparation Standards and ICRI Technical Guidelines. Abrasive blast, shot-blast, water jet, or mechanically abrade concrete surfaces to remove laitance, curing compounds, hardeners, sealers, and other contaminants and to provide a minimum ICRI-CSP 5 surface profile. Large cracks, voids and other surface imperfections should be filled with a recommended filler or surfacer.

3.3 REINFORCING STEEL REPAIR

Where corrosion of the reinforcement steel (rebar) exists, continue concrete removal along the corroded steel and any adjacent areas which show evidence of corrosion-induced damage that would inhibit bonding of repair material. When the exposed reinforcing steel has loose rust, corrosion products, or is not well bonded to the surrounding concrete, removal should include undercutting the corroded reinforcing steel by approximately ¾ in (19 mm) in accordance with ICRI Guideline No. 310.1R. Every precaution should be made to avoid cutting underlying reinforcement. All exposed reinforcement surfaces shall be thoroughly cleaned of all loose concrete, rust, and other contaminants. A protective coating such as Series 1 or N69 can be applied to the reinforcement after surface preparation. Avoid spillage or application onto the parent concrete. The area around the rebar may then be rebuilt using Series N218 MortarClad, or in more extreme cases, Series 217 MortarCrete.

3.4 OUTGASSING

Outgassing must always be considered a possibility with any concrete substrate. A number of means exist to either eliminate or reduce outgassing. First, application should be accomplished in indirect sunlight and during times when the surface temperature of the concrete is stable or in a descending pattern. In addition, use of primers and resurfacing agents can help reduce outgassing. Series 218 MortarClad was specifically designed, and is the preferred method, to minimize this problem.

3.5 TERMINATIONS

When the coating system is not scheduled to provide a monolithic surface, terminations must be built into the system. For example, when the system is scheduled to terminate, saw cuts must be installed. Apply Series N218 up to sawcuts, then install the Perma-Shield lining system into the saw cut. Please refer to the Perma-Shield Detail Guides which can be found online at tnemec.com.

4.0 RESURFACING/PATCHING

For information regarding the resurfacing or patching of deteriorated concrete surfaces please refer to the Series 215, 217, or 218 product data sheets or application guides.

5.0 MIXING

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. Mix the entire contents of Part A and Part B separately. Scrape all of the Part A into the Part B by using a flexible spatula. Note: The 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.

5.1 SURFACE TEMPERATURE - SERIES G436

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

5.2 POT LIFE/SPRAY LIFE - SERIES G436

POT LIFE - SERIES G436

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

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

SPRAY LIFE - SERIES G436

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

6.0 CURING SCHEDULE

Temperature	75°F (24°C)	55°F (13°C)
To Touch	3 hours	7 hours
Dry Through	14 hours	30 hours
To Place in Service	2 days	3 days
Maximum Recoat	7 days	7 days

Note: If more than 7 days have elapsed between coats, the Series G436 coated surface must be mechanically abraded before topcoating. Curing time will vary with surface temperature, air movement, humidity and film thickness.

7.0 APPLICATION & EQUIPMENT

Application of Series G436 Perma-Shield FR is as follows:

AIRLESS SPRAY

Pump Size	45:1, 56:1, X50 or X60 (with hopper)
Gun	Graco XHF, XTR-7 or WIWA 500F
Tip Orifice	0.045" - 0.051" H.D. (1143 - 1295 microns)
Atomizing Pressure	2500 - 3500 psi (172-241 bar)
Mat'l Hose ID	Attach (1) 25' x 3/4" hose to the pump Attach (1) 25' x 1/2" hose to the 3/4" line
Whip Line ID	Attach (1) 6-10' x 3/8" hose to the 1/2" line & gun
Manifold Filter	N/R

Note: Graco H.D. RAC Housing/Guard assembly and H.D. tip sizes ranging from 0.041" to 0.045" should be used. Material can be gravity fed to the pump through an attached hopper, or suction fed to the pump through a 1 1/4" ID straight pipe attached to the foot valve. Contact Tnemec Technical Service for more information.

Brush or Trowel: Recommended for small areas only.

7.1 PUMP MAINTENANCE

After every 20 to 25 gallons or as needed, the pump should be flushed with MEK. This is accomplished in two stages. First, MEK (either new or filtered) is recirculated through the pump for five minutes through a filter bag. Then a second flush is done, again for five minutes, this time using only fresh MEK. (This MEK can be used for the first flush of the next flush cycle). This cycle is repeated every 20 to 25 gallons, or as needed. It should be noted that the amount of flushing needed is dependent on temperatures and extended spray times.

After the end of a work shift, the pump is flushed as stated above. This time, after the second flush, the lower end of the pump is disassembled and thoroughly cleaned to remove all traces of coating material.

It should be noted that the amount of flushing needed is dependent on temperatures and extended spray times. Contact Tnemec Technical Services for detailed equipment recommendations.

8.0 SERIES G435 PERMA-GLAZE (OPTIONAL TOPCOAT)

Series G435 Perma-Glaze is a 100% solids, modified polyamine epoxy designed for outstanding H2S permeation resistance and is used as a glaze coat to prolong the service life of the Perma-Shield FR System. It is applied with a 3/8" - 1/2" high quality, synthetic, woven nap roller to a finished thickness of approximately 15 to 20 mils DFT. Refer to the Tnemec Series G435 Surface Preparation and Application Guide and Product Data Sheet for further instructions.

9.0 HIGH VOLTAGE DISCONTINUITY (SPARK TEST)

High voltage discontinuity (spark) testing is recommended to determine the presence and number of discontinuities in the nonconductive Series G436 applied to a conductive surface.

If required by the project specifications, all high voltage discontinuity (spark) testing shall be performed in accordance with the latest version of NACE SP0188.

Series G436 Perma-Shield FR shall be applied and allowed to cure within the parameters of the corresponding Product Data Sheets. Sufficient curing time of the coating system shall be allowed prior to conducting a holiday test, as indicated by the "To Place in Service" or "Return to Service" duration on the Product Data Sheets. Curing time will vary with surface temperature, air movement, humidity, and film thickness.

For more information on voltage recommendations and curing parameters, reference Tnemec Technical Bulletin No. 03-42 or contact Tnemec Technical Services.

10.0 HANDLING

Series G436 is for Industrial use only and must be installed by qualified coating and lining application specialists only. Paint products contain chemical ingredients which are considered hazardous. Read container label warning and Safety Data Sheet for important health and safety information prior to the use of this product. Keep out of the reach of children.

11.0 HEALTH & SAFETY

Detailed health and safety requirements for Series G436 are available in the Safety Data Sheet. Contact your local Tnemec representative for more information.