

SELECTION & SPECIFICATION DATA

Generic Type	Epoxy Phenalkamine
Description	An all-purpose immersion-grade epoxy that has a variety of attributes including low-temperature cure, surface tolerance, fast recoat times, moisture tolerance during application and cure, and excellent corrosion protection. Can be used direct to metal as a corrosion resistant primer, an intermediate coating over itself and many other primers, and can be used as a finish coat. Suitable for both maintenance and new construction projects due to its excellent surface wetting characteristics and quick cure for handling. May also be used for immersion in fresh or salt water (marine) exposures. Meets IMO performance for ballast tanks for marine vessels.
Features	<ul style="list-style-type: none"> • Low temperature cure (20°F) • Excellent corrosion protection • Excellent application characteristics • Fast recoat times • Moisture tolerance during application • Continues to cure underwater • Extended recoat window for atmospheric exposures (6 months for most topcoats) • Meets IMO Performance Standard for Protective Coatings MSC.215(82): 2006 for sea water ballast tanks
Color	0500 (Red), 0200 (Beige), 0700 (Gray), 0800 (White), 0900 (Black) Limited other colors may be available. Contact your Carboline Representative for availability.
Gloss	Satin
Primer	Self-Priming
Dry Film Thickness	4 - 6 mils (102 - 152 microns) per coat
Solids Content	By Volume 65% +/- 2%
Theoretical Coverage Rate	1043 ft ² /gal at 1.0 mils (25.6 m ² /l at 25 microns) 261 ft ² /gal at 4.0 mils (6.4 m ² /l at 100 microns) 174 ft ² /gal at 6.0 mils (4.3 m ² /l at 150 microns) Allow for loss in mixing and application.
VOC Values	<p>As Supplied : 2.47 lbs/gal (296 g/l mixed)</p> <p>Thinner 76 : Thinned 8% (10.5 oz/gal): 2.79 lbs/gal (337 g/l)</p> <p>Thinner 248 : Thinned 8% (10.5 oz/gal): 2.79 lbs/gal (337 g/l)</p> <p>Thinner 38 : Thinned 8% (10.5 oz/gal): 2.79 lbs/gal (337 g/l)</p> <p>These are nominal values and may vary with color.</p>
Dry Temp. Resistance	Continuous: 180°F (82°C) Non-Continuous: 220°F (104°C)
Limitations	Epoxies may lose gloss, discolor and chalk when exposed to sunlight.
Topcoats	<p>May be coated with acrylics, epoxies, alkyds, polyurethanes, polyaspartics or siloxanes depending on exposure and need.</p> <p>Consult the topcoat's product data sheet for compatibility.</p>

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	<p><u>Atmospheric Exposure:</u> For optimal performance: Hand Tool or Power Tool clean in accordance with SSPC-SP 2, SSPC-SP 3, or SSPC-SP11 to produce a rust-scale free surface. For maximum performance: SSPC-SP 6 (or greater) with a 1½-3 mil (40-75 micron) blast profile.</p> <p><u>Immersion Service:</u> Minimum near white metal cleanliness in accordance with SSPC-SP10.</p> <p>When using under fireproofing products, defer to the primer surface preparation requirements in the product data sheet of the fireproofing product.</p>
Concrete or CMU	Remove all loose, unsound concrete. Remove all oils or other non-compatible sealers or treatments. Do not apply coating unless the concrete has cured at least 28 days @ 70 F (21 C) and 50% relative humidity or equivalent.
Non-Ferrous Metals	Surface profile should be a dense angular 1.5 - 3 mils and is best achieved through abrasive blasting in accordance with SSPC-SP16 for atmospheric exposure, or SSPC-SP17 for immersion environments.

MIXING & THINNING

Mixing	Mix separately, then combine and mix until homogenous.
Thinning	<p>Preferred Thinner Uses and Application: For atmospheric applications thin up to 8% by volume with Carboline Thinner 248, Thinner 10 or Thinner 76, or 8% by volume per with Thinner 33 for brush and roller.</p> <p>Alternate Compatible Thinners for Atmospheric Service: Carboline Thinner 2, 10, 15, 76, 225E, 229, 236E, 243E, 248 and Plasite Thinner #19 or #20</p> <p>Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.</p>
Ratio	4:1 (Part A: Part B)
Pot Life	3 hours at 75°F (24°C) and less at higher temperatures. Pot life ends when coating becomes too viscous to use.

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.
Airless Spray	<p>Pump Ratio: 30:1 (min.) Volume Output: 2.5 gal/min (9.5 l/min) Material Hose: 3/8" I.D. min (9.5 mm) Tip Size: 0.017-0.021" (0.43-0.53 mm) Fluid Pressure: 2000-2500 psi (13.8-17.2 MPa) *PTFE packings are recommended and available from pump manufacturer.</p>
Brush & Roller (General)	For 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.

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.

