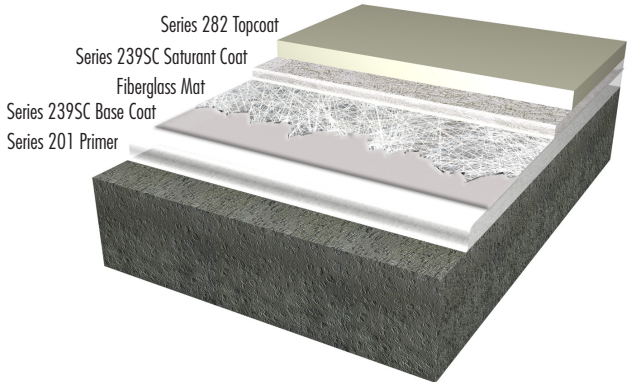
StrataShield®
FLOOR AND WALL COATINGS

Fiberglass Mat Reinforced Novolac Epoxy Lining (RCK)

Series 239SC/Series 282

Installation Procedure



1.0 SYSTEM DESCRIPTION

Series 239SC/282 is a 65 mil fiberglass mat reinforced, multi-functional, 100% solids, novolac epoxy secondary containment system.

2.0 OVERVIEW

The purpose of this guide is to acquaint contractors and applicators with the basic information necessary for properly ordering and installing Tnemec coatings for concrete secondary containment for water and wastewater. Prior to starting work, please read this entire guide carefully. If you have questions, contact your Tnemec representative or call Tnemec Technical Service at 1-800-TNEMEC1. It is important that you obtain answers to any questions before work begins.

Please review all pertinent product data sheets as well as construction detail drawings.

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

This Installation 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 sheets, please contact your Tnemec representative or call 1-800-TNEMEC1 for assistance.

System Overview

- Primer: Series 201 at 4.0 - 12.0 mils
- Base Coat: Series 239SC (Resin) at 6.0 - 12.0 mils
- Fiberglass Reinforcement: 3/4 oz. chopped strand fiberglass mat
- Saturant Coat: Series 239SC (Resin) at 6.0 - 12.0 mils
- Topcoat: Series 282 at 4.0 - 8.0 mils

3.0 JOB SET-UP

Prior to starting project installation, note the following:

- Itemize all materials ordered from Tnemec.
- Establish surface preparation requirements.
- Ensure all equipment is readily available and in working order.
- Set-up a mixing area clearly designated at least 50 feet away from heat, sparks, open flames, welding, or other sources of ignition.
- Communicate the installation, safety procedures, and requirements with all persons involved.

4.0 EQUIPMENT

Surface preparation

- Personal Protective Equipment
- Wet-or Dry-abrasive blasting equipment or Waterjetting equipment
- Diamond grinder

Mixing

- Volume measure for Part A and B
- 5 gallon empty pails for mixing
- PS "Jiffy" mixing paddle (liquids only)
- 3/4", 10 amp drill

Application

- Scissors or shears for cutting fiberglass mat
- 3/8" - 1/2" nap, shed resistant roller covers for application of primer, base coat, and saturating glass
- 1/8" rib roller
- Brushes, rollers or spray equipment for applying topcoat

5.0 CONCRETE SURFACE PREPARATION

All new concrete should be allowed to cure 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 Measure Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride” (reference ASTM F 1869). Moisture content is 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 to provide profile per SSPC-SP13/NACE No. 6, ICRI-CSP5. Blasting must be performed sufficiently close to the surface to open up surface voids, bug holes, air pockets and other subsurface irregularities. Dry, oil-free air must be used for the blasting operation (reference ASTM D 4285). Large voids and other cavities should be filled with the recommended filler or surfacer (Series 215 Surfacing Epoxy, Series 217 MortarCrete or Series 218 MortarClad). Refer to the appropriate data sheet for specific recommendations.

All dust and blasting debris dust shall be removed by vacuuming or washing prior to application. Cloths shall not be permitted for cleaning blasted surfaces because of possible lint contamination. Brushing or blowing the surface shall not be permitted, as these methods will not dislodge all particles embedded in the surface profile. All surfaces must be clean, dry, free of oil, grease and other contaminants.

5.1 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 out of direct sunlight and during times when the surface temperature of the concrete is stable or descending. In addition, coating systems may have an exothermic reaction during their cure generating heat on the concrete surface promoting outgassing. The use of primers or resurfacers can help reduce outgassing.

