

Tnemec Chemical Resistant Containment Lining Novolac 65 Mil Specification (Fiberglass Reinforced Epoxy)

PART 1 – GENERAL

1.01 DESCRIPTION

(Thick film, impact resistant, highly chemical resistant containment system that can handle impact and other physical abuse as well as a broad range of aggressive chemicals)

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as specified, shown, and required to furnish, install and place into satisfactory service the containment liner. The Work also includes:
 - a. Provide manufacturer's technical services for start-up installation. Provide on-site technical representation by manufacturer's technical representative during the time of corrosion protection lining Mock-up, substrate preparation and the start-up installation.
 - b. Chipping of concrete required to remove embedded oil and grease and subsequent patching with an approved compound. Only a compound compatible with the heavy-duty concrete topping to be used will be allowed for patching.
 - c. Maintaining minimum 55° F substrate temperature in the areas to receive containment liner for a period 48 hours before, during, and for 72 hours after installation. Use heat source that will provide warm, dry air and will not produce exhaust fumes or open flame in the work area.
2. Types of containment lining for concrete Work required include, but are not necessarily limited to, the following:
 - a. All systems shall include substrate cleaning, surface preparation, and containment lining application. Materials and thicknesses shall be as specified herein.
 - b. System shall consist of the following products: Tnemec Series 215 Surfacing Epoxy or Series 218 MortarClad resurfacer as specified herein; Tnemec Series 201 Epoxoprime primer; Tnemec Series 239SC ChemBloc, aggregate filled, modified novolac polyamine epoxy mortar to provide 60-80 mils thickness, Tnemec 239SC ChemBloc, resin kit/saturation coat, Tnemec Series 211-215 Fiberglass Mat (reinforcing) and Tnemec Series 282 Tnemec-Glaze, polyamine novolac epoxy finish coat to provide approximately 125 mil total thickness.
 - c. Cant cove bases shall be installed using either 215 or 218 mortars or mixed trowelable version of 239SC mortar as manufactured by Tnemec. Co. in accordance with the Manufacturer's written instructions and as indicated on the Standard Secondary Containment Lining Detail.

B. Coordination:

1. Review installation procedures under other Sections and coordinate the installation of items that must be installed prior to application of the corrosion protection lining.
2. Coordinate and schedule preparation of substrates, before equipment and similar items are installed to avoid later difficulty or delay in performing the Work of this Section, and to provide substrates within tolerances and surface profile specified.
3. All substrate surface preparation and lining application, including concrete resurfacing, to be completed by manufacturer's approved Installer.
- 4.

C. Related Sections:

1. Section 01300, Submittals.

1.02 REFERENCES

- A. This Section contains references to the governing standards and documents listed below. They are a part of this Section as specified and modified; the current version shall apply unless otherwise noted. In case of conflict between the requirements of this section and those of the listed documents, the more stringent of the requirements shall prevail.
1. American Concrete Institute, (ACI)
 - a. ACI 301 – Specifications for Structural Concrete.
 - b. ACI 308R – Guide to Curing Concrete.
 - c. ACI 350 – Code Requirements for Environmental Engineering Concrete Structures and Commentary.
 - d. ACI 546.R – Concrete Repair Guide.
 - e. ACI 546.3R – Guide for the Selection of Materials for the Repair of Concrete.
 2. ASTM International, (ASTM)
 - a. ASTM C307 - Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing.
 - b. ASTM C413 - Standard Test Method for Absorption of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - c. ASTM C531 - Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - d. ASTM C579 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - e. ASTM C580 - Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - f. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
 - g. ASTM D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
 - h. ASTM D2240 - Standard Test Method for Rubber Property—Durometer Hardness.
 - i. ASTM D4060 – Standard Test Method for Abrasion Resistance of Organic Linings by the Taber Abraser.
 - j. ASTM D4285 – Standard Test Method for Indicating Water or Oil in Compressed Air.
 - k. ASTM D4263 – Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
 - l. ASTM D4414 – Standard Practice for Measurement of Wet Film Thickness by Notch Gages.
 - m. ASTM D4541 - Standard Method for Pull-Off Strength of Coatings using Portable Adhesion Testers.
 - n. ASTM D6944 Standard Test Method for Measuring Humidity with a Psychrometer.
 - o. ASTM F1869 – Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
 3. International Concrete Repair Institute, (ICRI)
 - a. Guideline No. 310.1R – Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion.
 - b. Guideline No. 310.2 – Selecting and Specifying Concrete Surface Preparation for Sealer, Linings, and Polymer Overlays.
 4. NACE International, (NACE)
 - a. NACE Publication 6D-173 – A Manual for Painter Safety.
 - b. NACE SP0892 – Standard Practice for Coatings and Linings over Concrete for Chemical Immersion and Containment Service.
 - c. NACE No. 6/SSPC-SP13 – Surface Preparation of Concrete.
 5. Occupational Safety and Health Administration, (OSHA)
 - a. Safety and Health Standards (29 CFR 1910/1926).

