

## Selection & Specification Data

<b>*Special Note</b>	As of September 2009 Phenoline 357 has been redesignated <b>Phenoline 353</b> . Some specifications, technical documentation or delivery notes may refer to either name however they are identical products and changed in name only.
<b>Generic Type</b>	Modified Novolac Epoxy
<b>Description</b>	Phenoline 357 / 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 ethanol, gasolines, gasoline blends, biodiesel, fuel oils, and others. It can be used in both acidic and high temperature caustic exposures. Markets served are terminals, refineries, petrochemical, wastewater, railcar linings, and many others.
<b>Features</b>	<ul style="list-style-type: none"> <li>• Outstanding overall chemical resistance</li> <li>• Dense, highly cross-linked film with excellent abrasion resistance and toughness</li> <li>• VOC compliant to current AIM regulations</li> <li>• Well-suited for hydrocarbon exposures</li> <li>• Can be applied in a single-coat</li> </ul>
<b>Gloss</b>	Gloss
<b>Colour</b>	Gray (0700), White (0800)
<b>Dry Film Thickness</b>	<u>Two-Coat Applications:</u> 125-175 microns per coat
<b>Solids Content</b>	By Volume: 75% ± 2%
<b>Theoretical Coverage Rate</b>	30 m <sup>2</sup> /l at 25 microns 5 m <sup>2</sup> /l at 150 microns 3 m <sup>2</sup> /l at 250 microns (single coat system) Allow for loss in mixing and application
<b>Mix Ratio</b>	4:1 by volume (Part : Part B)
<b>VOC Values</b>	As supplied: 206 g/l Thinned 6% with #2: 244 g/l These are nominal values and may vary slightly with colour.
<b>Dry Temp. Resistance</b>	Continuous: 121°C Non-Continuous: 149°C Discolouration and loss of gloss is observed above 93°C.
<b>Wet Temp. Resistance</b>	Immersion temperature resistance depends upon exposure. Consult Carboline Technical Service for specific exposures.
<b>Limitations</b>	Linings exposed to cargos warmer than the outside steel temperature are subject to a "cold-wall" effect. Therefore, tanks with service above 60°C should have insulation.  Epoxies lose gloss, discolour and eventually chalk in sunlight exposure.

## Substrates & Surface Preparation

<b>General</b>	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.
<b>Steel</b>	<u>Immersion:</u> AS 1627.4 Class 2½ (SSPC-SP10) <u>Non-Immersion:</u> AS 1627.4 Class 2 (SSPC-SP6) Surface Profile:38-80 microns
<b>Concrete</b>	<u>Immersion:</u> Concrete must be cured 28 days at 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.

## Immersion Service

**Temperature of service is 40°C unless otherwise noted**  
**R = Recommended for immersion service**

Caustic (NaOH) up to 65°C, 10%, 50%, 73%	R
Potassium Hydroxide (KOH) up to 65°C	R
Crude Oil	R
Biodiesel	R
Diesel Oil	R
Fuel Oils	R
Lubricating Oils	R
Gasolines	R
Gasoline with Ethanol	R
Ethanol	R
Methanol	R
MTBE, ETBE, TAME	R
Jet Fuels	R
Aviation Gas	R
Aromatic Solvents	R
Ethylene Glycol up to 65°C	R
Tri- Ethylene Glycol	R
Urea-formaldehyde	R
Acetate Solvents	R
Glycol Ethers Solvents	R
Sodium Sulfide Solutions (≤50%)	R
Tetraethyl Lead	R
Toluol (Toluene)	R
TSP - Tribasic sodium phosphate	R
Phthalates	R
Citric Acid	R

Contact Technical Service for specific recommendations

## 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)** The following spray equipment has been found suitable and is available from manufacturers such as DeVilbiss and Graco.

**Conventional Spray** Pressure pot equipped with dual regulators, 9mm (3/8") I.D. minimum material hose, 1.4-1.8mm (.055-.070") I.D. fluid tip and appropriate air cap.

**Airless Spray** Pump Ratio: 30:1 minimum\*  
GPM Output: 10 litres/min. minimum  
Material Hose: 9.5mm (3/8") I.D. minimum  
Tip Size: .015-.019"  
Output PSI: 2100-2300  
Filter Size: 60 mesh  
\*Teflon 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 over a phenolic core

## Mixing & Thinning

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

**Ratio** 4:1 by volume (Part A : Part B)

**Thinning** May be thinned up to 6% 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.

**Pot Life** 2 Hours at 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 vapour 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 local 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	Surface	Ambient	Humidity
Normal	18°-.29°C	18°-.29°C	18°-.29°C	30-60%
Minimum	13°C	10°C	10°C	0%
Maximum	32°C	43°C	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. & 50% Relative Humidity	Minimum Recoat	Maximum Recoat	Final Cure to Immersion
10°C	18 hours	6 days	15 days
16°C	12 hours	5 days	10 days
24°C	8 hours	3 days	7 days
32°C	6 hours	2 days	5 days

These times are based on a 125-175 micron dry film thickness. 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 bluish must be removed by water washing before recoating. If the maximum recoat time is exceeded, the surface must be abraded by sweep blasting prior to the application of additional coats.

\*Note: Final cure temperatures below 16°C are not recommended for tank linings in aggressive service.

**Force Curing:** The following schedule may be used to force cure the coating system after the final coat is applied. Elevate temperature no more than 15°C every 30 minutes.

Surface Temperature and 50% R.H.	Final Cure for Immersion
24°C	4 hours, followed by
66°C	8 hours

Final cure requirement varies depending upon exposure. Contact Carboline Technical Service for additional force curing.

## Packaging, Handling & Storage

**Pack Sizes & Shipping Weight** 1 US Gallon Kit 7 kg (15 lbs) 5 US Gallon Kit 32 kg (75 lbs)

**Flash Point (Setaflash)** Part A: 27°C  
Part B: 13°C

**Storage Temperature & Humidity** Store under cover. KEEP DRY  
4°-43°C  
0-90% Relative Humidity

**Shelf Life** Part A & B: Minimum 24 months at 24°C

**\*Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.**

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