5.2 EXPOSED REBAR

When rebar is exposed through the surface preparation or due to construction oversights, the rebar must be properly cleaned and primed. Exposed rebar must be cleaned as per SSPC-SP10 / NACE No. 2 "Near-White Metal Blast Cleaning" and primed using an epoxy primer such as Tnemec Series N69 Hi-Build Epoxoline II or equal. The area around the rebar may then be rebuilt using Series 215 Surfacing Epoxy or Series 218 MortarClad, or in more extreme cases, Series 217 MortarCrete.

5.3 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 three feet up the wall, saw cuts must be installed so the system may be keyed into these termination points. Refer to the "Secondary Containment Construction Details Guide" for more information.

5.4 PREPARATION OF CMU

Allow new mortar to cure 28 days. Surfaces much be clean, dry, sound and free of all contaminants (Ref. SSPC-SP13/NACE No. 6). Level all protrusions and mortar spatter.

6.0 PRIMER INSTALLATION

6.1 SERIES 201 EPOXOPRIME

The primer for the Series 239SC/282 mat reinforced system is Series 201 Epoxoprime, a moisture-tolerant, modified polyamine epoxy.

6.2 SERIES 201 EPOXOPRIME TEMPERATURE REQUIREMENT

Storage Temperature:
Minimum: 40°F (4°C) Maximum: 90°F (32°C)

Material should be stored at temperatures between 70°F and 90°F (21°C and 32°C) for at least 48 hours prior to use.

Surface Temperature:
Minimum: 55°F (13°C) Maximum: 90°F (32°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 should be between 70°F and 90°F (21°C and 32°C). Temperature will affect the workability. Cool temperatures increase viscosity and decrease workability. Warm temperatures will decrease viscosity and shorten pot life.

Pot Life: 25 to 30 minutes at 75°F (24°C)

Material temperatures above 90°F will significantly reduce the pot life.

6.3 SERIES 201 EPOXOPRIME PACKAGING

Two (2) Parts A to One (1) Part B by volume

KIT SIZE	PART A	PART B	YIELD (MIXED)
Extra Large Kit	2-55 gallon drums	1-55 gallon drum	165 gallons
Large Kit	2-5 gallon pails	1-5 gallon pail	15 gallons
Small Kit	2-1 gallon cans	1-1 gallon can	3 gallons

6.4 SERIES 201 EPOXOPRIME COVERAGE RATES

DRY MILS (MICRONS)	WET MILS (MICRONS)	SQ.FT./GAL (M^2/GAL)
6.0 - 12.0 (150-305)	6.0 - 12.0 (150-305)	134-267 (12.2-24.8)

6.5 SERIES 201 EPOXOPRIME MIXING AND APPLICATION

Mixing: Use a variable speed drill with a PS Jiffy blade. Slowly mix Part A component, and while under agitation add Part B component and mix for a minimum of two minutes. Ensure that all Part B is blended with Part A by scraping the pail walls with a flexible spatula.

Roller Application: Use high quality 3/8" to ½" woven nap, shed resistant, roller cover.

Brush Application: Use high quality synthetic or nylon bristle brush.

Horizontal Application: Squeegee and backroll. Brush small areas only.

Vertical Application: Roller apply or spray and backroll. Brush small areas only. Spray application equipment includes a Graco "King" 45:1 or 56:1 airless spray pump or other airless spray equipment of equal or greater configuation and capability. Pump assembly should include a moisture trap and oiler, air regulator with gauge and fluid outlet drain valve. When spraying, a high pressure manifold and 60 mesh filter is recommended. Use a 3/8" to 1/2" I.D. matrerial hose (4,000-5,000 psi working pressure rating). A Graco silver gun or equivalent may be used. The preferred tips with orifices ranging from .019" to .033" should be mounted in a Graco H.D. RAC Housting/Guard assembly. The suggested operating air pressure is 80 to 90 psi. **Spraying should be considered as a means to transfer the material to the surface and should be followed by backrolling.**

7.0 BASE COAT INSTALLATION

7.1 SERIES 239SC CHEMBLOC

The base coat for the Series 239SC/282 mat reinforced system is Series 239SC ChemBloc, a chemical-resistant, modified novolac polyamine epoxy.