6. SSPC: The Society for Protective Linings, (SSPC)
 - a. SSPC-SP5/NACE No. 1 - White Metal Blast Cleaning
 - b. SSPC-SP13/NACE No. 6 – Surface Preparation of Concrete.
 - c. SSPC-Guide 12 – Guide for Illumination of Industrial Painting Projects.
 - d. SSPC-QP1 Certification – Field Application to Complex Industrial and Marine Structures.
- B. Unless otherwise specified, references to documents shall mean the documents in effect at the time of receipt of Bids. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents, the last version of the document before it was discontinued.

1.03 QUALITY ASSURANCE

- A. Installer’s Qualifications:
 1. Installer shall have a minimum of 5 years experience in the application of the specified lining systems. Professional references will be required which Submit firm and qualifications of proposed Applicator to ENGINEER for approval.
 2. Single Source Responsibility: Obtain primary resinous lining materials including primers, resins, hardening agents, finish, or sealing coats from a single manufacturer with not less than 5 years of successful experience in manufacturing principal materials described in this Section. Provide secondary materials only of type and from source recommended by manufacturer of primary materials.
 3. Installer shall be certified in accordance with SSPC QP1 “Standard Procedure for Evaluating the Qualifications of Painting Contractors: Field Application to Complex Structures”.
 4. Installer to establish quality control procedures and practices to monitor phases of surface preparation, storage, mixing, application, and inspection throughout the duration of the project. Contractor to provide a fulltime, on-site person whose dedicated responsibilities will include quality control of the containment liner.
 5. Quality control procedures and practices must include the following items:
 - a. Training of personnel in the proper surface preparation requirements;
 - b. Training of personnel in the proper storing, mixing, application, inspection, and repair of the corrosion protection lining.
 - c. Training of personnel in health and safety practices.
- B. Mock-Ups:
 1. Prior to the installation of the containment lining and auxiliary system components, but after Engineer’s approval of the Samples, install 100 square foot stepped-back mock-ups of the systems showing each system component, in area selected by Engineer, to show representative installation of the Work.
 2. Obtain Engineer’s acceptance of visual qualities of the mock-ups before start of Work. Retain and protect mock-ups during construction as one standard for judging completed corrosion protection lining Work. Do not alter mock-ups after approval by Engineer.
 - a. Finished Work, in compliance with visual qualities of mock-ups, which fails other on-Site quality control testing procedures, shall be replaced by Contractor with new materials.
 3. Build as many mock-ups as required to achieve Engineer’s acceptance of the corrosion protection lining.
 4. Accepted mock-up shall be considered the acceptable minimum standard of quality.
 5. Containment lining Work that proceeds without approved mock-ups shall be stopped, and mock-ups prepared for approval.

