

SELECTION & SPECIFICATION DATA

Generic Type	Modified Novolac Epoxy
Description	<p>This is a Carboline Specialty Product Phenoline 353 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 gasoline, 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.</p> <p>Minimum order quantities and special pricing will apply in North America. Contact your Carboline Sales Representative for more details.</p>
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 • Low temperature cure version available
Color	Red-brown (0500), Gray (0700), White (0800)
Finish	Gloss
Dry Film Thickness	<p>5 - 6 mils (127 - 152 microns) per coat</p> <p>Two coats are generally recommended to 10-12 mils (250-300 microns) total DFT.</p>
Solids Content	By Volume 75% +/- 2%
Theoretical Coverage Rate	<p>1203 ft²/gal at 1.0 mils (29.5 m²/l at 25 microns)</p> <p>241 ft²/gal at 5.0 mils (5.9 m²/l at 125 microns)</p> <p>200 ft²/gal at 6.0 mils (4.9 m²/l at 150 microns)</p> <p>Allow for loss in mixing and application.</p>
VOC Values	<p>As Supplied : 1.72 lbs/gal (206 g/l)</p> <p>Thinner 2 : 8 oz/gal w/ #:2 2.04 lbs/gal (244 g/l)</p> <p>These are nominal values and may vary slightly with color.</p>
HAPs Values	<p>As supplied: 1.35 lbs/solid gallon</p> <p>These are nominal values and may vary by color.</p>
Dry Temp. Resistance	<p>Continuous: 250°F (121°C)</p> <p>Non-Continuous: 300°F (149°C)</p> <p>Discoloration and loss of gloss is observed above 200°F (93°C).</p>
Limitations	<p>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.</p>

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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SUBSTRATES & SURFACE PREPARATION

Steel	Immersion: SSPC-SP10 minimum Profile: 1.5-3.0 mils (38-75 microns) When using under fireproofing products, defer to the primer surface preparation requirements in the product data sheet of the fireproofing product.
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 D4258-92 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. When using between 60-70°F (15-21°C), mix and allow the material to "sweat-in" for 15 minutes before using. DO NOT MIX PARTIAL KITS.
Thinning	May be thinned up to 8 oz/gal 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	2 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 (General)	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	60°F (16°C)	50°F (10°C)	50°F (10°C)	0%
Maximum	90°F (32°C)	110°F (43°C)	100°F (38°C)	85%

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

Surface Temp.	Final Cure Immersion	Maximum Recoat Time	Minimum Recoat Time
60°F (16°C)	10 Days	10 Days	12 Hours
75°F (24°C)	7 Days	7 Days	8 Hours
90°F (32°C)	5 Days	2 Days	6 Hours

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. 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 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
150°F (66°C)	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 SDS 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.

Phenoline® 353

PRODUCT DATA SHEET



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.
Storage Temperature & Humidity	40°-110°F (4°-43°C) 0-90% RH
Storage	Store Indoors.
Shipping Weight (Approximate)	<u>1 Gallon Kit</u> 15 lbs (7 kg) <u>5 Gallon Kit</u> 75 lbs (32 kg)
Flash Point (Setaflash)	Part A: 81°F (27°C) Part B: 55°F (13°C) Mixed: 86°F (30°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.