product data carboline®

Phenoline 311

Selection & Specification Data

Generic Type
Micaceous iron oxide filled; Novolac Epoxy Phenalkamine Primer

Description
A tank lining holding primer that has a variety of attributes including low-temperature cure, fast recoat times, moisture tolerance during application and cure, and excellent blast-hold protection. Phenoline 311 can also be used direct to metal as a corrosion resistant primer and is suitable for both new tanks and relines. It exhibits excellent surface wetting characteristics and quick cure for handling. It contains high levels of inert flake reinforcement.

Features
- Low temperature cure (20°F)
- Excellent blast-hold protection
- Excellent application characteristics
- Fast recoat times
- Moisture tolerance during application
- Meets VOC restrictions
- Low HAP's content

Gloss
Flat

Color
Red

Primers
Self-Priming

Topcoats
Topcoat selection will depend on exposures

Dry Film Thickness
For most applications: 2.0-3.0 mils (50-75 microns) per coat
For NSF 61 application service do not exceed 3 mils

Solids Content
Theoretical solids (mixed) by volume:
SBV: 47 +/- 2%

Theoretical Coverage Rates
754 mil ft² (18.5 m²/l at 25 microns)
301 sq. ft. at 2.5 mils (7.4 sq. m/l @ 62 microns)
NOTE: Material losses during mixing and applications will vary and must be taken into consideration when estimating job requirements.

Dry Temp. Resistance
Continuous: 180°F (82°C)
Non-Continuous: 220°F (104°C)

VOC Values (calculated)
As supplied: 2.25 lbs/gal. (270 g/l) mixed
VOC (EPA Method 24): 2.80 lbs/gal (336 g/l) mixed
Thinned 6 oz/gal. w/ # 225E: 2.80 lbs/gal (336 g/l)
Thinned 6 oz/gal. w/ #2: 2.99 lbs/gal. (359 g/l)
These are nominal values

HAP's Values
1.79 lbs./solid gallon

Limitations
Epoxies lose gloss, discolor and eventually chalk in sunlight exposure.

Substrates & Surface Preparation

General
Remove any oil or grease from surface to be coated with clean rags soaked in Carboline Thinner #2, or toluol.

Steel Substrates
For immersion applications: Abrasive blast to a Near-White Metal Finish in accordance with SSPC-SP 10 and obtain a 2.5-4 mil blast profile.

For non-immersion applications: Abrasive blast to a Commercial Finish in accordance with SSPC-SP 6 and obtain a 1½-2 mil (40-75 micron) blast profile for moderate to severe exposures. For mild environments, Hand Tool or Power Tool clean in accordance with SSPC-SP 2, SSPC-SP 3, or SSPC-SP 11 to produce a rust-scale free surface. For applications over damp surfaces, brush and roller is the preferred method.

Ordering Information

Prices may be obtained from Carboline Sales Representative or Main Office. Terms – Net 30 days.

	1 Gal. Kit	5 Gal. Kit
Shipping Weight (approx)	15.0 lbs. (6.8 kg)	78 lbs. (35.5 kg)

Application Equipment

Listed below are the 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
Hold gun 12-14 inches from the surface and at a right angle to the surface.

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

Airless Spray

Pump Ratio:	30:1 (min.)*
Volume Output:	3.0 gpm minimum
Material Hose:	(3/8" I.D. min.)
Tip Size:	(0.015-0.019")
Output Pressure:	(2000-2500 psi)

*Teflon packings are recommended and available from pump manufacturer.

Brush and Roll
Multiple coats may be required to obtain desired appearance, recommended dry film thickness, and adequate hiding

Avoid excessive re-brushing or re-rolling. For best results, tie-in within 10 minutes at 75°F (24°C). Use a short-nap synthetic roller cover with phenolic core

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Mixing & Thinning

Mixing Mix separately, then combine and mix in the following proportions (3:1 ratio):

	1 Gal. Kit	4 Gal. Kit
Part A	.75 gallon	3 gallon
Part B	.25 gallon	1 gallon

Thinning not normally required. May be thinned up to 6 oz/gal with Carboline Thinner #2 or exempt Thinner 225E to maintain VOC. Maintain constant agitation to ensure consistency due to settling. Tip: If spraying is stopped for more than 10 minutes it is advisable to recirculate the material lines back in.

Pot Life 3 hours at 75°F (24°C) and less at higher temperatures. Pot life ends when coating becomes too viscous to use.

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. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

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.

Application Conditions

Condition	Material	Substrate	Ambient	RH
Optimum	60°F– 75°F (16°C–24°C)	60°F-75°F (16°C-24°C)	60°F-75°F (16°C-24°C)	30-70%
Minimum	45°F (7°C)	20°F (-7°C)	20°F (-7°C)	0%
Maximum	90°F (32°C)	120°F (50°C)	100°F (35°C)	85%

Industry standards are for substrate temperatures to be above the dew point. Phenoline 311 is unique in that it can tolerate damp substrates. See Brush or Roller above. Special thinning and application techniques may be required above or below normal conditions.

Curing Schedule

For nominal film thicknesses (2-3 mils)

Surface Temperature @ 50% RH	Dry to Topcoat (Non-NSF 61) minimum	Dry to Handle	Maximum recoat time
20°F (-7°C)	24 hours	36 Hours	45 days
35°F (2°C)	2 Hours	16 Hours	45 days
50°F (10°C)	1 hours	10 Hours	30 days
75°F (24°C)	30 Minutes	3 Hours	30 days
90°F (32°C)	30 Minutes	1.5 Hours	15 days

Note: Minimum cure time for NSF 61 application is 7 days

These times are based on a 2-3 mil (50-75 micron) dry film Thickness per coat. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure. While this product can tolerate excessive humidity during curing, check for blush or haze and remove, if present, 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. For force curing, contact Carboline Technical Service for specific requirements. For application and cure conditions below 35°F, dehumidify before, during, and after application to prevent ice formation on the surface. Do not apply to substrates with ice or ice crystal formation. Dehumidify or raise the temperature to eliminate ice on the substrate.

Packaging, Handling & Storage

Flash Point (Setaflash)	Part A:	60°F (15°C)
	Part B:	74 °F (23°C)
	Carboline Thinner 2	-4°F (-20°C)
Storage (General)	Store Indoors. **KEEP DRY**	
Storage Temperature & Humidity	40 -100°F (4°C-38°C) 0-95% Relative Humidity	
Shelf Life	Part A	12 months at 76°F (24°C)
	Part B	24 months at 76°F (24°C)

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

carboline®

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October 2008 replaces April 2008