C. Pre-Installation Conference:

1. Before erecting mock-ups, Contractor, Installer, and technical representative of the corrosion protection lining manufacturer shall meet on-Site with Engineer to discuss approved products and workmanship to ensure proper application of the corrosion protection lining components and substrate preparation requirements.
2. Review foreseeable methods and procedures related to the containment lining Work, including but not necessarily limited to, the following:
 - a. Review Project requirements and the Contract Documents.
 - b. Review required submittals, both completed and yet to be completed.
 - c. Review status of substrate Work, including approval of surface preparations and similar considerations.
 - d. Review requirements of on-Site quality control testing and requirements for preparing Site Quality Control Report as specified herein.
 - e. Review availability of materials, tradesmen, equipment, and facilities needed to make progress and avoid delays.
 - f. Review required inspection and testing.
 - g. Review environmental conditions, other Project conditions, and procedures for coping with unfavorable conditions.
 - h. Review regulations concerning code compliance, environmental protection, health, safety, fire, and similar considerations.
 - i. Review procedures required for the protection of the corrosion protection lining during the remainder of the construction period.
3. Record the discussions of the Pre-Installation Conference and the decisions and agreements or disagreements reached, and furnish a copy for the record to each party attending. Record any revision or changes agreed upon, reasons therefore, and parties agreeing or disagreeing with them.
4. Reconvene the conference at the earliest opportunity if additional information must be developed to conclude the subjects under consideration.

1.04 SUBMITTALS

- A. In accordance with the procedures and requirements set forth in the General Conditions and Section 01300 entitled "Submittals", the CONTRACTOR shall submit all required information as specified herein.
- B. Submit for approval prior to commencing any Work:
 1. Copies of specifications, technical information, installation instruction and general recommendations from the corrosion protection lining manufacturer for Work required. Include requirements for environmental conditions and other conditions required for an acceptable installation, providing features and performance as stated in manufacturer's literature.
 2. Submit to the Engineer for review in accordance with the General Requirements, complete shop drawings with the manufacturer's technical data showing complete methods of surface preparation and lining installation and general maintenance. Include plans and details of where and how chasing, coving, and expansion and control joints will be installed.
 3. Submit three sets of 12-in by 12-in samples of containment liner in the finish texture and color required. Samples shall show a hard-specified surface.
 4. No lining work on site will be allowed until construction methods are approved and samples approved as to color and finish. All containment linings to be used shall conform to approved samples in all respects.
 5. Product Data Sheets: Copies of current technical data for each component specified and applied as outlined in this Section.
 6. Copies of Material Safety Data Sheets (MSDS) for all materials brought on-site to complete Work, including all clean-up solvents and containment lining materials.
 7. Qualifications Data: Submit qualifications in accordance with Section 1.03 above:
 - a. SSPC-QP1 Certification.

8. Performance Testing Reports: Copies of test data for the entire physical, chemical, and permeation properties listed herein and as outlined within this Section.
9. Construction Details: Copies of manufacturer's computer generated standard lining details for specified materials, including: leading edge termination, metal embedment in concrete, joint detail, wall-to-slab detail, pipe termination detail, and any other detail at the request of the ENGINEER.
10. Maintenance Manual: Upon completion of the Work, submit five copies of containment lining manufacturer's written instructions for recommended maintenance practices. Include the following information:
 - a. Product name and number.
 - b. Name, address, e-mail address and telephone number of manufacturer and local representative.
 - c. Detailed procedures for routine maintenance and cleaning.
 - d. Detailed procedures for repairs.
11. Product Substitution: The specified corrosion protection lining is the minimum standard of quality for this project. Equivalent materials of other manufacturers may be substituted only by approval of Engineer. Requests for material substitutions shall be in accordance with requirements of the project specification.
 - a. Manufacturers "or equal" products shall provide direct property comparison with the materials specified in addition to complying with all other requires of these Specifications. "Or equal" products shall employ the same generic materials and system components as the corrosion protection lining specified.
 - b. Bidders desiring to use corrosion protection lining other than those specified shall submit proposed system with their proposal at the time of bid based, together with the information required herein, and indicate the sum which will be deducted form the base bid should alternate materials be accepted.