7.2 SERIES 239SC CHEMBLOC TEMPERATURE REQUIREMENT

Storage Temperature:
Minimum: 40°F (4°C) Maximum: 90°F (32°C)

Material should be stored at temperatures between 70°F and 90°F (21°C and 32°C) for at least 48 hours prior to use.

Surface Temperature:
Minimum: 55°F (13°C) Maximum: 90°F (32°C)

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

Material Temperature: For optimum application, handling and performance, the material temperature during application should be between 70°F and 90°F (21°C and 32°C). Temperature will affect the workability. Cool temperatures increase viscosity and decrease workability. Warm temperatures will decrease viscosity and shorten pot life.

Pot Life: 30 to 35 minutes at 75°F (24°C)

7.3 SERIES 239SC CHEMBLOC PACKAGING

KIT SIZE	PART A	PART B	YIELD (MIXED)
RCK	1 gallon can	1/2 gallon can	1.5 gallons

7.4 SERIES 239SC CHEMBLOC COVERAGE RATES

DRY MILS (MICRONS)	WET MILS (MICRONS)	SQ.FT./KIT (M^2/KIT)
6.0 - 12.0 (150-305)	6.0 - 12.0 (150-305)	201-401 (18.6-37.3)

7.5 SERIES 239SC CHEMBLOC MIXING AND APPLICATION

Mixing: Use a variable speed drill with a PS Jiffy blade. Slowly mix Part A component, and while under agitation add Part B component and mix for a minimum of two minutes. Ensure that all Part B is blended with Part A by scraping the pail walls with a flexible spatula.

Roller Application: Use high quality 3/8" to ½" woven nap, shed resistant, roller cover.

Brush Application: Use high quality synthetic or nylon bristle brush.

Horizontal Application: Squeegee and backroll. Brush small areas only.

Vertical Application: It is recommended that the base coat be applied using a high quality 3/8" to 1/2" woven nap, shed resistant, roller cover.

7.6 FIBERGLASS REINFORCEMENT INSTALLATION

Fiberglass Mat Placement: Measure the length desired (equal to the area to be base coated). This area will vary with application rate. The glass is best cut with scissors. Roll up the cut piece of mat tightly for easier handling.

While the base coat resin is still wet, lay and press the fiberglass reinforcing mat into the surface. Using a rib roller, backroll fiberglass to remove any air pockets. Once mat is placed, immediately saturate mat with Series 239SC saturant coat until fiberglass mat is completely wet out. It is necessary to be especially careful to press the mat firmly into corners.

8.0 SATURANT COAT INSTALLATION

8.1 SERIES 239SC CHEMBLOC

The saturant coat for the Series 239SC/282 mat reinforced system is Series 239SC ChemBloc. See Sections 7.2 through 7.5 for temperature, packaging, coverage rate, and mixing details.

8.2 SERIES 239SC CHEMBLOC APPLICATION

Saturating: It is recommended that the saturant coat be applied while the base coat underneath is still wet. The saturating resin is best applied with a short nap roller and large brush in areas where necessary. Material may be thinned up to 10% with #2 thinner to facilitate better roller application over the fiberglass mat. At overlaps the top layer of mat should be lifted so saturating resin can be applied to the bottom layer. The top layer is then pressed onto the bottom layer and saturated. Use enough saturant to "wet out" the mat, but do not allow the saturant to puddle or run. Saturation is complete when the glass mat has lost its dry white appearance and becomes transluscent. A 1/8" ribbed roller should then be utilized to force out any entrapped air or wrinkles. While the saturant is still wet, an aggregate may be broadcast into the horizontal surface for enhanced slip resistance. Once cured, the reamaining, unadhered aggregate must be swept or vacuumed up before topcoating.

Note: Once saturant has cured hard and if an aggregate has not been incorporated into the surface, the glass should be inspected for any imperfections. Grind down any mortar fins or glass spurs. Any voids found underneath the glass should be ground down and patched before topcoating. Refer to Tech Bulletin 98-11 for more information.

9.0 TOPCOAT INSTALLATION

9.1 SERIES 282 TNEME-GLAZE

The topcoat/sealer for the Series 239SC/282 mat reinforced system is Series 282 Tneme-Glaze, a chemical-resistant, novolac epoxy. *Note:* Two coats of Series 282 may be required for hide and to enhance performance.

9.2 SERIES 282 TNEME-GLAZE TEMPERATURE REQUIREMENT

Storage Tempature:
Minimum 40°F (4°C) Maximum 90°F (32°C)

Prior to application, the material temperature should be between 70°F and 90°F (21°C and 32°C).

