



Carboguard® 890 & 890 LT

MARINE/OFFSHORE COATINGS

product data

Selection & Specification Data

Generic Type	Cycloaliphatic Amine Epoxy						
Description	Highly chemical resistant epoxy mastic coating with exceptionally versatile uses in all marine and industrial markets. Self-priming and suitable for application over most existing coatings, and tightly adherent to rust. Carboguard 890 serves as stand-alone system for a variety of chemical environments. Carboguard 890 is also designed for various immersion conditions.						
Features	<ul style="list-style-type: none">▪ Excellent chemical resistance▪ Surface tolerant characteristics▪ Conventional and low-temperature versions▪ Self-priming and primer/finish capabilities▪ Very good abrasion resistance▪ VOC compliant to current AIM regulations▪ Low temperature (non-immersion) version available for cure down to 35°F▪ Suitable for use in USDA inspected facilities						
Color	See Carboline Color Chart. For immersion service (890) use factory made material.						
Finish	Gloss						
Primers	Self-priming. May be applied over inorganic zinc primers and other tightly adhering coatings. A mist coat may be required to minimize bubbling over inorganic zinc primers.						
Topcoats	Acrylics, Epoxies, Polyurethanes, Polysiloxanes						
Dry Film Thickness	4.0-6.0 mils (100-150 microns) per coat 6.0-8.0 mils (150-200 microns) over light rust and for uniform gloss over inorganic zincs. Don't exceed 10 mils (250 microns) in a single coat or two (5-mil) coats wet-on-wet (see Curing). Excessive film thickness over inorganic zincs may increase damage during shipping or erection.						
Solids Content	By Volume (890): 75% ± 2% (890LT): 80% ± 2%						
Theoretical Coverage Rate	890: 1203 mil ft ² (30.0 m ² /l at 25 microns) 241 ft ² at 5 mils (6.0 m ² /l at 125 microns) 890LT: 1283 mil ft ² (31.0 m ² /l at 25 microns) 257 ft ² at 5 mils (6.3 m ² /l at 125 microns) Allow for loss in mixing and application						
VOC Values	<table><tr><td></td><td>890</td><td>890 LT</td></tr><tr><td>As supplied</td><td>1.7lbs/gal (214 g/l)</td><td>1.5lbs/gal (180g/l)</td></tr></table>		890	890 LT	As supplied	1.7lbs/gal (214 g/l)	1.5lbs/gal (180g/l)
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Dry Temp. Resistance	Continuous: 250°F (121°C) Non-Continuous: 300°F (149°C) Discoloration and loss of gloss is observed above 200°F (93°C).						
Limitations	Do not apply over latex coatings. Carboguard 890 LT should only be used as a primer or intermediate coat; and should not be used for immersion service. Discoloration may be objectionable if used as a topcoat.						

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 (890 only): SSPC-SP10 Non-immersion: SSPC-SP6 1.5-3.0 mils (38-75 microns) SSPC-SP2 or SP3 are suitable cleaning methods for mild environments.
Galvanized Steel	Prime with specific Carboline primers as recommended by your Carboline Sales Representative. Refer to the specific primer's Product Data Sheet for substrate preparation requirements.
Previously Painted Surfaces	Lightly sand or abrade to roughen surface and degloss the surface. Existing paint must attain a minimum 3B rating in accordance with ASTM D3359 "X-Scribe" adhesion test.

Performance Data

Test Method	System	Results	Report #
ASTM D3359 Adhesion	Blasted Steel 1 ct. 890	5A	0270
ASTM D4060 Abrasion	Blasted Steel 1 ct. Epoxy Pr. 1 ct. 890	85 mg. loss after 1000 cycles, CS17 wheel, 1000 gm. load	02411
ASTM B117 Salt Fog	Blasted Steel 2 cts. 890	No effect on plane, rust in scribe. 1/16" undercutting at scribe after 2000 hours	02594
ASTM B117 Salt Fog	Blasted Steel 1 ct. IOZ 1 ct. 890	No effect on plane, no rust in scribe and no undercutting after 4000 hours	L40-42,45,95
ASTM D1735 Water Fog	Blasted Steel 1 ct. Epoxy Pr. 1 ct. 890	No blistering, rusting or delamination after 2800 hours	08564
ASTM D3363 Pencil Hardness	Blasted Steel 2 cts. 890	Greater than 8H	02775
ASTM D2486 Scrub Resistance	Blasted Steel 1 ct. 890	93% gloss retained after 10,000 cycles w/ liquid scrub medium	03142

Test reports and additional data available upon written request.

