

SELECTION & SPECIFICATION DATA

Generic Type	Solventless two-component crosslinked epoxy
Description	Solventless, clear, epoxy lining that can be applied using reinforced glass fibers specifically designed to comply with API RP652 for thick-film tank bottom lining repairs. API RP652 specifically recommends "long fiber" reinforcement which can be achieved using a glass mat or chopped glass. The system is suitable for exposures in water, crude oil, aromatic distillates and unblended gasolines. It can be applied by standard or plural-component airless spray equipment depending on the glass reinforcement used.
Features	<ul style="list-style-type: none"> • Solventless, high performance protection • Low-to-no odor • Easy to apply by standard equipment • Excellent chemical resistance • Fast cure • Tough abrasion resistant film • Excellent flexibility • Excellent corrosion protection • Impact resistant • High-build application • "Long fiber" internal film reinforcement • Low temperature cure (35 °F)
Color	Clear only
Finish	High Gloss Epoxies lose gloss, discolor and eventually chalk in sunlight exposure
Primer	Self-priming, or Phenoline 311 as a holding primer
Dry Film Thickness	508 - 762 microns (20 - 30 mils) per coat Two coats are recommended per API RP652 using glass reinforcement
Solids Content	By Volume 99% +/- 2%
Theoretical Coverage Rate	39.0 m ² /l at 25 microns (1588 ft ² /gal at 1.0 mils) 1.9 m ² /l at 500 microns (79 ft ² /gal at 20.0 mils) 1.3 m ² /l at 750 microns (53 ft ² /gal at 30.0 mils) Allow for loss in mixing and application.
VOC Values	As Supplied : 0.06 lbs./gal 7 g/l
Dry Temp. Resistance	Continuous: 121°C (250°F) Non-Continuous: 149°C (300°F) Discoloration and loss of gloss is observed above 200 °F (93 °C).

SUBSTRATES & SURFACE PREPARATION

General	Remove all oil or grease from the surface to be coated with clean rags soaked in Thinner 2 or Carboline Surface Cleaner 3 (refer to Surface Cleaner 3 instructions) in accordance with SSPC-SP1. For girth weld areas, all burrs, weld slag and other matter shall be removed to achieve a smoother surface prior to blasting.
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Carboguard 695 CLR

PRODUCT DATA SHEET



SUBSTRATES & SURFACE PREPARATION

Steel	This material is used to repair steel bottom storage tanks which are typically pitted and may have severe loss of steel. Heavy pits need to be filled in with suitable putty or resin while other areas may need steel plate overlay or replacement. Abrasive blast to a Near White Metal Finish in accordance with SSPC-SP 10 and obtain a 3.0 mil (75 micron) blast profile. If the blasted steel cannot be coated before it begins to flash rust, a holding primer such as Phenoline 311 should be used.
Concrete	Clean and dry concrete. Remove all loose unsound concrete. Do not apply coating unless concrete has cured at least 28 days at 70 °F (21 °C) and 50% RH or equivalent. Prepare surfaces in accordance with ASTM D4258 Surface Cleaning of Concrete and ASTM D4259 Abrading Concrete. Voids in concrete may require filling/surfacing.
Coving	Also applies to lap seams, welded areas, depressions and chine areas. Even out these abrupt transitions using a suitable epoxy putty (such as Carboguard 695 PM) or transition material.

PERFORMANCE DATA

All test data was generated under laboratory conditions. Field testing results may vary.

Test Method	System	Results
ASTM D790	695 CLR / .75 oz mat / 695 CLR	4500 psi
ASTM D790	695 CLR / 1 oz mat / 695 CLR	5,500 psi
ASTM D790	695 CLR / 1 oz mat / 695 CLR / Pigmented Gel Coat	10,000 psi
ASTM D790	695 CLR / 1.5oz mat / 695 CLR	12,000 psi

Carboguard 695 CLR should be topcoated with a suitable Carboline lining for the intended chemical service. Consult Carboline for appropriate recommendations.

MIXING & THINNING

Mixing	Premix each component separately, then add together and mix until uniform.
Thinning	Thinning is not normally required. Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.
Ratio	3:1 Ratio (A to B)
Pot Life	30 minutes (large kit) at 80 °F (27 °C). The pot life ends when the material 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.

