product data carboline®

Phenoline® 187 Primer

Selection & Specification Data

Generic Type Amine-cured, modified epoxy phenolic

Description PRODUCT IS DISCONTINUED. REPLACEMENT IS 187 VOC DEPENDING UPON APPLICATION. CONTACT TECH SERVICE FOR MORE INFO. Highly cross-linked primer with exceptional chemical resistance. Widely used as a tank lining primer in the petrochemical industry as well as in other aggressive immersion conditions like jet fuel, municipal and industrial wastewater as part of the tank lining system. Can also be used as a protective coating under insulation due to its excellent resistance to wet and dry cycling conditions at elevated temperatures.

Features
- Excellent overall chemical resistance
- Very good abrasion resistance and flexibility
- VOC compliant to current AIM regulations
- Meets all performance requirements of: **DOD-P-23236 Type 1, Class 1 Phenoline 187 Primer & 187 Finish system**
- **Complies with FDA 21CFR 175.300 criteria for food contact**

Color Red (0500); White (0800)

Finish Flat

Topcoat Normally top coated with Phenoline 187 Finish

Dry Film Thickness 4.0 - 6.0 mils (102 - 152 microns) per coat

Solids Content By Volume 65% +/- 2%

Theoretical Coverage Rate
1043 ft^2 at 1.0 mils (25.6 m^2/l at 25 microns)
261 ft^2 at 4.0 mils (6.4 m^2/l at 100 microns)
174 ft^2 at 6.0 mils (4.3 m^2/l at 150 microns)

Allow for loss in mixing and application.

VOC Values Thinner 2 16 oz/gal: 3.00 lbs/gal (363 g/l)
As Supplied 2.50 lbs/gal (300 g/l)

These are nominal values and may vary slightly with color.

Under Insulation Resistance
Continuous: 400 °F (204 °C)
Non-Continuous: 425 °F (218 °C)

Discoloration and loss of gloss is observed above 200°F(93°C).

Limitations
- Do not use in water immersion over 130°F (54°C).
- Epoxies lose gloss, discolor and eventually chalk in sunlight exposure.

Substrates & Surface Preparation

General Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating.

Steel
Immersion: SSPC-SP10
Non-Immersion: SSPC-SP6
Surface Profile: 2.0-3.0 mils (50-75 micron)

Substrates & Surface Preparation

Concrete **Immersion:** Concrete must be cured 28 days at 75°F (24°C) and 50% relative humidity or equivalent. Prepare surfaces in accordance with ASTM D4258-92 Surface Cleaning of Concrete and ASTM D4259 Abrading Concrete. Voids in concrete may require surfacing.

Stainless Steel Surface profile should be a dense angular 2.0-2.5 mils(50-63 microns) and is best achieved through abrasive blasting. Remove all surface contaminants that would interfere with the performance of stainless steel for the intended service such as, but not limited to, embedded iron or chlorides.

Performance Data

Test Method	System	Results
ASTM B117 Salt Spray	Blasted Steel 1ct 187 Primer 1 ct 187 Finish	No blistering, rusting, cracking, or delamination; less than 1/16" rust creepage at the scribe at 1000 hours.
ASTM D1653 Permeability Method B Condition C	Blasted Steel 1 ct 187 Primer 1 ct 187 Finish	Permeability .0076; WVP: 0.29 metric perms, 0.44 perms; MVT 5.72
ASTM D2794 Gardner Impact	Blasted Steel 1 ct. 187 Primer 1 ct. 187 Finish 180 inch lbs	Direct Impact: 5/16 inch diameter Reverse Impact: 1/16 inch diameter
ASTM D4060 Abrasion	Blasted Steel 1 ct 187 Primer 1 ct 187 Finish	163.3 mg loss CS17 Wheel 1000 gm load 1000 cycles
ASTM D4541 Adhesion (Elcometer)	Blasted Steel 1 ct. 187 Primer 1 ct. 187 Finish	840 psi
ASTM D522 Mandrel Bend test for Flexibility	Blasted Steel 1 ct 187 Primer 1 ct 187 Finish	26.4% - Actual average maximum elongation.

