Phenoline® 385/187 VOC

PRODUCT DATA SHEET

SELECTION & SPECIFICATION DATA

Generic Type	High-solids, 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 compliant to current AIM regulations • Excellent overall chemical resistance to crude-oil & other petroleum products • Temperature 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 for aviation fuel handling systems • Complies with MIL-PRF-4556F testing
Color	Gray (0700), White (0800) Other limited colors may be available on special order. Contact your Carboline Representative for availability.
Finish	Semi-Gloss
Primer	Self-priming
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. **Total system not to exceed 18 mils (457 microns) DFT.**
Solids Content	By Volume 85% +/- 2%
Theoretical Coverage Rate	1363 ft²/gal at 1.0 mils (33.5 m²/l at 25 microns) 341 ft²/gal at 4.0 mils (8.4 m²/l at 100 microns) 227 ft²/gal at 6.0 mils (5.6 m²/l at 150 microns) Allow for loss in mixing and application.
VOC Values	Thinner 76 : 25 oz/gal: 1.96 lbs/gal (235 g/l) **As Supplied** : 1.00 lbs/gal (119 g/l) Thinner 225 E : 13 oz/gal: 0.56 lbs./gal (67 g/l) Thinner 2 : 25 oz/gal: 2.00 lbs./gal (240 g/l) These are nominal values and may vary slightly with color.
Dry Temp. Resistance	Continuous: 400°F (204°C) Non-Continuous: 450°F (232°C)
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 2.0-3.5 mils (50-88 µ)
Concrete or CMU	**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 Surface Cleaning of Concrete and ASTM D4259 Abrading Concrete. Voids in concrete may require surfacing.
Non-Ferrous Metals	Surface prep: SSPC-SP16 or SSPC-SP17 as relevant, with an anchor profile of 1.5 mils (37.5 µ) minimum. 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 shall be removed.

MIXING & THINNING

Mixing	Power mix Part A and 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, Thinner 76, or Thinner 225 E. 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 1/4 Hours 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: 0.017”-0.021” • 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 5-8 mil (150-200 µ). Repeat this procedure for the second coat to obtain an 8-14 mil (200-350 µ) DFT total. Multi-Coat system total should not exceed 18 mils (375 µ) DFT average. Call Tech. Service for Q&A

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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.

Brush & Roller (General) | Use a high quality brush, and apply a very light crisscross brush coat. Allow to dry for approximately 5 minutes. Then apply a heavy coat using a crisscross brush pattern. "Flow" the coating on rather than try to "brush out." Allow to dry tack-free. Repeat until sufficient film thickness is obtained. Normally, a film thickness of 2.5-3 mils (62-75 microns) can be obtained per coat by this method.

Brush | Use medium bristle brush.

Roller | Not recommended for tank lining applications except when striping welds. Use a short-nap synthetic roller with phenolic core for other applications.

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.
Note: Prior to spray application, stripe brush all weld attachments and surface irregularities by thinning a minimum of 50% by volume with Thinners 2, 76, or 225E.

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°C) for four hours. Raise temperature 30°F for every 30 minutes until temperature is reached.
See application guide for optional elevated temperature curing.

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.

CLEANUP & SAFETY

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	Part A: 12 months at 75°F (24°C) Hi Performance Catalyst: 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
Storage	Store Indoors
Shipping Weight (Approximate)	1 Gallon Kit: 15 lbs (6.8 kg) 5 Gallon Kit: 75 lbs (34 kg)
Flash Point (Setaflash)	Part A: 52°F (11°C) Hi Performance Catalyst: 60°F (15°C)

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.