Spray Application (General)	This product may be applied using brush, roller or trowel. Listed below are general equipment guidelines for the spray application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.
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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.

Application Procedure

Review NACE No.10/SSPC-PA 6 Joint Standard for further details. Listed below is an abbreviated summary of the key steps following surface prep, optional holding primer application, and 695 PM (putty).

Mat Reinforcement Method

Also refer to Carboguard 695 CLR Pictorial Instructions.

1. Spray apply a resin (flood) coat at 20-30 mils.
2. Lay sections of pre-cut mat. Selection of mat is critical for proper "wetting" by the resin. Acceptable mat can be purchased from Carboline (Chopped Strand Mat; 3/4 oz) or from Saint-Gobain (Vetrotex Division), M127, 3/4 oz/ft².
3. Using ribbed rollers, roll the resin into the mat to fully saturate the mat and remove air entrapment.
4. Spray 2nd resin coat at 25-30 mils. Allow to cure overnight.
5. Sand to remove any protruding fibers.
6. Spray apply a final (clear or pigmented) gel coat at 20-25 mils, to seal and cover the reinforced coating system.
7. When the final coat (system) has cured sufficiently to pass 50 double rubs with MEK, it is suitable for service.

When used as a prime/fill coat only for pitted steel; mix and roller apply (spray is acceptable with back-rolling) to ensure complete coverage and pit-filling is accomplished. Allow to dry overnight before topcoating.

Airless Spray

Airless spray equipment capable of 6000 psi (minimum 64:1 airless pump) is required for the application of this material. Recommended tip size is 0.021-0.025". Contact Carboline Technical Service for additional information. Plural component equipment may also be used if the material can not be sprayed within the working time of the mixed material.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	21°C (70°F)	2°C (35°F)	2°C (35°F)	10%
Maximum	32°C (90°F)	43°C (110°F)	43°C (110°F)	80%

This product 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.

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PRODUCT DATA SHEET



CURING SCHEDULE

Surface Temp.	Dry to Handle	Final Cure Immersion
2°C (35°F)	72 Hours	10 Days
10°C (50°F)	36 Hours	7 Days
24°C (75°F)	10 Hours	3 Days
38°C (100°F)	6 Hours	36 Hours

*Longer cure times are generally needed for more aggressive service.

Force Cure Bake Cycle (optional)

Carboguard 695 CLR has a force cure bake cycle of 3.5 hours at 130 °F (54 °C) once the product has had an ambient cure of 15 minutes at 75 °F (24 °C).

Note: For the bake cycle, increase the surface temperature from 75 °F (24 °C) to 130 °F (54 °C) at a rate not exceeding 30 °F (16 °C) every 15 minutes. Following the 3.5-hour cure, allow the lining to air dry for an additional two hours prior to placing in service. Insufficient ventilation or cooler temperatures will require longer cure times. 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 if recoating. The times above are for untopcoated Carboguard 695 CLR. When other topcoats (linings) are used; consult specific lining for cure to service times.

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. Employ normal workmanlike safety precautions. Keep container closed when not in use.
Ventilation	While this is a solventless epoxy, it is common practice when used as a tank lining or in enclosed areas to circulate the air during and after application until the coating is cured. Minimal protection is needed when proper ventilation is achieved. The ventilation system should be capable of preventing any solvent vapor concentration from reaching the lower explosion limit for any solvents that may be present. 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.

PACKAGING, HANDLING & STORAGE

Shelf Life	Part A: 24 months at 75 °F (24 °C) Part B: 18 months at 75 °F (24 °C) * Shelf Life : (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.
Shipping Weight (Approximate)	1 Gallon Kit - 10 lbs. (4.5 kg) 4 Gallon Kit - 40 lbs. (18 kg)
Storage Temperature & Humidity	40-110 °F (4-43 °C) 0-80% Relative Humidity
Flash Point (Setaflash)	Part A: >205 °F (96 °C) Part B: >230 °F (110 °C)
Storage	Store Indoors.



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 Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. 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.