C. Jobsite Reports: Submit at the completion of Work

1. Daily Reports: Include surface preparation, substrate conditions, ambient conditions application procedures, lining materials applied, material quantities, material batch number(s), description of work completed and location thereof.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Delivery of Materials:

1. Deliver material in manufacturers original, unopened, and undamaged packages.
2. Clearly identify manufacturers, brand name, contents, color, batch number, and any personal safety hazards associated with the use of or exposure to the materials on each package.
3. Packages showing indications of damage that may affect condition of contents are not acceptable.

B. Storage of Materials:

1. Materials shall be stored in accordance with manufacturer's recommendations in enclosed structures and shall be protected from weather. Material shall be stored in a dry, enclosed area protected from exposure to moisture. Temperature of storage area shall be maintained between 70° F and 90° F.
2. Flammable materials shall be stored in accordance with state and local codes. Materials exceeding storage life as defined by the manufacturer shall be removed promptly from the site. Store all materials only in area or areas designated by the ENGINEER solely for this purpose.
3. Store in original packaging under protective cover off the ground using pallets and protect from damage.
4. Stack containers in accordance with manufacturer's recommendations.

C. Handling of Materials: Handle materials in such a manner as to prevent damage to products or finishes.

1.06 PROJECT CONDITIONS

A. Environmental Requirements:

1. For containment lining, concrete substrate shall have cured a minimum of 28 days utilizing a dissipating curing membrane (water). If a curing compound is used on the slab, it must be completely removed prior to application of final topping, and compound and removal system must be approved in writing by topping manufacturer. Concrete sub floors on or below grade shall be adequately waterproofed beneath and at the perimeter of the slab.

NOTE: If it is necessary to install chemical resistant lining system prior to 28 days or before minimum moisture levels have been achieved in the concrete then Tnemec 241 Ultra-Tread MVT should be used on horizontal surfaces and 218 Mortarclad on all vertical surfaces as soon as 10 days after concrete installation.

2. Proceed with containment lining Work only when temperature and moisture conditions of substrates, air temperature, relative humidity, dewpoint and other conditions comply with the containment lining manufacturer's written recommendations and when no damaging environmental conditions are forecasted for the time when the material will be vulnerable to such environmental damage. Record all such conditions and include in final Site Quality Control Report.
 3. Do not begin Work when relative humidity is expected to rise above 90% during the time of installation and catalyzation, nor when substrate temperature are not at least five degrees above the dewpoint temperature and rising.
 4. Utilities, including electric, water, heat (air temperature between 65° F and 90° F), and finished lighting to be supplied by the general contractor.
 5. Job area to be free of other trades during, and for a period of 24 hours, after lining installation.
 6. Do not begin containment lining Work until manufacturer's recommended environmental conditions can be maintained and only when manufacturer and installer are willing to guarantee the Work as required and without additional reservations and restrictions.
 7. Protection of finished walls and floor from damage by subsequent trade shall be the responsibility of the general contractor.
- B. Dust and Contaminants: Protect work and adjacent areas from excessive dust and airborne contaminants during protective lining application and curing. Schedule Work to avoid excessive dust and airborne contaminants.

1.07 WARRANTY

- A. Submit manufacturer's standard warranty.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Products and Manufacturers: Provide one of the following:

1. Tnemec Company, Inc., Kansas City, MO. 800-863-6321
2. Or equal.

B. Products: Provide the following Containment Lining system:

1. Epoxy Resurfacer Surfacer/Filler/Patcher to surface and repair concrete substrate and eliminate bug-hole induced outgassing:
 - a. Series 215 Surfacing Epoxy by Tnemec Company, Inc.
 - b. Series 218 MortarClad by Tnemec Company, Inc.
 - c. Or equal.
2. Cant Cove: System shall consist of an aggregate filled, 100% solids, modified novolac polyamine epoxy resin coating to form a cant cove edged up vertical surfaces on inside corners of walls and at wall to floor intersections:
 - a. Series 239SC ChemBloc by Tnemec Company, Inc. (Or 215 or 218 Epoxy Mortars)
 - b. Or equal.