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.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	45°F (7°C)	20°F (-7°C)	20°F (-7°C)	0%
Maximum	90°F (32°C)	120°F (49°C)	100°F (38°C)	95%

Industry standards are for substrate temperatures to be above the dew point. Carboguard 635 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

Surface Temp.	Dry to Touch	Dry to Handle	Dry to Topcoat Minimum	Dry to Topcoat Maximum
20°F (-7°C)	4 Hours	36 Hours	24 Hours	180 Days
35°F (2°C)	2 Hours	16 Hours	2 Hours	180 Days
50°F (10°C)	1 Hour	10 Hours	1 Hour	180 Days
75°F (24°C)	30 Minutes	3 Hours	45 Minutes	180 Days
90°F (32°C)	15 Minutes	30 Minutes	30 Minutes	180 Days

These times are to be used as a guideline.

The listed times in the chart above are based on a 4-6 mil (100-150 micron) dry film thickness per coat. Deviation from those thicknesses may compromise the performance and adhesive properties of the film. Higher film thickness, insufficient ventilation or cooler temperatures could result in solvent entrapment and premature failure. Excessive humidity or condensation on the surface during curing will not affect performance but may cause discoloration and result in a surface haze. Any haze or blush must be removed by water washing before recoating. Recoat intervals may vary from those listed above when using under intumescent fireproofing products. Consult Carboline Technical Service for recommended cure times before applying Carboline intumescent products. 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. Do not apply to substrates with ice or ice crystal formation. Dehumidify or raise the temperature to eliminate ice on the substrate. This product will tolerate drops in temperature to 0°F (-17°C) during its cure and will continue to cure when the temperature rises. Follow "Cure for Service" guideline listed above to determine when the product is fully cured.

Marine Use : Undocking time of 24 hours @75°F

The optimum time to topcoat with an antifoulant is when the 635 is "touch-tacky." If the touch-tacky time has been exceeded, or if the film is "glossy," you can generally re-prime/refresh the first coat of 635 with a fresh coat of itself within 30 days. The longer the first coat has to cure, particularly in sunlight exposure or elevated temps, the higher risk of inadequate adhesion. If those maximum recoat times have been exceeded, the surface must be abraded by sweep blasting or sanding prior to the application of additional coats.

Maximum Topcoat Time for Atmospheric Use: 180 days

Surface Temp.	Dry to Topcoat Minimum	Dry to Topcoat with Antifoulant Maximum	Dry to Topcoat Maximum
20°F (-7°C)	24 Hours	36 Hours	30 Days
35°F (2°C)	2 Hours	16 Hours	30 Days
50°F (10°C)	1 Hour	8 Hours	30 Days
75°F (24°C)	45 Minutes	4 Hours	30 Days
90°F (32°C)	30 Minutes	3 Hours	30 Days

CURING SCHEDULE

The curing schedule above references curing times for immersion service when an antifoulant topcoat is used.

The optimum time to topcoat with an antifoulant is when the film is "touch-tacky." If the touch-tacky time has been exceeded, or if the film is "glossy," you can generally re-prime/refresh the first coat with a fresh coat of itself. High temps and/or sunlight exposure may shorten this recoat schedule.

Marine Use: Undocking time of 24 hours @75°F

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 SDS for this product. 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, workers should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

PACKAGING, HANDLING & STORAGE

Shelf Life	Part A: 24 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.
Storage Temperature & Humidity	40 -100°F (4°C-38°C) 0-95% Relative Humidity
Storage	Store Indoors. KEEP DRY
Shipping Weight (Approximate)	• 1 Gal. Kit - 14 lbs. • 5 Gal. Kit - 65 lbs.
Flash Point (Setaflash)	Part A: 66°F (19°C) Part B: 80 °F (27°C) Mixed: 84°F (29°) Carboline Thinner 76: 23°F (-5°C)

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 to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. Carboline warrants our products to be free of manufacturing defects in accord with applicable Carboline quality control procedures. THIS WARRANTY IS NOT VALID WHEN THE PRODUCT IS NOT: (1) APPLIED IN ACCORDANCE WITH CARBOLINE'S SPECIFICATIONS, AND/OR (2) PROPERLY STORED, CURED, AND USED UNDER NORMAL OPERATING CONDITIONS. Carboline assumes no responsibility for coverage, performance, injuries, or damages resulting from use of the product. If this product is found not to perform as specified upon inspection by a Carboline representative during the warranty period, Carboline's sole obligation, if any, is to replace the Carboline product(s) proven to be defective or refund the purchase price thereof, at Carboline's sole option. Carboline shall not be liable for any other losses or damages. This warranty excludes (1) labor and costs of labor for the application or removal of any product, and (2) any incidental or consequential damages, whether based on breach of express or implied warranty, negligence, strict liability or any other legal theory. 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. The whole text of this Product Data Sheet, as well as the documents derived from it, have been written in English, and for legal purposes the English version shall prevail.