Surface Temperature:
Minimum 55°F (13°C) Maximum 90°F (32°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 should be between 70°F and 90°F (21°C and 32°C). Temperature will affect the workability. Cool temperatures increase viscosity and decrease workability. Warm temperatures will decrease viscosity

and shorten pot life.

Pot Life: 25 to 30 minutes at 75°F (24°C)

Material temperatures above 90°F (32°C) will significantly reduce the pot life.

9.3 SERIES 282 TNEME-GLAZE PACKAGING

One (1) Part A to One (1) Part B by volume

KIT SIZE	PART A	PART B	YIELD (MIXED)
Large Kit	5 gallon pail	5 gallon pail	10 gallons (37.9 L)
Small Kit	1 gallon can	1 gallon pail	2 gallons (7.57 L)

9.4 SERIES 282 TNEME-GLAZE COVERAGE RATES

	DRY MILS (MICRONS)	WET MILS (MICRONS)	SQ.FT./GAL (M^2/GAL)
Horizontal	6.0-12.0 (150-305)	6.0-12.0 (150-305)	134-267 (12.4-24.8)
Vertical	4.0-8.0 (100-205)	4.0-8.0 (100-205)	201-401 (18.6-37.3)

9.5 SERIES 282 TNEME-GLAZE MIXING AND APPLICATION

Mixing: Use a variable speed drill with a PS Jiffy blade. Slowly mix Part A component, and while under agitation add Part B component and mix for a minimum of two minutes. Ensure that all Part B is blended with Part A by scraping the pail walls with a flexible spatula.

Roller Application: Use high quality 3/8" to ½" woven nap, shed resistant, roller cover.

Brush Application: Use high quality synthetic or nylon bristle brush.

Horizontal Application: Squeegee and backroll. Brush small areas only.

Vertical Application: Roller apply or spray and backroll. Brush small areas only. Spray application equipment includes a Graco "King" 45:1 or 56:1 airless spray pump or other airless spray equipment of equal or greater configuation and capability. Pump assembly should include a moisture trap and oiler, air regulator with gauge and fluid outlet drain valve. When spraying, a high pressure manifold and 60 mesh filter is recommended. Use a 3/8" to 1/2" I.D. matrerial hose (4,000-5,000 psi working pressure rating). A Graco silver gun or equivalent may be used. The preferred tips with orifices ranging from .019" to .033" should be mounted in a Graco H.D. RAC Housting/Guard assembly. The suggested operating air pressure is 80 to 90 psi. **Spraying should be considered as a means to transfer the material to the surface and should be followed by backrolling.**

10.0 UV-RESISTANT URETHANE TOPCOAT (OPTIONAL)

An optional UV-resistant topcoat of Series 290 CRU can be applied to the system to prevent sunlight degradation of Series 282. Series 290 may not withstand chemical exposures and should be considered a "sacrificial" coating. Periodic maintenance should be performed to reestablish any chemically attacked coating.

11.0 INSPECTION

Examine the application for any air bubbles or blisters. If present, they must be cut out and repaired. Refer to Tnemec Technical Bulletin 98-11 for additional information.

High voltage discontinuity (spark) testing may be used to determine the presence and number of discontinuities in the nonconductive Series 282 Tneme-Glaze applied to a conductive surface.

All high voltage discontinuity (spark) testing shall be performed in accordance with NACE RP0188 and the procedures outlined herein.

Coatings 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" duration on the Product Data Sheets. Curing time will vary with surface temperature, air movement, humidity, and film thickness.

If the substrate is incompatible or if thickness constraints are not applicable for a non-destructive dry film thickness gauge, measurements of the coating system thickness are to be performed during application of each system component using a wet film gauge, feeler gauge, or other measurement device that can accurately measure the coating wet film thickness. These coating measurements are to be tabulated to determine the total system thickness.

All high voltage discontinuity (spark) testing shall be performed using a Tinker & Rasor model AP/W Holiday Detector. Refer to the following chart for appropriate voltage based on coating system thickness.

To perform holiday testing attach a ground wire from the instrument ground output terminal to the conductive substrate and ensure proper electrical contact. Test conductivity by attaching the instrument ground wire to rebar or other metallic ground permanently installed in the concrete and touch the electrode to the bare concrete. If metallic ground is not visible, the ground wire can be placed directly against a bare concrete surface and weighted with a damp cloth and sand-filled paper bag. Make contact with the exploring electrode on the conductive substrate to verify the instrument is properly grounded. If the test proves negative, determining discontinuities with a high voltage spark test will be ineffective. Under no circumstances shall the voltage be increased above the recommended voltage potential.