3. Epoxy Primer: Roller applied penetrating two-component epoxy primer:
 - a. Series 201 Epoxoprime by Tnemec Company, Inc.
 - b. Or equal.
 4. Containment liner: Shall be a highly cross-linked, 65 mil DFT, 100% solids modified novolac polyamine epoxy resin coating with fiberglass mat reinforcement and novolac epoxy saturant coat. System shall be resistant to organic acids, inorganic acids, alkali solutions, salts, oils, and solvents:
 - a. Series 239SC ChemBloc, consisting of 239SC Resin and fiberglass reinforcing consisting of either 211-0215 or 273 fiberglass mat as required by job conditions, all by Tnemec Company, Inc.
 - b. Or equal.
 5. Polyamine novolac epoxy finish coat: Roller applied 100% solids
 - a. Series 282 Theme-Glaze by Tnemec Company, Inc.
 - b. Or equal.
 6. MVT (Moisture Vapor Transmission Primer/Basecoat), modified urethane mortar slurry:
 - a. Series 241 Ultra-Tread MVT by Tnemec Company, Inc
 - b. Or equal
- C. Coating systems shall be used for each given surface area type as follows:
1. Floors, Front vertical faces of steps and stairs, stair reads, sump floors, sump walls, and field-formed (non-prefabricated) trenches, tops of tank pads, tops of equipment pedestals, and containment walls etc.: nominal 65 MIL novolac epoxy system comprised of a penetrating two-component epoxy primer, a two component modified novolac polyamine epoxy basecoat, fiberglass reinforcing fabric, a two component, modified novolac polyamine epoxy saturant, and a pigmented, polyamine novolac epoxy topcoat.
- D. Epoxy Polymeric Surfacer/Filler/Patcher:

1.	<u>Properties</u>	<u>Tnemec Series 215 Surfacing Epoxy</u>
	a. Application Time	
	Working Time at 75°F	1 hour
	b. Compressive Strength (ASTM C579)	9,183 psi
	c. Flexural Strength (ASTM C580)	4,330 psi
	d. Modulus of Elasticity (ASTM C580)	324,877 psi
	e. Tensile Strength (ASTM C307)	2,282 psi
	f. Minimum Thickness	1/16 inch
	g. Maximum Thickness	1/4 inch

E. Epoxy modified Cementitious Surfacer/Filler/Patcher:

1.	<u>Properties</u>	<u>Tnemec Series 218 MortarClad</u>
	a. Minimum thickness	1/16 inch
	b. Maximum thickness	1/2 inch
	c. Application Time	
	Working Time at 75°F	60 min
	Initial set at 75°F	90 min
	d. Bond Strength (ICRI 310.1R)	
	Applied at 1/4" to Concrete	Concrete Failure
	e. Applied at 2.0" to Concrete	Concrete Failure
	f. Compressive Strength	5,137 psi
	g. Curing Requirements (ACI 308)	
	Method	Ambient Cure
	Duration	15 hours

F. Epoxy Novolac Containment Lining with Fiberglass Mat-Reinforcement:

1. <u>Properties</u>	<u>Tnemec Series 239SC ChemBloc</u>
a. Application Time at 75°F	30 min
b. Color	Gray
c. Minimum Dry Film Thickness (DFT)	6 mils
d. Maximum Dry Film Thickness (DFT)	12 mils
e. Bond Strength (ASTM D7234)	
Bare Concrete/Series 239SC	Concrete Failure
Bare Concrete/Series 215/Series 239SC	Concrete Failure
Bare Concrete/Series 218/Series 239SC	Concrete Failure
f. Chemical Resistance (ASTM C686)	
10-70% Sulfuric Acid, 72 hours, 75°F	No effect
3 to 15% Sodium Hypochlorite, 72 hours, 75°F	No effect
10 to 50% Sodium Hydroxide, 72 hours, 75°F	No effect
5 to 50% Citric Acid, 72 hours, 75°F	No effect
5 to 43% Ferric Chloride, 72 hours, 75°F	No effect
10 to 85% Phosphoric Acid, 72 hours, 75°F	No effect
g. Compressive Strength (ASTM D695)	12,087 psi
h. Flexural (ASTM D790)	
Strength	5,274 psi
Modulus of Elasticity	222,933 psi
i. Shrinkage (ASTM C531)	0.0042%
j. Tensile Strength (ASTM C 307)	2,843 psi
k. Tensile Strength (ASTM D 638)	4,352 psi
l. Thermal Expansion	
Linear Coefficient (ASTM C531)	1.25 x 10 ⁻⁵ in/in/°F
Thermal Cycling (ASTM D6944)	No effect
m. Water Absorption (ASTM C413)	0.01%

