

This specification covers **Proline CR-GF-L** Chemical-Resistant Glass-Flake Reinforced Steel Tank Lining System. This system consists of a vinyl ester primer, and two troweled coats of glass flake filled vinyl ester. This system exhibits excellent chemical permeation resistance.

1.00 GENERAL

1.01 SECTION INCLUDES

- A. Preparation of Steel Substrate.
- B. Apply vinyl ester primer
- C. Trowel apply fiberglass flake vinyl ester.

1.02 RELATED SECTIONS

- A. These guidelines apply to the applications of glass flake linings over mild steel.
- B. The surfaces to be covered with a premium vinyl ester resin glass flake are all surfaces exposed to corrosive fluids and vapors.
- C. Materials, tank surface preparation, application and curing procedures are covered in this specification.

1.04 REFERENCES STANDARDS

- A. For reference standards tests & results refer to Manufactures Product Data Sheets

1.05 ADMINISTRATIVE REQUIRMENTS

- A. Pre installation meeting call if needed.
- B. Involve: Owner, Contractor, Consultant(s), sub-contractors effected

1.06 SUBMITTALS

- A. Samples: forward 4- 4" x 4" color samples representative of finish product for review.
- B. Manufactures' Instructions: submit to Consultant for review.
- C. Sustainable Design Submittals: as required by other sections.

1.07 CLOSEOUT SUBMITTALS

- A. Applicable testing/performance data certification(s)
- B. Certification(s) of compliance with owner's performance spec, if required
- C. Cleaning, care and maintenance instructions
- D. Material warranty information

1.08 QUALITY ASSURANCE

- A. Regulatory Agency Sustainability Approvals
- B. Applicator: Use applicator experienced in application of specified materials for a minimum of [5] [Five] years on projects of similar size and complexity. Provide list of completed projects including project name and location, name of architect, name of material manufacturer, and approximate quantity of materials applied.

- C. Applicator's Personnel: Employ only persons trained for application of specified materials.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, batch or lot number, and date of manufacture. Do not store in direct sunlight or high heat conditions.
- B. Packaging Waste Management
- C. Storage:
 - 1. Store materials in accordance with manufacturer's instructions.
 - 2. Keep containers sealed until ready for use.
 - 3. Do not subject material to excessive heat or freezing; do not apply material that has been subjected to excessive heat or freezing. Material subjected to excessive heat or freezing shall be separated from inventory and destroyed by mixing all three components. The solid reacted product shall be disposed of in environmentally sound and regulatory compliant manner.
 - 4. Shelf life: Specific for each product within system. Refer to Product Data Sheet.
- D. Handling:
 - 1. Protect materials during handling and application to prevent damage or contamination.
 - 2. Condition materials for use to 65°F – 85°F for 24 hours prior to application.

1.1 SITE CONDITIONS

- A. Ambient Conditions
 - 1. Do not apply materials if surface or air temperature is below 55°F.
 - 2. Do not apply materials if relative humidity is above 85 percent or within 5° of dew point at time of application.
- B. Existing Conditions
 - 1. Utilities, including electric, water, heat and finished lighting to be supplied by General Contractor or owner.
 - 2. Maintain temperature between 65°F – 85°F for 48 hours before, during and 48 hours after installation, or until cured.
 - 3. At the time of application ensure the minimum substrate temperature is above 55°F and the substrate temperature is 5°F above the measured dew point at the time of application.

1.2 MANUFACTURER WARRANTY

- A. Provide warranty covering materials for a period of [1] [one] year after date of installation
- B. Installer to provide suitable warranty covering workmanship

2.01 MANUFACTURER

- A. Protective Industrial Polymers www.protectpoly.com (440) 327-0015
- B. 7875 Bliss Parkway North Ridgeville Ohio 44039

2.02 MATERIALS

- A. Protect VE-CR or Protect VE-PR Flex Vinyl Ester Primer
- B. Protect VE-CR 70 Glass Flake Vinyl Ester.

2.03 QUALITY CONTROL

- A. Tests and Inspections: as required by Manufacturer.
- B. Non-Conforming Work: remove immediately and dispose off site.
- C. Coordination of Other Tests and Inspections

3.00 EXECUTION**3.01 APPLICATOR**

- A. Must be a recognized contractor of Protective Industrial Polymers

3.02 EXAMINATION

- A. The lining must be inspected and approved by a qualified inspector in order for the job to be accepted.
- B. Poor workmanship is reason for rejection. Flaws which cannot be repaired, porosity, voids, cracks, crazing, delamination, blisters, excess resin, etc. are considered to be reason for rejection and rework.
- C. Inspection and approval by the owner's representative shall not relieve the vendor from compliance with these specifications.
- D. In isolated spots, the layer may be 20% above nominal thickness. Thickness of the lining at intersecting applications may be above nominal. The thickness of the lining shall not be less than nominal at any place.

3.03 TANK PREPARATION

- A. All tank openings should be standard flanged nozzles. A 12" flanged nozzle should be placed at each end of the tank for ventilation. A man door at the end of the vessel may be used as one of these ventilation nozzles.
- B. All tank weld splatter shall be removed and sharp edges rounded, and all welds shall be ground smooth.