The Performance Data above is a Phenoline 187 Primer and Phenoline 187 Finish system. Test reports and additional data are available upon written request.

Mixing & Thinning

Mixing Power mix separately, then combine and power mix. DO NOT MIX PARTIAL KITS.

Thinning May be thinned up to 32 oz/gal (25%) with Thinner #2. Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

Ratio 4:1 Ratio (A to B)

Pot Life 4 Hours at 75°F (24°C)
Pot life ends when coating loses body and begins to sag. Pot life times will be less at higher temperatures.

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Application Equipment Guidelines

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

Spray Application (General) The following spray equipment have been found suitable.

Conventional Spray Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .055-.070" I.D. fluid tip and appropriate air cap.

Airless Spray Pump Ratio: 30:1 (min.)*
GPM Output: 3.0 (min.)
Material Hose: 3/8" I.D. (min.)
Tip Size: .015-.019"
Output PSI: 2100-2300
Filter Size: 60 mesh
PTFE packings are recommended and available from the pump manufacturer.

Brush & Roller (General) Not recommended for tank lining applications except when striping welds and touching up.

Brush Use a medium bristle brush.

Roller Use a short-nap solvent resistant roller.

Application Conditions

Condition	Material	Surface	Ambient	Humidity
Minimum	55 °F (13 °C)	50 °F (10 °C)	50 °F (10 °C)	0%
Maximum	90 °F (32 °C)	110 °F (43 °C)	100 °F (38 °C)	85%

This product simply requires the substrate temperature to be above the dew point. Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques may be required above or below normal application conditions.

Curing Schedule

Surface Temp.*	Final Cure Immersion	Maximum Recoat Time	Minimum Recoat Time
50 °F (10 °C)	NR	30 Days	4 Days
60 °F (16 °C)	30 Days	30 Days	2 Days
75 °F (24 °C)	15 Days	15 Days	24 Hours
90 °F (32 °C)	7 Days	7 Days	12 Hours

These times are based on a 4.0-6.0 mil (100-150 micron) dry film thickness. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure. Excessive humidity or condensation on the surface during curing can interfere with the cure, can cause discoloration and may result in a surface haze. Any haze or blush must be removed by water washing before recoating. If the maximum recoat time is exceeded, the surface must be abraded by sweep blasting prior to the application of additional coats. <strong

Ambient Cure Final cure temperatures below 60°F (16°C) are not recommended for tank linings.

Force Cure Force curing is beneficial to the performance of all tank linings, especially for storage of food grade products. The following schedule may be used to force cure the coating system after the final coat is applied. Cure @ 75°F (24°C) for 4 hours followed by 8 hours @ 150°F (65°C). Elevate temperature no more than 30°F (-1°C) every 30 minutes.
Final cure requirement varies depending upon exposure. Contact Carboline Technical Service for additional force curing and safety information.

Cleanup & Safety

Cleanup Use Thinner #2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

Cleanup & Safety

Safety Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions including personnel protection equipment.

Ventilation When used as a tank lining or in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. In addition to ensuring proper ventilation, appropriate respirators must be used by all application personnel.

Caution This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

Packaging, Handling & Storage

Shelf Life Part A & B: Min. 36 months at 75°F (24°C)

*Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.

Shipping Weight (Approximate) 1 Gallon Kit - 13 lbs (6 kg)
5 Gallon Kit - 63 lbs (29 kg)

Storage Temperature & Humidity 40° - 110°F (4°-43°C)
0-90% Relative Humidity

Flash Point (Setaflash) Part A: 67°F (19°C)
Part B: 68°F (20°C)
Mixed: 67°F (19°C)

Storage Store Indoors.

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Coatings - Linings - Fireproofing

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