PART 3 – EXECUTION

3.01 INSPECTION

- A. Contractor shall examine the areas and condition under which the corrosion protection coating Work is to be performed and notify Engineer, in writing, of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until satisfactory conditions have been corrected in a manner acceptable to Engineer

3.02 SUBSTRATE PREPARATION

- A. Concrete surfaces to be coated shall be free of curing compounds and form release agents, laitance and foreign particles that may inhibit bonding. Prior to start of protective lining systems application, high-pressure water clean, waterjet or abrasive blast surfaces to be covered as required, and inspect the substrate in accordance with SSPC-SP13/NACE No. 6. Surface preparation procedures shall be in accordance with SSPC-SP13/NACE No. 6 and ICRI Guideline No. 310.2. Surface preparation requirement is to expose aggregate and obtain a uniform surface texture resembling an ICRI-CSP 4-5.
- B. All new cast-in-place and precast concrete shall cure for a period of 28 days in accordance with ACI 308R before protective lining system is installed, unless otherwise recommended by the Containment Lining manufacturer. Verify dryness by testing for moisture. Perform “Standard Test Method for Measure Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride” (reference ASTM F 1869) and/or perform relative humidity testing.
- C. Concrete surfaces to receive protective lining shall be a Smooth Form Finish as defined in ACI 301. Surfaces shall not be rubbed, sacked, troweled or otherwise finished in any manner that will obscure or cover the firm substrate surface.

- D. Level or grind concrete substrates to manufacturer's recommended tolerances and produce a smooth, uniform installation, including removal of all sharp edges, ridges, or depressions.
- E. New Concrete Application: Voids, bugholes, and other surface depressions shall be filled with specified underlayment material, re-establishing plan finished grades and concrete planes.
 - 1. Inspect and record substrate profile (anchor pattern). Surfaces shall be abraded, at a minimum, equal to the roughness of CSP4-5 in accordance with ICRI Guideline 310.2 and SSPC-SP13/NACE No. 6.

3.03 SYSTEM INSTALLATION

NOTE: Where necessary or indicated due to moisture conditions install Tnemec 241 Ultratread MVT on horizontal surfaces at 60-70 sf/kit prior to installation of 239SC containment system. Broadcast approx. ½ lb/sf of 30-50 mesh sand into the wet 241 to refusal. After cure remove excess sand.