- C. All metal surfaces shall be abrasive blasted with grit to a "white metal" condition (NACE #1).
- D. An adequate size abrasive must be used to obtain a 2-3 mil anchor profile.
- E. All preparation dust and blast media dust must be removed from the surface by vacuuming or brushing.
- F. All outside corners must have a minimum radius of 1/8". All inside corners must be filleted (1" radius).
- G. Lining system shall not be applied until surface preparatory work is deemed adequate by a qualified inspector.
- H. All salt contamination on steel surface must be removed prior to priming.

3.05 MIXING

- A. Mix material in appropriate vessel as stated in the product's corresponding Technical Data Sheet.
- B. Mix material as directed in the product's corresponding Technical Data Sheet.

3.06 APPLICATION EQUIPMENT

- A. Protective equipment and clothing as called for in the MSDS
- B. Mortar and Mud drill mix paddles
- C. Low speed high torque drill motor
- D. High quality short nap roller covers - ¼ - 3/8 inch nap
- E. Application Trowels

3.05 APPLICATION

- A. VE-CR or VE-PR Flex Primer- If the metal surface temperature is below 50 °F, the Protect VE-CR or VE-PR Flex must not be applied. The metal surface must be dry and the dew point must be at least 5 °F below the air temperature. The surface may be warmed by introducing forced heated air.
 - 1. As soon as possible after the dust has been removed, the surface shall be primed to prevent flash rusting. The primer must be applied within 2 hours of grit blasting.
 - 2. The primer shall be allowed to cure until dry to the touch before proceeding with the trowelled VE-CR 70.
 - 3. Primed metal surfaces should be inspected and approved before the trowelled VE-CR 70 Flake is applied.
- B. VE-CR 70 Application
 - 1. Mechanically premix the glass flake mixture for 2 minutes prior to adding VE-B catalyst.
 - 2. Add the required catalyst and mix 3 additional minutes
 - 3. Trowel the VE-CR 70 at 30-40 mils WFT.
 - 4. Allow to harden. Repeat a second application if required.

NOTE: If any layer is allowed to cure overnight, it should be wiped with clean rags to remove contaminants immediately before the next layer is applied. (Wiping a primary surface with a rag wetted with a solvent, such as styrene or acetone, is often the cause of poor secondary bond formation. A solvent wetted rag may contain contaminants that will act as mold release agents. If wiping with a clean rag does not remove the contaminants, they must be removed by grinding, sandblasting, etc.) If the surface becomes tacky with a wet wipe of styrene, it may be re-coated. If the surface does not become tacky with a wet wipe of styrene, then it must be sanded or ground for re-coating. Since the temperature of the resin and the type of resin in a glass flake mixture affects the rate of cure, it is a good practice to apply a test patch to check the ability of the surface to adhere to a secondary layer. The more complete the cure of a base, the less adhesion characteristic the glass flake mixture has without surface preparation.

Post curing the entire lining at a minimum of 160 °F is desirable where highly corrosive, food products, chemicals such as bleach or conc. mineral acid is to be contained.

* Surface of final application must be washed with a biodegradable food grade soap prior to return to service

C. Tolerances:

1. Proline CR-GF-L: 60-80 mils

3.06 TESTING

- A. After Topcoat is hard, spark test at 5,000 volts to ensure pinhole free lining.
- B. Dry Film Thickness Gauge may be utilized to measure thickness.

3.07 CURING

- A. Allow the system to cure for a minimum 48 hours after application at 24°C (75°F) and 50% RH.

3.08 REPAIR

- A. Repair gouges, chip outs, and scratches as soon as possible to prevent moisture and chemical under cutting and permanent damage to the lining system.

3.10 SITE QUALITY CONTROL

- A. Site Tests and Inspections: per manufacturer's guidelines
- B. Non-Conforming Work: remove immediately and dispose off site

3.11 ADJUSTING

- A. Permitted only upon manufacturer's approval in writing

3.12 CLEANING

- A. Remove masking, draping, and other protection from adjacent surfaces.
- B. Remove remaining materials and debris from job site and dispose of them according with local rules and regulations. Leave area in clean condition free of debris.

3.13 CLOSEOUT ACTIVITIES

- A. Notify manufacturer of completion of installation
- B. Forward operation and maintenance data to owner/owner's rep
- C. Forward effective warranty date and information to owner/owner's rep

END OF SECTION

See additional legal information below

Protective Industrial Polymers may change individual product properties without notice. All sales subject to Protective Industrial Polymers' current terms and conditions of sale. Current terms and conditions can be obtained by calling 440-327-0015. The user of the Protective Industrial Polymers' product(s) must test the product(s) for suitability for the intended purpose and application before proceeding with full application of the product(s).

The most current Technical Data Sheets, System Sheets and SDS information are available at www.protectpoly.com, or by calling 440-327-0015. Installers and handlers of any Protective Industrial Polymers material must read and follow all printed information on Product Labels, Technical Data Sheets, System Data Sheets and SDS Sheets. Nothing contained in any Protective Industrial Polymers material relieves the installer, handler, owner or owner's rep of the obligation to read and follow stated warnings and instructions as presented in these referenced documents.

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