

**PRODUCT DESCRIPTION**

Semstone 145 is a 100% solids, high performance, novolac epoxy lining system designed for concrete. Semstone 145 is a semi-leveling coating which may be applied as an aggregate filled and/or reinforced coating system. Semstone 145 is specially formulated to withstand some of industry's most aggressive chemicals, including 98% sulfuric acid, as well as many organic chemicals and solvents.

**USES, APPLICATIONS**

- Process Slabs
- Tank Farm Floors
- Chemical Loading and Unloading Areas
- Spill Containment Areas

**PRODUCT ADVANTAGES**

Semstone 145 is a two-component system that possesses the following characteristics:

- Excellent resistance to chemical attack
- Excellent abrasion and impact resistance
- Exceptional thermal shock resistance
- Superior bonding qualities
- High cohesive strength
- Low permeability
- Low odor

**CHEMICAL RESISTANCE**

Semstone 145 is formulated to resist a variety of chemical solutions. Please consult Carboline Technical Service Department for specific recommendations.

**PACKAGING**

Semstone 145 is available in 1 gallon and 5 gallon units.

A 1 gallon unit consists of:

- 1 1 gallon can of Part A (resin)
- 1 1 quart can of Part B (hardener)

A 5 gallon unit consists of:

- 1 5 gallon pail of Part A (resin)
- 1 1 gallon can of Part B (hardener)

**COVERAGE**

Semstone 145 will cover 1,604 mils sq. ft./gal. For estimating purposes, one gallon of Semstone 145 will cover 64 sq. ft./5.96 sq. m at a thickness of 25 mils/0.63 mm. Application thickness may vary from 30-150 mils/0.75-3.8 mm, depending on expected service conditions (i.e., chemical exposure, temperature, traffic load and other mechanical abuse, immersion service vs. splash-spill, etc.). Consult Carboline's Technical Service Department for specific thickness recommendations. In addition, coverage rates will be effected by the condition of the surface being coated (degraded vs. smooth, steel vs. concrete, etc.).

**STORAGE CONDITIONS**

Store all components between 50-75°F/10-24°C in a dry area. Keep out of direct sunlight. Avoid excessive heat and do not freeze. Twenty-four hours before application, all materials (components A and B, aggregate, etc.) should be stored at a 70-85°F/21-29°C to facilitate handling.

**SUBSTRATE PREPARATION****General**

Proper preparation is critical to ensure an adequate bond. The substrate must be dry and free of all wax, grease, oils, fats, soil, loose or foreign materials and laitance. Laitance and unbonded

**PHYSICAL CHARACTERISTICS**

**Compressive Strength**.....16,000 psi (ASTM C-579: AFC)

**Tensile Strength**.....Neat: 7,000 psi  
(ASTM D-638) Reinforced: 8,500 psi

**Flexural Strength**.....Neat: 9,000 psi  
(ASTM D-790) Reinforced: 13,000 psi  
(ASTM C-580) Aggregate Filled: 6,200 psi

**Flexural Modulus of Elasticity**.....Neat:  $5.4 \times 10^5$  psi  
(ASTM D-790) Reinforced:  $7.5 \times 10^5$  psi  
(ASTM C-580) Aggregate Filled:  $12.6 \times 10^5$  psi

**Hardness**.....Neat: 75 (ASTM D-2240, Shore D)

**Bond Strength**.....> 400 psi  
(ASTM D-4541) (100% concrete failure)

**Water Vapor**.....0.0120 grams/hr.ft<sup>2</sup> (ASTM E-96)

**Transmission Permeability**.....0.0042 perm. -in. (ASTM E-96)

**Weight per Mixed Gallon**.....10.4 lbs.

**Pot Life @ 75°F**.....45 to 60 min\*

**Shelf Life**.....Part A: 24 months; Part B: 24 months

**Cure Times @ 75°F**.....Dry to Touch: 12 hrs

Firm: 24 hrs

Chemical Service: 36 hrs

**Flammability**.....Non-flammable

\*Significantly less at elevated temperatures

cement particles must be removed by mechanical methods, i.e., abrasive blasting or scarifying. Other contaminants may be removed by scrubbing with a heavy-duty industrial detergent and rinsing with clean water. For recommendations or additional information regarding substrate preparation, please contact Carboline's Technical Service Department.

**Concrete**

Concrete should be properly cured for 28 days and have the following characteristics:

- Substrate tensile strength of at least 300 psi.
- pH range of 7 to 11.

