product data carboline®

Phenoline® 309

(Formerly Semstone 140S)

Selection & Specification Data

Generic Type Polyamine Epoxy

Description Single-coat, airless-applied, ultra-high build coating for use on steel and concrete substrates subject to aggressive chemical fume and immersion exposure. 309 provides exceptional resistance to thermal shock and abrasion, and has found wide acceptance in a broad variety of heavy industrial applications.

Features

- Single coat application reduces labor costs.
- Ultra-high build capabilities provides a void-free film and excellent edge protection.
- Wide chemical resistance to acids, caustics and aliphatic solvents.
- Can be mat reinforced where exposure conditions dictate.
- Application by airless spray equipment (plural component acceptable but not required).
- VOC compliant to current AIM regulations
- Meets or exceeds all requirements of:

Color White (0800), Gray (0700)

Finish Eggshell

Primers Self-priming

Topcoats Phenoline 309

Dry Film Thickness 1 coat system: 20-25 mils (500-625 microns).
2 coat system: 20-25 mils (500-625 microns) per coat.

Solids Content By Volume: 98% ± 2%

Theoretical Coverage Rate 1572 mil ft^2 (39.0 m^2/l at 25 microns)
Allow for loss in mixing and application

VOC Values As supplied: 0.1 lbs/gal (12 g/l)
These are nominal values and may vary slightly with color.

Dry Temp. Resistance Continuous: 140°F (60°C)
Non-Continuous: 180°F (82°C)
Discoloration and loss of gloss is observed above 140°F (60°C).

Wet Temp. Resistance Immersion temperature resistance depends upon exposure. Consult Carboline Technical Service for specific information. It is recommended that metal tanks operating above 140°F (60°C) be insulated.

Limitations

- Epoxies lose gloss, discolor and eventually chalk in sunlight exposure.
- This coating commonly develops an *amine-blush* during cure. While this condition will not adversely affect performance of the coating, this blush must be removed before applying additional coats and may require removal before placing into service.

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-SP5 – 2-4 mils
Non-Immersion:	SSPC-SP10 – 2-4 mils

Concrete Immersion and Non-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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Application Equipment

Spray Application (General)
Recommended for application by single or plural component airless spray. This is a high solids coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

Conventional Spray
Not recommended

Airless Spray

Pump Ratio:	45:1 (min.)
GPM Output:	3.0 (min.)
Material Hose:	½" I.D. (min.)
Tip Size:	.035"-.042"
Output PSI:	2700-3000
Filter Size:	60 mesh

Teflon packings are recommended and available from the pump manufacturer.
Contact Carboline Technical Service for plural component equipment recommendations.

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

Brush
For touch up and limited areas only.

Roller
For touch up and limited areas only.

Mixing & Thinning

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

Ratio
4:1 Ratio (A to B)

Thinning
Not recommended. Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

Pot Life
45 minutes at 75°F (24°C). Pot life ends when material begins to thicken and starts to heat up. Pot life times will be less at higher temperatures.

Cleanup & Safety

Cleanup
Use #2 Thinner 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
Vapors and/or spray mist may cause explosion. 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.

Application Conditions

Condition	Material	Surface	Ambient	Humidity
Normal	60°-85°F (16°-29°C)	60°-85°F (16°-29°C)	60°-90°F (16°-32°C)	0-80%
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)	90%

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. To reduce outgassing when applying to concrete substrates, do not apply in direct sunlight or when surface temperatures are increasing. Best results are obtained when ambient and surface temperatures are decreasing or constant.

Curing Schedule

Surface Temp. & 50% Relative Humidity	Minimum Recoat Time	Maximum Recoat Time	Final Cure for Immersion Service
50°F (10°C)	NR*	NR*	NR*
60°F (16°C)	24 Hours	4 Days	96 Hours
75°F (24°C)	12 Hours	2 Days	36 Hours
90°F (32°C)	4 Hours	1 Day	24 Hours

These times are based on a 20.0 mil (500 micron) dry film thickness. Higher film thicknesses, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure. Condensation on the surface or humidity above 25% during application and curing will result in a surface haze or blush. Any haze or blush must be removed by water washing before recoating. During high humidity conditions, it is recommended that the application be done while temperatures are increasing. If the maximum recoat time is exceeded, the surface must be washed with detergent and water, then abraded by sweep blasting prior to the application of additional coats. For force curing, contact Carboline Technical Service for specific requirements. ***Note**: Final cure temperatures below 60°F (16°C) are not recommended for tank linings.

Packaging, Handling & Storage

Shipping Weight (Approximate)
1 Gallon Kit: 12 lbs (5 kg)
5 Gallon Kit: 53 lbs (24 kg)

Flash Point (Setaflash)
Part A: >205°F (96°C)
Part B: >205°F (96°C)

Storage (General)
Store Indoors.

Storage Temperature & Humidity
40°-110°F (4-43°C)
0-100% Relative Humidity

Shelf Life
1 year if stored at 50°-85°F. To ensure maximum film build, Phenoline 310 should be applied within three (3) months of the manufactured date.

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