product data

carboline®

Phenoline®368 WG

Selection & Specification Data

Generic Type
Modified Phenolic

Description
Highly cross-linked coating with long track record and excellent performance as a lining for crude oil service, brine and water/oil mixtures. Widely used as a tank lining system in the petrochemical industry, Phenoline 368 WG performs extremely well in immersion conditions at elevated temperatures and where chemical resistance to caustics is required.

Features
- Resists crude oil and crude oil/water mixtures up to 250°F (121°C)
- Resists brines up to 220°F (104°C)
- Will cure down to 50°F (10°C)
- No extensive surface prep between coats
- Very good abrasion resistance
- Tested for Nuclear Service Level 1
- VOC compliant to current AIM regulations

Color
White (0800); Light Gray (0773)

Finish
Flat

Primers
Self-priming

Topcoats
Not recommended

Dry Film Thickness
6.0-7.0 mils (150-175 microns) per coat for a 2-coat system
4.0-5.0 mils (100-125 microns) per coat for a 3-coat system

Solids Content
65% ± 2%

Theoretical Coverage Rate
1043 mil ft^2 (26.0 m^2/l at 25 microns)
Allow for loss in mixing and application

VOC Values
As supplied: 2.40 lbs/gal (288 g/l)
Thinned:
20 oz/gal w/ Phenoline Thinner: 3.10 lbs/gal (371 g/l)
32 oz/gal w/ Phenoline Thinner: 3.40 lbs/gal (407 g/l)
These are nominal values and may vary slightly with color.

Temperature Resistance (Immersion)

Process Water:	220°F (104°C)
Brine:	220°F (104°C)
Crude Oil:	250°F (121°C)
Crude Oil/Water:	250°F (121°C)
Demin. Water:	180°F (82°C)

It is recommended that metal tanks operating above 140°F (60°C) be insulated.

Limitations
Immersion in acids or other solutions with pH less than 4.

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
Non-Immersion:	SSPC-SP10 or SSPC-SP6
Surface Profile:	2.0-3.0 mils (50-75 micron)

Concrete
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.

Performance Data

Test Method	System	Results	Report #
ASTM D4541 Adhesion (Elcometer)	2 cts 368 WG	690 psi	SR 178
ASTM 4060 Abrasion	2 cts 368 WG CS 17 Wheel 1000 gm load 1000 cycles	36.6 mg loss	SR 178
ASTM D2794 Impact	2 cts. 368 WG 100 inch lbs.	1-2 mm diameter impact damage to topcoat with no substrate exposed.	SR 178
ASTM D1653 Water Vapor Transmission	2 cts. 368 WG, free film at 9-10 mils thickness	Moisture Vapor Transmission (MVT) = 8.08 gms./24 hrs. x sq. m.; Water Vapor Pemeance (WVP) = 0.339 metric perms, 0.516 US perms; Permeability = 0.008 metric perm centimeters	02630

Test reports and additional data available upon written request.

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Phenoline® 368 WG

Application Equipment

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.
General Guidelines:

Spray Application (General) The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

Conventional Spray Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, 50' maximum material hose, .070" I.D. fluid tip and appropriate air cap.

Airless Spray

Pump Ratio:	30:1 (min.)*
GPM Output:	3.0 (min.)
Material Hose:	3/8" I.D. (min.)
Tip Size:	.017-.021"
Output PSI:	2000-2400
Filter Size:	60 mesh

*Teflon packings are recommended and available from the pump manufacturer.

Brush Recommended for touch up and striping of welds only. Use a natural bristle brush with full strokes. Avoid rebrushing.

Roller Not recommended.

Mixing & Thinning

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

Ratio 1:1 Ratio (A to B)

Thinning May be thinned up to 32 oz/gal (25%) with Phenoline Thinner. 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 4 Hours at 75°F (24°C)
Pot life ends when coating loses body and begins to sag. Pot life times will be less at higher temperatures.

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. 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°-85°F (16°-29°C)	30-70%
Minimum	55°F (13°C)	50°F (10°C)	50°F (10°C)	0%
Maximum	90°F (32°C)	120°F (49°C)	110°F (43°C)	85%

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. & 50% Relative Humidity	Minimum Recoat Time	Maximum Recoat Time	Final Cure for Immersion
50°F (10°C)	72 Hours	14 Days	N/R*
60°F (16°C)	36 Hours	14 Days	14 Days
70°F (21°C)	24 Hours	10 Days	10 Days
80°F (27°C)	18 Hours	6 Days	6 Days
90°F (32°C)	12 Hours	96 Hours	96 Hours
100°F (38°C)	6 Hours	48 Hours	48 Hours
110°F (44°C)	3 Hours	36 Hours	36 Hours
120°F (49°C)	2 Hours	24 Hours	24 Hours

These times are based on a 4.0-7.0 mil (100-175 micron) dry film thickness. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure. Holiday Testing (when required): Due to special formulation of 368 WG, it is recommended that low voltage sponge testing be done on the full system using a quick, single pass. The sponge should be damp, not dripping or wet enough to leave puddles or runs, with clean potable water. Holiday testing outside these parameters may lead to false readings. System should be cured a minimum of 24 hours at 75°F (24°C) prior to holiday testing. If the maximum recoat time is exceeded, the surface must be abraded by sweep blasting prior to the application of additional coats. *Note: Final cure temperatures below 60°F (16°C) are not recommended for tank linings.

Force Curing: Force curing is recommended for all tank linings, especially for storage of food grade products. The following schedule may be used to force cure the coating system after the final coat is applied. Elevate temperature no more than 30°F (-1°C) every 30 minutes and maintain good ventilation.

Surface Temp. & 50% Relative Humidity	Final Cure for Immersion
75°F (24°C)	4 Hours, followed by
150°F (66°C)	8 Hours

Final cure requirement varies depending upon exposure. Contact Carboline Technical Service for additional force curing and safety information.

Packaging, Handling & Storage

	2 Gallon Kit	10 Gallon Kit
Shipping Weight (Approximate)	30 lbs (14 kg)	150 lbs (68 kg)

Flash Point (Setaflash) Part A: 70°F (21°C)
Part B: 63°F (17°C)

Storage (General) Store Indoors.

Storage Temperature & Humidity 40° - 110°F (4°-43°C)
0-90% Relative Humidity

Shelf Life Part A & B: Min. 24 months at 75°F (24°C)

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

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