

Selection & Specification Data

Generic Type	Phenalkamine epoxy
Description	High performance immersion-grade epoxy that has excellent resistance to water, salt water, and municipal wastewater exposures. This coating exhibits outstanding moisture tolerance during application, low temperature cure capability, and very fast cure response for quick return to service. Can be used in immersion and non-immersion areas. Can be used as a single-coat system.
Features	<ul style="list-style-type: none"> ▪ High solids, low VOC ▪ High build (20 mils) ▪ Low temperature cure (20°F) ▪ Meets ANSI/AWWA C210-07 for interior and exterior of steel water pipelines ▪ Acceptable for potable water service (ANSI/NSF Standard 61) in one or two coats ▪ Excellent moisture tolerance during application ▪ Fast cure response
Gloss	Semi-gloss
Color	Beige (0200) and Red (0500) are standard. Gray (0700) is special order and should be used while it is still fresh to avoid ambering as it ages.
Primers	Self-Priming
Topcoats	Acrylics, Alkyds, Epoxies, Polyurethanes
Dry Film Thickness	For most applications: 5.0-8.0 mils (125-200 microns) per coat. Can be applied up to 20 mils (500 microns) in a single coat or 30 mils in two coats.
Solids Content	Theoretical solids of mixed material by volume: SBV: 80 +/- 2%
Theoretical Coverage Rates	1283 mil ft ² (32 m ² /l at 25 microns) 256 sq. ft. at 5 mils (6.4 sq. m/l @ 125 microns) NOTE: Material losses during mixing and applications will vary and must be taken into consideration when estimating job requirements.
Dry Temp. Resistance	Continuous: 200°F (93°C) Non-Continuous: 250°F (121°C)
Wet Temp. Resistance	Immersion temperature resistance depends upon exposure. Consult Carboline Technical Service for specific information. All internal linings exposed to service warmer than the opposite-side substrate (steel) temperature are subject to a phenomenon known as the "cold wall" effect. In general, the larger the temperature differential the more negative influence on coating performance. Consult your Carboline Technical Representative for assistance.
VOC Values (calculated)	As supplied: 1.42 lbs/gal (170 g/l) mixed Thinned: 16 * oz/gal w/ #2: 2.06 lbs/gal (248 g/l) These are nominal values and may vary with color.
Limitations	Epoxies lose gloss, discolor and eventually chalk in sunlight exposure. Discoloration is more pronounced with Carboguard 691. For potable water use, tanks of 20,000 gal capacity or greater are acceptable. For industrial wastewater exposures consult Carboline Technical Service department for severe service recommendations.

Substrates & Surface Preparation

General	Remove any oil or grease from surface to be coated with clean rags soaked in Carboline Thinner #2, or toluol. Concrete Do not apply coating unless concrete has cured at least 28 days @ 70°F (21°C) and 50% RH or equivalent.
Substrates	<p>Steel: Immersion: SSPC-SP10; Surface Profile: 1.5-3.0 mils (38-75 microns)</p> <p>Non-Immersion: SSPC-SP6; Surface Profile: 1.5-3.0 mils (38-75 microns) In certain situations SSPC-SP3 is acceptable for thicknesses up to 8 mils (150 microns)</p> <p>Concrete: Normally clean and dry. Remove all loose, unsound concrete. This product can tolerate damp concrete (green appearance but not visibly wet). Consult Carboline Technical Service for more specific recommendations.</p>

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	14.4 lbs.	72 lbs.

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.														
Airless Spray	<table border="0"> <tr> <td>Pump Ratio:</td> <td>45:1 (min.)</td> </tr> <tr> <td>Volume</td> <td>11.5 l/min min.</td> </tr> <tr> <td>Output:</td> <td>(2.5gpm min.)</td> </tr> <tr> <td>Material Hose:</td> <td>12.5mm min. (½" I.D. recommended)</td> </tr> <tr> <td>Tip Size:</td> <td>0.43-0.53mm (0.017-0.021")</td> </tr> <tr> <td>Output</td> <td>140-175kg/cm²</td> </tr> <tr> <td>Pressure:</td> <td>(2000-2500 psi)</td> </tr> </table>	Pump Ratio:	45:1 (min.)	Volume	11.5 l/min min.	Output:	(2.5gpm min.)	Material Hose:	12.5mm min. (½" I.D. recommended)	Tip Size:	0.43-0.53mm (0.017-0.021")	Output	140-175kg/cm ²	Pressure:	(2000-2500 psi)
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The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

Mfr. & Gun	Pump*
Use either model below:	Huskie
Graco 207-300	(DeVilbiss)
Binks Model 520	Bulldog 45:1
	Jupiter 8D

*Teflon packings are recommended and available from pump manufacturer.

Carboguard 691

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

Brush or Roller Not recommended for tank lining applications except when striping welds. For non-immersion applications over damp surfaces, brush and roller is the preferred method. 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). Thin up to 12.5% by volume per gallon with Carboline #2. Use a short-nap synthetic roller cover with phenolic core

Mixing & Thinning

Mixing Mix separately, then combine and mix in the following proportions (1:4 ratio):

	<u>1 Gal. Kit</u>	<u>5 Gal. Kit</u>
Part A	.2 gallon	1 gallon
Part B	.8 gallon	4 gallon

Thin up to 12.5% by volume with Carboline Thinner #2. Do not exceed 16oz. of Thinner #2.

Pot Life 1.5 hours at 75°F (24°C) and less at higher temperatures. Pot life ends when coating becomes too viscous to use.
*Use of Thinner other than stated may void UL or NSF approval.

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

<u>Condition</u>	<u>Material</u>	<u>Substrate</u>	<u>Ambient</u>	<u>RH</u>
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. For immersion conditions it is recommended to follow this procedure. For non-immersion conditions Carboguard 691 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 (5-8 mils)

<u>Surface Temperature</u> <u>@ 50% RH</u>	<u>Dry to recoat minimum</u>	<u>Minimum cure for immersion service</u>	<u>Maximum recoat time*</u>
20°F (-7°C)	72 hours	45 days	30 days
35°F (2°C)	17 Hours	30 Days	30 Days
60°F (14°C)	6 hours	14 days	14 days
75°F (24°C)	2 hours	7 days	14 days
90°F (32°C)	2 hours	6 days	7 days

These times are based on recommended coverage rates.

These times are based on a 5.0-8.0 mil (125-200 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. 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. 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.

*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. Exposure to elevated temperatures or sunlight can dramatically reduce the maximum recoat times

For high film thicknesses (20+ mils)

<u>To Recoat</u>	<u>Temperature</u>	<u>At 20 mils*</u>
	35°F (10°C)	2 days
	60°F (16°C)	40 hours
	75°F (24°C)	24 hours
	90°F (32°C)	24 hours

*Carboguard 691 that has been applied at thicknesses greater than 25 mils will require longer cure times, especially if applied thinned.

Packaging, Handling & Storage

Flash Point (Setaflash) Part A: 300°F (148°C)
Part B: 45 °F (7°C)
Thinner 2: 23°F (-5°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: 24 months at 76°F (24°C)
Part B: 12 months at 76°F (24°C)

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