RECOMMENDED VOLTAGES FOR HIGH VOLTAGE SPARK TESTING WITH TINKER & RASOR MODEL AP/W

Total Dry Film Thickness (mils)	Voltages (V)	Total Dry Film Thickness (mils)	Voltages (V)
20-24	2,500	100-124	12,500
25-29	3,000	125-134	15,000
30-39	3,500	135-159	16,000
40-47	5,000	160-174	17,500
48-59	6,000	175-214	20,000
60-69	7,500	215-269	27,000
70-79	8,500	270-299	31,000
80-99	10,000	300-350	35,000

Holiday testing of repaired areas shall be performed using same testing procedures as outlined above.

If utilizing alternate high voltage DC holiday detectors, never exceed 100 volts DC per mil or contact Tnemec Technical Services for recommended voltage settings. Excessive voltage may produce a holiday in the coating film.

12.0 REPAIR

For patching and repairing small areas, less than 1 sqft, grind affected area and reapply as per initial instructions. Overlap 1" to 2" onto the existing material and square off with masking tape. Make sure areas for overlap are scarified and feathered. Small repairs may be completed by adding fumed silica to Series 239SC.

13.0 CURING

Allow 24 hours final cure before placing into service. Contact Tnemec Technical Service if deviations are required.

14.0 CLEANUP

Clean all equipment immediately after use with a compatible solvent such as Xylene or Methyl Ethyl Ketone (MEK). Hands can be cleaned with soap and water.

15.0 STORAGE & HANDLING

All materials must be stored between 40°F (10°C) and 90°F (32°C). Prior to application, the material must be between 70°F and 90°F (21°C and 32°C) for at least 48 hours. For optimum application, handling and performance, the surface, air and material temperatures during application should be between 70°F and 90°F (21°C and 32°C). For applications below 70°F, contact your Tnemec representative for instructions and precautions. The surface and air temperature should be at least 5°F above the dew point and the relative humidity should be below 75 percent.

16.0 SAFETY

These products may contain solvents and/or other chemical ingredients. Adequate health and safety precautions should be observed during storage, handling, application and curing. For information regarding the potential hazards associated with these products, please refer to the container label or request a Material Safety Data Sheet from Tnemec Company, Inc. at 1-800-TNEMEC1 or www.tnemec.com.

17.0 CHEMICAL RESISTANCE CHART

CHEMICAL & CONCENTRATION	RESULT
Aluminum Chloride	OK
Aluminum Sulfate 49%	OK
Ammonium Fluosilicate	OK
Ammonium Hydroxide 5-50%	OK
Bromine 5%	OK
Calcium Carbonate	OK
Calcium Hydroxide	OK
Calcium Hypochlorite 5%	OK
Calcium Oxide 1%	OK
Carbon Dioxide	NR
Citric Acid 5-50%	OK
Chlorine Dioxide	OK
Copper Sulfate	OK
Ferric Chloride 5-43%	OK
Ferric Sulfate	OK
Fluosilicic Acid 35%	OK
Hydrochloric Acid 5-30%	OK
Hydrogen Peroxide 30%	OK

CHEMICAL & CONCENTRATION	RESULT
Methanol	OK
Phosphoric Acid 10-85%	OK
Polyalumium Chloride	OK
Potassium Permanganate	OK
Sodium Aluminate	NR
Sodium Bicarbonate	OK
Sodium Bisulfate	OK
Sodium Carbonate	OK
Sodium Fluoride	OK
Sodium Hexametaphosphate	OK
Sodium Hydroxide 10-50%	OK
Sodium Hypochlorite 3-13%	OK
Sodium Silicate	OK
Sodium Sulfate	OK
Sodium Sulfite	OK
Sodium Silicofluoride	OK
Sulfuric Acid 10-95%	OK
Sulfur Dioxide	OK
Tetrasodium Pyrophosphate	NR

OK: Secondary Containment
NR: Not Recommended

Exposures are based on continuous contact with chemical for up to 72 hours. EPA regulations require removal within 48 hours or in as timely a manner as possible. Softening or discoloration may occur during exposure.