

## SELECTION & SPECIFICATION DATA

<b>Generic Type</b>	Polymer Concrete
<b>Description</b>	<p>Semstone 305 polymer concrete is an excellent alternatives to acid brick. It is used to protect Portland cement concrete from attack from a wide range of aggressive chemicals.</p> <p>Semstone 305 polymer concrete can be applied from 1/2" (12.7 mm) to several inches thick. Applied by screed and trowel method, their installation is quick and easy. Semstone 305 provides a monolithic surfacing that has excellent resistance to impact and mechanical abuse and can be used to restore and protect degraded surfaces in a single application.</p>
<b>Features</b>	<ul style="list-style-type: none"> <li>• Easy to apply</li> <li>• Nonflammable</li> <li>• Low odor</li> <li>• Castable</li> <li>• Make excellent materials of construction</li> </ul>
<b>Typical Uses</b>	<ul style="list-style-type: none"> <li>• Pouring pump foundations</li> <li>• Pre-casting of sumps and trenches</li> </ul>
<b>Color</b>	Tile Red, Grey
<b>Primer</b>	<p>All surfaces must be primed, including steel and concrete. Use only Semstone 110 Damp Proof Epoxy Primer.</p> <p>Mix and apply in accordance with instructions found in our data sheet on Semstone 110 Damp Proof Epoxy Primer. Immediately apply Semstone 305 while the primer is still wet. If the primer cures tack free, you must re-prime.</p>
<b>Application Thickness</b>	1/2 inch (12.7 mm)
<b>Dry Film Thickness</b>	0.5 - 4 inches (12700 - 101600 microns) per coat
<b>Solid(s) Content</b>	100% by volume
<b>Coverage Rate</b>	<p>48 sq ft (4.5 sq m) at 1/2" (1.27 cm)          24 sq ft (4.5 sq m) at 1" (2.54 cm)          12 sq ft (4.5 sq m) at 2" (5.08 cm)</p> <p>Coverage rates are affected by the condition of the surface being topped, and application thickness. Application thickness depends upon expected service conditions. Consult Carboline Company or your local representative for specific recommendations.</p>
<b>VOC Values</b>	<b>As Supplied</b> : 0 lbs/gal (0 g/l)

## SUBSTRATES & SURFACE PREPARATION

<b>General</b>	Surfaces must be dry and free of dirt, dust, oil, grease, chemicals and other contaminants immediately prior to applying primer or Semstone 305.
<b>Steel</b>	<p><i>Incidental Steel</i></p> <p>Equipment base plates, etc., to be topped, along with the concrete, should be abrasive blasted to a near white metal finish with a 1 to 2 mil anchor profile. (Ref. SSPC-SP-10)</p>

### SUBSTRATES & SURFACE PREPARATION

**Concrete or CMU**

Concrete shall be designed, placed, cured, and prepared per NACE No. 6/SSPC-SP 13, latest edition. Abrade to remove all laitance, loose concrete, etc. and to create surface profile in accordance with the appropriate ICRI CSP standard for the coating system. The concrete is considered cured sufficiently for coating when it passes the moisture tests.

**Special Instruction**

Mask surfaces that are not to be coated. These materials are difficult to remove, once applied.

**Intercoat Preparation**

- All surfaces to receive a second application must be dry.
- Allow topping to cure until firm to the touch before re-application.
- For surfaces cured firm to the touch but less than 24 hours, wash with soap and water, thoroughly rinse and dry, and prime with Semstone 110 Damp Proof Epoxy Primer.
- For surfaces which have cured more than 24 hours, wash with soap and water and thoroughly rinse and dry, then lightly sand or abrasive blast.

### PERFORMANCE DATA

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

Test Method	System	Results
Coefficient of Thermal Expansion (ASTM C-531)	Semstone 305	20 x 10 <sup>-6</sup> in/in °F (ASTM C-531)
Compressive Strength (ASTM C-579)	Semstone 305	15,000 – 20,000 psi
Density	Semstone 305	125 lbs/cu. ft.
Effective Shrinkage (glass deflection) (ASTM C-883)	Semstone 305	No deflection
Flammability	Semstone 305	Non-flammable
Flexural Strength (ASTM C-580)	Semstone 305	7,000 – 8,000 psi
Hardness (ASTM D-2240, Shore D)	Semstone 305	Neat: 75
Shrinkage (ASTM C-531)	Semstone 305	Essentially none
Tensile Strength (ASTM C-307)	Semstone 305	5,000 – 6,000 psi
Thermal Compatibility to Concrete (ASTM C-884)	Semstone 305	Passes
Water Boil Absorption (ASTM C-413)	Semstone 305	Less than 0.2%

