

SELECTION & SPECIFICATION DATA

Generic Type	High solids phenolic-epoxy
Description	High performance, high solids, epoxy lining that is recommended for a variety of petroleum storage products including 180°F (82°C) crude oil, demineralized water 150°F (65°C), crude/water mixtures, fuel oil, jet fuel, biodiesel, and gasoline. It is also a good choice for wastewater and water exposures. Product is self-priming and is normally applied in two coats. It is also suitable for food-grade (aqueous) cargos and meets the FDA requirements for 21CFR 175.300 for direct food contact.
Features	<ul style="list-style-type: none"> • High solids; Low VOC formula • VOC compliant to current AIM regulations • Excellent for crude-oil storage • Excellent resistance to petroleum products • Excellent abrasion resistance • Excellent thermal shock resistance
Color	Light Grey (0700), White (0800), and Light Blue (0100) Colors are unmatched, designed for immersion service.
Finish	Semi-Gloss (35-70)
Primer	Self-priming
Dry Film Thickness	<p>102 - 152 microns (4 - 6 mils) per coat</p> <p>Two coats are normally recommended. Some service may require 12-14 mils DFT</p>
Solids Content	By Volume 85% +/- 2%
Theoretical Coverage Rate	<p>33.5 m²/l at 25 microns (1363 ft²/gal at 1.0 mils)</p> <p>8.4 m²/l at 100 microns (341 ft²/gal at 4.0 mils)</p> <p>5.6 m²/l at 150 microns (227 ft²/gal at 6.0 mils)</p> <p>Allow for loss in mixing and application.</p>
VOC Values	<p>As Supplied : 1.00 lbs/gal (119 g/l)</p> <p>Thinner 2 : 25 oz/gal: 1.96 lbs/gal (235 g/l)</p> <p>Thinner 76 : 25 oz/gal: 1.96 lbs/gal (235 g/l)</p> <p>These are nominal values and may vary slightly with color.</p>
Limitations	Epoxies lose gloss, discolor and eventually chalk in sunlight exposure.
Wet Temp. Resistance	Immersion temperature resistance depends upon exposure. Consult Carboline Technical Service for specific information.

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	<p>Immersion: SSPC-SP10</p> <p>Surface Profile: 2-3½ mils (50-88 microns)</p>

Phenoline 385

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SUBSTRATES & SURFACE PREPARATION

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.
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PERFORMANCE DATA

Test Method	System	Results
Abrasion ASTM D 4060 (CS 17 Wheel, 1000 cycles, 1000 g load)	Two coats of Phenoline 385	94 mg loss
Thermal Shock 5 cycles (-70° to 200°F)	Two coats of Phenoline 385	Unaffected

MIXING & THINNING

Mixing	Power mix 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 or Thinner #76 (cooler conditions). 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	1¼ Hours at 75°F (24°C), 2 Hours at 60°F (15.5°C) Pot life ends when coating loses body and begins to sag. Pot life times will be less at higher temperatures.

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, 0.070" 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	<p>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</p> <p>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 film thickness of approximately 4-6 mil/100-150 microns (approximately 5-7 wet mil/125-175 microns). Repeat this procedure for the second coat to obtain an 8-12 mil/200-300 microns DFT. Call Tech. Service for Q&A</p>

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.

Brush & Roller (General)	Recommended for small areas and repairs only. 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 a medium bristle brush.
Roller	Not recommended

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	10°C (50°F)	10°C (50°F)	10°C (50°F)	0%
Maximum	32°C (90°F)	52°C (125°F)	43°C (110°F)	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 using Phenoline 385 thinned a minimum of 50% by volume with Thinner #2.

CURING SCHEDULE

Surface Temp.	Dry to Recoat	Final Cure Immersion	Maximum Recoat Time
10°C (50°F)	36 Hours	14 Days	30 Days
16°C (60°F)	20 Hours	10 Days	21 Days
24°C (75°F)	10 Hours	7 Days	14 Days
32°C (90°F)	5 Hours	5 Days	7 Days

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 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 for four hours. Raise temperature 30°F for every 30 minutes until temperature is reached. (Other curing temperatures in table below)

Metal Temperature Curing Time

150°F/66°C 12 hours
175°F/79°C 10 hours
200°F/93°C 6 hours
225°F/107°C 4 hours

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 MSDS for this product. Employ normal workmanlike safety precautions.

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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.
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PACKAGING, HANDLING & STORAGE

Shelf Life	Part A: 12 months at 75°F (24°C) Part B: 6 months at 75°F (24°C)
Shipping Weight (Approximate)	1 Gallon Kit - 15 lbs (6.8 kg) 5 Gallon Kit - 75 lbs (34 kg)
Storage Temperature & Humidity	40° - 110°F (4° - 43°C) 0-100% Relative Humidity
Flash Point (Pensky Martens Closed Cup)	Part A: 52°F (11°C) Part B: 60°F (15°C)
Storage	Store Indoors.

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.