- A. To all vertical surfaces, apply Tnemec Series 218 MortarClad or Series 215 Surfacing Epoxy at a minimum 1/16" to 1/8" thickness as necessary to fill voids and smooth surfaces, trowel applied. Fill flush any voids in horizontal surfaces.
- B. Cant Cove bases shall be installed using mixed trowelable version of lining system in accordance with the Manufacturer's written instructions and as indicated on the Standard Secondary Containment Lining Details or Series 215 or 218 Mortar.
- C. To all horizontal and vertical surfaces, roller apply penetrating primer of Tnemec Series 201 Epoxoprime at 6.0 – 12.0 mils DFT. Allow to become tacky and apply Tnemec Series 239SC ChemBloc embedment coat Mortar as shown in D (below).
- D. To all horizontal and vertical surfaces, roller apply resinous base coat of Tnemec Series 239SC ChemBloc at 8.0 – 12.0 mils DFT.
- E. Embed Tnemec Series 211-215 Fiberglass Mat into the basecoat while still wet and smooth with ribbed roller to remove any voids or wrinkles.
- F. Saturate top of fiberglass mat completely with Tnemec Series 239SC ChemBloc resin at 10.0 – 12.0 mils until glass attains a translucent, even appearance.
- G. Once cured, sand to remove any imperfections or fiberglass fibers that may be sticking up through the cured film. Grind if required to remove.
- H. To all horizontal and vertical surfaces, roller apply topcoat of Tnemec Series 282 Tnemec-Glaze at 8.0 – 12.0 mils DFT.
- I. Flooring shall be finished in accordance with texture approved on samples and the mock-up unit.
- J. Saw cuts - All areas where the installed lining does not transition into another surface of a different angle shall be saw cut. The saw cut shall be ¼" wide by a ¼" in depth.
- K. Expansion and Control Joints - Where specified, a joint shall be saw-cut after the lining installation and filled with a polysulfide sealant.
- L. Application in direct sunlight and/or with rising surface temperature is not allowed, as this may result in blistering of the materials due to expansion of entrapped air or moisture in the concrete. In such cases, it will be necessary to postpone the application until later in the day when the temperature of the substrate is falling.
- M. Areas not to receive containment lining shall be masked or otherwise protected to prevent these surfaces from being coated.
- N. Ensure straight, even termination of protective lining system on wall edges and flush with embedded steel.

3.04 FIELD QUALITY CONTROL, INSPECTION, AND TESTING

- A. Inspection by the Engineer or others does not limit the Contractor's responsibilities for quality control inspection and testing as specified herein or as required by the Manufacturer's instructions.
- B. Contractor and his Installer shall examine the areas and conditions under which the containment lining Work is to be performed in accordance with SSPC-SP13/NACE No. 6 and notify Engineer in writing of conditions deleterious or otherwise detrimental to the proper and timely completion of the work.

- C. Commencement of the Work of this Section shall indicate that the substrate and other conditions of installation are acceptable to the Contractor and his Installer, and will produce a finished product meeting the requirements of the Specifications. All defects resulting from such accepted conditions shall be corrected by Contractor at his own expense.
- D. Dry-Film Thickness:
 1. Wet-Film Thickness shall be taken every 100 square feet in accordance with ASTM D 4414 and recorded.
 2. The Dry-Film Thickness can be determined using surface area calculation for material consumption.
- E. Manufacturer's Services: Manufacturer or Manufacturer's representative shall make a minimum of 3 trips to the job site per area tank to observe installation including surface preparation and application.

3.05 ACCEPTANCE CRITERIA

- A. All surfaces shall be prepared in accordance with the specification and referenced standards herein.

3.06 ADJUSTMENTS AND CLEANING

- A. At the completion of the Work, Contractor shall remove all materials and debris associated with the Work of this Section.
- B. Clean all surfaces not designated to receive protective lining. Restore all other work in a manner acceptable to Engineer.
- C. Provide non-staining protective construction paper as approved over the entire surface area, with joints taped, and boards or planks where subjected to especially heavy traffic or hazards.
- D. All finished protective lining shall be protected from damage until Final Acceptance of the Work. Protective lining damaged in any manner shall be repaired or replaced at the discretion of Engineer, at no additional cost to Owner.
- E. Clean all protective lining as recommended by the manufacturer to provide finished Work acceptable to Owner just prior to Final Acceptance.

Specifier Notes: This product selection guide is written according to the Construction Specifications Institute (CSI) Format, including *Master Format*, *Section Format*, and *Page Format*, contained in the *CSI Manual of Practice*.

The section must be carefully reviewed and edited by the Architect to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the drawings.

Delete all "Specifier Notes" when editing this section.

Specifier Notes: This section covers Tnemec high-performance coating systems for commercial facilities.

This specification is only a guide listing various coating system options for various environments and should not be used as a final specification. Additional coating systems not listed in this specification are available, and may be more appropriate for your coating application. To finalize this specification, please contact www.rightergroup.com

Many coatings contain organic solvents. Consult Righter Group for compliance to local VOC regulations.

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