## MIXING & THINNING

<p><b>Mixing</b></p>	<p>1. Determine the number of units of Semstone 305 to be mixed in the batch. Mix only as much material as can be placed and finished before material begins to set. 2. Use a horizontal blade mortar mixer with at least twice the volume capacity of the material to be mixed (i.e., if mixer capacity is 10 cu. ft., mix no more than 5 cu. ft. of material in a batch.)</p> <p><b>CAUTION:</b> <i>Be sure your mixture runs before adding these ingredients. These are catalyzed epoxy materials that will rapidly set up inside your mixer.</i></p> <p>3. Mixer should be dry and clean of all foreign matter.</p> <p>4. Mixer should be in good condition and rubber blades on ends of mixing arms should make full contact with mixing tub.</p> <p>5. The following are the component measurements that, when mixed together, will yield a two cubic foot batch of polymer concrete:</p> <ul style="list-style-type: none"> <li>- Part A: 25 lbs.</li> <li>- Part B: 3.6 lbs.</li> <li>- Semstone polymer concrete powder: 70 lbs.</li> <li>- *1/4" pea-gravel: 130 lbs.</li> <li>- *20/40 mesh silica sand: 50 lbs.</li> </ul> <p>*These materials are user/contractor supplied.</p> <p>6. In a clean pail, mix together the properly proportioned Part A and Part B. Mix for 2 minutes using a power mixer with a Jiffy type mixer attached.</p> <p>7. Turn on the mortar mixer. Be sure that the safety cover is closed. As it is running, pour in all of the mixture. Be sure to scrape all the mixture from the bucket.</p> <p>8. Slowly add the 1/4" pea-gravel, followed by the polymer concrete powder, followed by the 20/40 mesh silica sand. Continue to mix until no dry aggregate appears.</p> <p>9. Discharge the mixed material into a clean wheel-barrow, turn the mixer off, and scrape it clean.</p> <p><b>Note:</b> The first batch may be drier and stiffer than succeeding batches. This is to be expected and does not effect performance.</p> <p><b>CAUTION:</b> At elevated temperatures, or in direct sunlight, working time will be significantly reduced.</p> <p><b>IMPORTANT:</b> All aggregates must be clean, dry and supplied in plastic lined bags.</p>
<p><b>Ratio</b></p>	<p>The proper mix ratios are critically important. (Any variation in ratios will adversely affect performance.) Make provisions to accurately weigh out the components as required herein.</p>
<p><b>Working Time at 75° F (24° C)</b></p>	<p>30 minutes</p> <p>Significantly less at elevated temperatures or in direct sunlight</p>

**APPLICATION PROCEDURES****Application**

1. Place the mixed material onto the primed surface.
2. Maintain a minimum thickness of ½ inch. Screed strips are helpful in maintaining minimum thickness. A vibrating screed may facilitate placement.
  - Do not feather edge.
  - Key mid-floor termination points into the slab (see Carboline's Construction Detail Sheets.)
3. Finish by hand tamping using a flat trowel or float.
4. Semstone 120 Smoothing Liquid is not required, but may be helpful in obtaining a smoother finish.
  - If Semstone 120 is used, mist it over the freshly placed material and spread it using clean, flat trowels.
  - Refer to the Semstone 120 technical bulletin for further information.
5. If a more pronounced nonskid surface is desired, broadcast a sharp, dry grit onto the still wet surface.
6. If work is interrupted, or at the end of the day, terminate the topping in a straight and square line. Follow intercoat surface preparation instructions.
7. When used as a material of construction, Semstone 305 may be formed and poured using standard concrete construction techniques. Line all forms with polyethylene.
8. Vertical surfaces intended for constant immersion service can be formed and poured.
  - Alternatively, our Semstone 140 or 145 Coating and Lining system may be used for vertical systems.

CAUTION: Semstone 120 Smoothing Liquid is flammable.

**APPLICATION CONDITIONS**

Condition	Material	Surface	Ambient	Humidity
Minimum	50°F (10°C)	50°F (10°C)	50°F (10°C)	0%
Maximum	90°F (32°C)	120°F (49°C)	110°F (43°C)	80%

**CURING SCHEDULE**

Surface Temp.	Foot Traffic	Light Vehicular	Chemical Service
75°F (24°C)	8 Hours	24 Hours	36 Hours

**CLEANUP & SAFETY**

**Cleanup** | Clean all tools and equipment with Plasite Thinner 15, 20 or 71.

**PACKAGING, HANDLING & STORAGE****Shelf Life**

Minimum shelf life of 36 months, if properly stored.  
Refer to batch number on label for date of manufacture.

**Storage Temperature & Humidity**

Store at 50-75 °F (10-24 °C), out of direct sunlight.

**Storage**

Keep aggregate dry. Keep all components tightly sealed in their original containers until ready for use.

## PACKAGING, HANDLING & STORAGE

<b>Shipping Weight (Approximate)</b>	<b><u>Two cubic foot unit:</u></b>
	1 pail Part A: 25 lbs
	1 pail Part B: 3.6 lbs
	1 bag of polymer concrete powder: 70 lbs
<b>Flash Point (Setaflash)</b>	<b><u>Forty cubic foot unit:</u></b>
	1- 55 gallon drum Part A: 500 lbs
	2- 5 gallon pails Part B: 36 lbs each
	20 bags of polymer concrete powder: 70 lbs each
<b>Flash Point (Setaflash)</b>	Part A: 399.2 °F (204 °C)
	Part B: 210.2 °F (99 °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.