

SELECTION & SPECIFICATION DATA

Generic Type	Modified Novolac Epoxy
Description	Phenoline 353 LT is a highly cross-linked epoxy lining with extraordinary overall chemical resistance and versatility. It has a unique blend of resins that make it highly resistant to a variety of aggressive cargos like ethanol, gasolines, gasoline blends, biodiesel, fuel oils, and others. It can be used is both acidic and high temperature caustic exposures. Markets served are terminals, refineries, petrochemical, wastewater, railcar linings, and many others. This low temperature cure formulation allows application and curing down to 2°C (35°F).
Features	<ul style="list-style-type: none"> • Outstanding overall chemical resistance • Dense, highly cross-linked film for superior barrier protection • Excellent abrasion resistance and toughness • Well-suited for hydrocarbon exposures • Cures down to 35°F (2°C) • Meets NORSOK System 7C Requirements for subsea equipment up to 180°C (356°F) • Certified for UNE 48307 - Type I, classes I, IIA, IIB, IIIA & IV <p>For a comprehensive list of chemical resistance see the latest Phenoline 353 Series Chemical Resistance Chart.</p>
Color	Red-brown (0500), Gray (0700), White (0800)
Finish	Gloss
Dry Film Thickness	127 - 178 microns (5 - 7 mils) per coat Two coats are generally recommended to 10-14 mils (254-356 microns) total DFT. Total thickness not to exceed 18 mils (457 microns).
Solids Content	By Volume 76% +/- 2%
Theoretical Coverage Rate	29.9 m ² /l at 25 microns (1219 ft ² /gal at 1.0 mils) 6.0 m ² /l at 125 microns (244 ft ² /gal at 5.0 mils) 4.3 m ² /l at 175 microns (174 ft ² /gal at 7.0 mils) Allow for loss in mixing and application.
VOC Values	As Supplied : 197 g/l (1.60 lbs/gal) These are nominal values and may vary slightly with color.
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).
Limitations	Linings exposed to cargos warmer than the outside steel temperature are subject to a "cold-wall" effect. The smaller the temperature differential the less negative effect on performance. Epoxies lose gloss, discolor and eventually chalk in sunlight exposure.

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.
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Phenoline 353 LT

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SUBSTRATES & SURFACE PREPARATION

Steel	Immersion: Sa 2½ (ISO 8501-1) Profile: 1.5-3.0 mils (38-75 microns),
Concrete or CMU	Immersion: Concrete must be cured 28 days at 75°F (24°C) and 50% relative humidity or equivalent. Prepare surfaces in accordance with ASTM D4258 Surface Cleaning of Concrete and ASTM D4259 Abrading Concrete. Voids in concrete may require surfacing.

MIXING & THINNING

Mixing	Power mix separately, then combine and power mix. Use material immediately after mixing. DO NOT MIX PARTIAL KITS.
Thinning	May be thinned up to 15% with Thinner #2. 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	4:1 Ratio (A to B)
Pot Life	1 Hours at 75°F (24°C) Pot life ends when coating shows dramatic changes in viscosity. Pot life times will be less at higher temperatures

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	The following spray equipment has been found suitable and is available from manufacturers.
Conventional Spray	Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, 0.055-0.070" 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: 0.015-0.019" Output PSI: 2100-2300 Filter Size: 60 mesh *PTFE packings are recommended and available from the pump manufacturer.
Brush & Roller (General)	Not recommended for tank lining applications except when striping welds and touching up.
Brush	Use a medium bristle brush.
Roller	Use a short-nap synthetic roller cover with phenolic core.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	16°C (60°F)	2°C (35°F)	2°C (35°F)	0%
Maximum	32°C (90°F)	43°C (110°F)	38°C (100°F)	85%

This product simply requires the substrate temperature to be 3°C 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

Surface Temp.	Minimum Recoat Time	Maximum Recoat Time	Final Cure Immersion
2°C (35°F)	18 Hours	10 Days	15 Days
10°C (50°F)	12 Hours	7 Days	10 Days
16°C (60°F)	8 Hours	5 Days	7 Days
24°C (75°F)	6 Hours	3 Days	5 Days
32°C (90°F)	4 Hours	1 Day	3 Days

These times are based on a 5-7 mil (125-175 micron) dry film thickness and adequate ventilation for the release of solvents for proper cure. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment, delamination between coats 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. If the maximum recoat time is exceeded, the surface must be abraded prior to the application of additional coats. Note: It is recommended to cure above 60°F (16°C) for aggressive service.

Surface Temp.	Final Cure Immersion
66°C (150°F)	8 Hours

The above curing schedule may be used to force cure the coating system. Allow the freshly applied coating to air dry for 4 hours prior to elevating temperature. Elevate temperature no more than 30°F (15°C) every 30 minutes.

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.
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. In addition to ensuring proper ventilation, appropriate respirators must be used by all application personnel.
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.

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PACKAGING, HANDLING & STORAGE

Shelf Life	Part A & B: Min. 24 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)	Part A: 8 liter (13kg) Part B: 2 liter (3.5kg)
Storage Temperature & Humidity	40°-110°F (4°-43°C) 0-90% RH
Flash Point (Setaflash)	Part A: 52°F (27°C) Part B: 90°F (13°C) Mixed: 89°F (32°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 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.