product data

carboline®

Carboguard® 635

NSF NSF/ANSI 61

Selection & Specification Data

Generic Type Cross-linked epoxy polymeric amine

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. Carboguard 635 can be used direct to metal as a corrosion resistant primer or as an intermediate coating over other primers. It is suitable for both maintenance and new construction projects due to its excellent surface wetting characteristics and quick cure for handling. It may also be used for immersion in potable water, fresh water, or salt water (marine) exposures. *See also marine-version data sheet.*

Features

- Low temperature cure (20°F)
- Excellent corrosion protection
- Excellent application characteristics
- Fast recoat times
- Moisture tolerance during application
- Extended recoat window for atmospheric exposures (6 months for most topcoats)

Gloss Satin

Color Potable Water Use: (0200) Beige, (0700) Grey, and (0800) White; Other Colors: Red and Black

Primers Self-Priming

Topcoats Acrylics, Alkyds, Epoxies, Polyurethanes, Polysiloxanes

Dry Film Thickness For most applications: 4.0-6.0 mils (100-150 microns) per coat. *Note: Thicknesses above this range may result in higher gloss appearance which can interfere with topcoat adhesion. Follow "Curing Schedule" notes to mitigate possible adhesion issues.*

Solids Content Theoretical solids (mixed) by volume:
SBV: 65 +/- 2%

Theoretical Coverage Rates 1042 mil ft² (25 m²/l at 25 microns)
260 sq. ft. at 4 mils (6.4 sq. m/l @ 100 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: 2.47 lbs/gal (296 g/l) mixed
Thinned: (8%) 10.5 oz/gal w/ #248 or 76: 2.79 lbs/gal (337 g/l)
These are nominal values and may vary with color.

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

Potable Water Use Limitations @75°F

Cure Between Coats	Final Cure	Max DFT	# of Coats (mils/ct)	Rating
45 minutes	7 days	12 mils	2 (6 mils/ct)	>1,000 gal (tank)

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 **Steel:** (atmospheric exposures) For optimal performance: 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 maximum performance: SSPC-SP 6 (or greater) with a 1½-2 mil (40-75 micron) blast profile.
Steel: (immersion service): White metal cleanliness in accordance with SSPC-SP10 minimum

Concrete: Remove all loose, unsound concrete. Remove all oils or other non-compatible sealers or treatments. Consult Carboline Technical Service for more specific recommendations.

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)	14 lbs.	65 lbs. (30 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.

Airless Spray

Pump Ratio:	30:1 (min.)
Volume	9.5 l/min min.
Output:	(2.5gpm min.)
Material	905 mm min.
Hose:	(3/8" I.D. min.)
Tip Size:	0.43-0.53mm (0.017-0.021")
Output	140-175kg/cm²
Pressure:	(2000-2500 psi)

Use a 3/8" minimum I.D. material hose

*Teflon packings are recommended and available from pump manufacturer.

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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 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. 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.

Mixing & Thinning

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

	1 Gal. Kit	5 Gal. Kit
Part A	.8 gallon	4 gallon
Part B	.2 gallon	1 gallon

Thinning For atmospheric applications thin up to 8% by volume with Carboline Thinner #248 or 76 or 8% by volume per with Thinner #33 for brush and roller. For immersion (including potable water), use Thinner #38 up to 8% by volume.

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)	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

Non-Immersion Schedule

Surface Temperature @ 50% RH	Dry to Touch	Dry to Handle	Dry to Topcoat Minimum	Dry to Topcoat Maximum
20°F (-7°C)	4 hrs	36 hrs	24 hrs	180 Days
35°F (2°C)	2 hrs	16 hrs	2 hrs	180 Days
50°F (10°C)	1 hr	10 hrs	1 hr	180 Days
75°F (24°C)	30 min	3 hrs	45 min	180 Days
90°F (32°C)	15 min	30 min	30 min	180 Days

Immersion Schedule – 635 or Antifoulant Topcoat

Surface Temperature @ 50% RH	Dry to Topcoat Minimum	Dry to Topcoat with Antifoulant Maximum*	Dry to Topcoat with 635* Maximum
20°F (-7°C)	24 hrs	36 hrs	Up to 30 days; high temps and/or sunlight exposure may shorten this recoat schedule
35°F (2°C)	2 hrs	16 hrs	
50°F (10°C)	1 hr	8 hrs	
75°F (24°C)	45 min	4 hrs	
90°F (32°C)	30 min	3 hrs	

***These times are to be used as a guideline. 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 reprime/refresh the first coat of 635 with a fresh coat of itself. 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. Contact your local Carboline Marine Representative for assistance/guidance.**

Marine Use: *Undocking time* of 24 hours @75°F
Potable Water Use: 7 day cure after final coat @75°F

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. 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:	66°F (19°C)
Part B:	80°F (27°C)
Mixed:	84°F (29°C)
Carboline Thinner 76	23°F (-5°C)

Storage (General) Store Indoors. **KEEP DRY**

40 -100°F (4°C-38°C)
0-95% Relative Humidity

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.**

carboline®
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