

SELECTION & SPECIFICATION DATA

Generic Type	Polyamine cured, modified epoxy phenolic
Description	High solids epoxy lining with exceptional chemical resistance. Primarily as a tank lining, it is recommended for storage of crude oil (180°F/82°C), demineralized water (150°F/65°C), tap water (200°F/93°C) food and beverage industries, and water and wastewater exposures. Is excellent as a protective coating under insulation, operating at (400°F/204°C). Outstanding resistance to wet/dry cycling conditions at these elevated temperatures.
Features	• High solids; Low VOC formula • VOC compliant to current AIM regulations • Excellent overall chemical resistance • Excellent for crude-oil storage • Excellent resistance up to 400°F(204°C) • Excellent abrasion & thermal shock resistance • Meets the FDA requirements for 21CFR 175.300 for direct food contact • Passes EI 1541 jet fuel gum test • Complies with MIL-PRF-4556F testing
Color	Red (0500), Gray (0700); White (0800)
Finish	Semi-Gloss
Dry Film Thickness	4 - 6 mils (102 - 152 microns) per coat Two coats are needed for optimum performance. A third coat may be applied for additional thickness and/or service life.
Solids Content	By Volume 84% +/- 2%
Theoretical Coverage Rate	1347 ft²/gal at 1.0 mils (33.1 m²/l at 25 microns) 337 ft²/gal at 4.0 mils (8.3 m²/l at 100 microns) 225 ft²/gal at 6.0 mils (5.5 m²/l at 150 microns) Allow for loss in mixing and application.
VOC Values	As Supplied : 1.00 lbs/gal (119 g/l) Thinner 2 : 20% by volume 2.00 lbs./gal (240 g/l) These are nominal values and may vary slightly with color.
Under Insulation Resistance	Continuous: 400°F (204°C) Non-Continuous: 450°F (232°C)
Temperature Resistance (Immersion)	Immersion temperature resistance depends upon exposure. Consult Carboline Technical Service for specific information.

SUBSTRATES & SURFACE PREPARATION

General	Remove any oil or grease from surface to be coated in accordance with SSPC-SP1.
Steel	SSPC-SP10; Surface Profile should be dense angular 2.0-3.0 mils (50-75 µ)
Stainless Steel	Profile should be dense angular 2.0-3.0 mils (50-75 µ). Remove all surface contaminants that would interfere with the performance of stainless steel for the intended service such as, but not limited to, imbedded iron or chlorides.

Phenoline® 187 VOC

PRODUCT DATA SHEET



PERFORMANCE DATA

All test data was generated under laboratory conditions. Field testing results may vary.

Test Method	System	Results
Abrasion ASTM D4060 (CS17 Wheel, 1000 cycles, 1000 g load)	2 coats Phenoline 187 VOC	95 mg loss
Thermal Shock, 3 cycles (-10°F to 410°F) (-23°C to 210°C)	2 coats Phenoline 187 VOC	Unaffected except for discoloration
Thermal Shock, 5 cycles (-70°F to 200°F) (-57°C to 93°C)	2 coats Phenoline 187 VOC	Unaffected except for discoloration

MIXING & THINNING

Mixing	Power mix Phenoline 187 VOC Part A and Hi Performance Catalyst (also known as Phenoline 187 VOC Part B) separately, then combine and power mix. DO NOT MIX PARTIAL KITS. Requires short 15 min sweat-in time.
Thinning	Thinning will be required to properly atomize the mixed material. Thin up to 20% (25 oz/gal) with Thinner #2. Use of thinners other than those supplied by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.
Ratio	2:1 Ratio (A to B)
Pot Life	1 Hour at 75°F (24°C), 2 Hours at 60°F (15°C); less at higher temperatures. Pot life ends when coating loses body and begins to sag.

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.

Conventional Spray	Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap. Adjust air pressure to approximately 50 psi at the gun and provide 10-20 lbs. of pot pressure.
Airless Spray	• Pump Ratio: 30:1 (min.) • GPM Output: 2.5 (min.) • Material Hose: 3/8" I.D. (min.) • Tip Size: .017"-.021" • Output PSI: 1500-2300 • Filter Size: 60 mesh • PTFE packings are recommended Apply a "mist" bonding pass. Allow to dry approximately one minute but not long enough to allow film to completely dry. Apply crisscross multi-passes, moving gun at fairly rapid rate, maintaining a wet appearing film. Fast multi-passes may be applied until you have a wet film thickness of approximately 6-8 mil (150-200 µ). Repeat this procedure for the second coat to obtain an 8-12 mil (200-300 µ) DFT. Call Tech. Service for Q&A
Brush	Use medium bristle brush. Not recommended for tank lining applications except when striping welds. Avoid excessive re-brushing for best results.
Roller	Not recommended for tank lining applications except when striping welds. Use a short-nap synthetic roller with phenolic core.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	50°F (10°C)	50°F (10°C)	50°F (10°C)	0%
Maximum	90°F (32°C)	125°F (52°C)	110°F (43°C)	80%

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.	Dry to Recoat	Final Cure Immersion	Maximum Recoat Time
50°F (10°C)	36 Hours	14 Days	30 Days
60°F (16°C)	24 Hours	10 Days	21 Days
75°F (24°C)	12 Hours	7 Days	14 Days
90°F (32°C)	6 Hours	5 Days	7 Days

These times are based on a 4.0-6.0 mil (100-150 µ) dry film thickness. 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 times have been exceeded, the surface must be abraded by sweep blasting or sanding prior to the application of additional coats.

Food-grade exposures require force curing at 225°F (107°) for four hours. Raise temperature 30°F (17°C) for every 30 minutes until temperature is reached. Consult Tech Service for other curing options/schedules.

CLEANUP & SAFETY

Cleanup	Use Thinner #2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.
Safety	Read and follow all caution statements on this product data sheet and on the SDS for this product. Employ normal workmanlike safety precautions.
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. User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor levels, use MSHA/NIOSH approved supplied air respirator.
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	Phenoline 187 VOC Part A: 12 months at 75°F (24°C) Hi Performance Catalyst (also known as Phenoline 187 VOC Part B): 6 months at 75°F (24°C) Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.
Storage Temperature & Humidity	40° - 110°F (4° - 43°C); 0-100% Relative Humidity

Phenoline[®] 187 VOC

PRODUCT DATA SHEET



PACKAGING, HANDLING & STORAGE

Storage | Store Indoors

Shipping Weight (Approximate) | 1 Gallon Kit: 15 lbs (6.8 kg)
5 Gallon Kit: 75 lbs (34 kg)

Flash Point (Setaflash) | Phenoline 187 VOC Part A: 52°F (11°C)
Hi Performance Catalyst (also known as Phenoline 187 VOC Part B): 60°F (15°C)

IMMERSION DATA

Test Method	System	Results
Citric Acid 50%, 1 year immersion 100°F (38°C)	2 coats Phenoline 187 VOC	Unaffected
Corn Syrup, 1 year immersion 180°F (82°C)	2 coats Phenoline 187 VOC	Unaffected
Crude Oil (180°F/82°C), Modified NACE TM0174 Procedure B	2 coats Phenoline 187 VOC	Unaffected
Diesel (150°F/65°C), Modified NACE TM0174 Procedure B	2 coats Phenoline 187 VOC	Unaffected
Jet Fuel (150°F/65°C), Modified NACE TM0174 Procedure B	2 coats Phenoline 187 VOC	Unaffected

WARRANTY

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. All of the trademarks referenced above are the property of Carboline International Corporation unless otherwise indicated.