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Carboguard® 890 & 890 LT

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) 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 Pressure pot equipped with dual regulators, 3/8" I.D. minimum 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: 2100-2300
Filter Size: 60 mesh
*Teflon packings are recommended and available from the pump manufacturer.

Brush & Roller (General) 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).

Brush Use a medium bristle brush.

Roller Use a short-nap synthetic roller cover with phenolic core.

Mixing & Thinning

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

Ratio 890 and 890 LT 1:1 Ratio (A to B)

Thinning* Spray: Up to 13 oz/gal (10%) w/ #2
Brush: Up to 16 oz/gal (12%) w/ #33
Roller: Up to 16 oz/gal (12%) w/ #33
Thinner #33 can be used for spray in hot/windy conditions. Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.
*See VOC values for thinning limits.

Pot Life 890 3 Hours at 75°F (24°C)
890 LT 2 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. 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.

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Application Conditions

890				
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)	80%

890 LT				
Normal	60-85°F (16-29°C)	60-85°F (16-29°C)	60-90°F (16-32°C)	10-80%
Minimum	40°F (4°C)	35°F (2°C)	35°F (2°C)	0%
Maximum	90°F (32°C)	125°F (52°C)	110°F (43°C)	80%

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

890 (Based on 4-8 mils, 100-200 microns dry film thickness.)				
Surface Temp. & 50% Relative Humidity	Dry to Recoat	Dry to Topcoat w/ Other Finishes	Final Cure	
			General	Undocking
50°F (10°C)	12 Hours	24 Hours	3 Days	N/R
60°F (16°C)	8 Hours	16 Hours	2 Days	10 Days
75°F (24°C)	4 Hours	8 Hours	1 Day	5 Days
90°F (32°C)	2 Hours	4 Hours	16 Hours	3 Days

890 LT (Based on 5 mils, 125 microns dry film thickness.)				
Surface Temp. & 50% Relative Humidity	Dry to Touch	Dry to Handle	Dry to Recoat & Topcoat w/ Others	Final Cure General Service
35°F (2°C)	5 Hours	18 Hours	20 Hours	7 Days
40°F (4°C)	4.5 Hours	15.5 Hours	16 Hours	5 Days
50°F (10°C)	3.5 Hours	6.5 Hours	12 Hours	3 Days
60°F (16°C)	2 Hours	5 Hours	8 Hours	2 Days
75°F (24°C)	1.5 Hours	2 Hours	4 Hours	24 Hours
90°F (32°C)	1 Hour	1.5 Hours	2 Hours	16 Hours

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. During high humidity conditions, it is recommended that the application be done while temperatures are increasing. **Maximum recoat/topcoat times are 30 days for epoxies and 90 days for polyurethanes at 75°F (24°C).** 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. 890 LT applied below 50°F (10°C) may temporarily soften as temperatures rise to 60°F (16°C). This is a normal condition and will not affect performance. *890 and 890LT may be topcoated with themselves wet-on-wet (allow 5-min flash time between coats) in two 5 mil coats.

Packaging, Handling & Storage

Shipping Weight (Approximate)	2 Gallon Kit 29 lbs (13 kg)	10 Gallon Kit 145 lbs (66 kg)
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Flash Point (Setaflash)	89°F (32°C) for Part A; 890 & 890 LT 73°F (23°C) for Part B; 890 & 890 LT
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Storage Temperature & Humidity	40° -110°F (4°-43°C) Store indoors. 0-100% Relative Humidity
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Shelf Life: 890 & 890LT	Part A: 36 months at 75°F (24°C) 890 Part B: 15 months at 75°F (24°C) 890 LT Part B: 15 months at 75°F (24°C)
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***Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.**