The surface must show open pores throughout and have a sandpaper texture.

**Steel**

Equipment base plates, etc. to be coated along with the concrete should be abrasive blasted to a near white metal finish, SSPC-10 or NACE-2, with a 1 to 2 mils anchor profile.

**Masking**

Mask surfaces that should not be coated. This material is difficult to remove once applied.

**APPLICATION GUIDELINES**

Before mixing and applying any material, make sure environmental conditions are satisfactory for application. For optimal working conditions, substrate temperature must be between 60°F/15°C and 80°F/27°C. Measure the surface temperature with a surface thermometer. Cold areas must be heated until the slab temperature is above 50°F/10°C. This will allow the material to achieve a proper cure. Also, a cold substrate will make the material stiff and difficult to apply.

# SEMSTONE® 145

Warm areas or areas in direct sunlight must be shaded or arrangements made to work during evenings or at night. A warm substrate (60°F/15°C to 80°F/27°C) will aid in the material's workability; however, a hot substrate (80°F/27°C to 100°F/37°C) or a substrate directly in the sun will shorten the material's working time and can cause other phenomenon such as pinholing and bubbling. Substrate temperature should be greater than 5°F/3°C above dew point.

If the temperature is expected to drop below 50°F/10°C use Semstone 145CT.

## APPLICATION

### Priming

Apply Semstone 110 Primer in accordance with the product data sheet. Allow the primer to cure prior to application of Semstone 145.

**Note:** For substrates with out-gassing concerns use Carboguard 1340. Primer should be applied while the substrate temperature is decreasing.

### Broadcast Application (AFC – Broadcast)

Pre-mix Part A (resin) for 30 seconds using a Jiffy Mixer. Pour Part B (hardener) into the Part A pail and mix thoroughly for 2 minutes.

Apply a base coat at the specified thickness using a squeegee or a notched trowel. For a 60 mil/1.5 mm system apply a 25 mil/0.63 mm base coat and for a 125 mil/3.1 mm system apply a 50 mil/1.3 mm base coat. Immediately after applying the base coat, begin broadcasting the aggregate until a dry appearance is achieved.

**Note:** The use of a 20/40 mesh aggregate is highly recommended. One gallon of 20/40 mesh silica weighs 13-14 lbs.

After the base coat has cured, remove the loose aggregate. Apply a 10-15 mil/0.25-0.38 mm topcoat using a squeegee or roller.

### Material Coverages

Below is a list of coverages for the Broadcast application depending upon desired thickness and texture.

MATERIAL	Nominal 60 mils/1.5 mm	Nominal 75 mils/1.9 mm	Nominal 125 mils/3.1 mm
Semstone 110 Primer	200-250 sq.ft./gal.	200-250 sq.ft./gal.	200-250 sq.ft./gal.
Semstone 145 Base Coat	64 sq.ft./gal.	45 sq.ft./gal.	32 sq.ft./gal.
Aggregate	1.5 lbs./sq. ft.	1.5 lbs./sq. ft.	2 lbs./sq. ft.
Semstone 145 Topcoat			
15 mils	100 sq. ft./gal.	100 sq. ft./gal.	100 sq. ft./gal.
30 mils	53 sq. ft./gal.	53 sq. ft./gal.	53 sq. ft./gal.

### Blended Application (AFC – Blended)

Pre-mix Part A (resin) for 30 seconds using a Jiffy Mixer. Pour Part B (hardener) into Part A and thoroughly mix for 2 minutes. After mixing Part A and Part B, split the mix into two 5 gallon buckets. While continuing to mix with a Jiffy Mixer, slowly add the aggregate.

**Note:** A 2:1 sand to liquid weight ratio will produce a trowel-like consistency. A 3:1 sand to liquid weight ratio will produce a grout-like consistency.

**Note:** The use of a 20/40 mesh silica aggregate is highly recommended. One gallon of 20/40 mesh silica weighs 13-14 lbs.

Apply the mixture at the desired thickness using a notched trowel.

**Note:** For vertical surfaces add Semstone Thixotrope Part C (pre-measured mixes) or Cab-O-Sil (TS 720) to the blended mix at a 1:2 Cab-O-Sil to liquid volume ratio.

After the surface has cured, the surface must be washed with soap and water prior to re-coating.

**Note:** Surface must be sanded prior to re-coating after an initial cure of 24 hours.

### Material Coverages

Below is a list of coverages for the Blended application.

MATERIAL	Nominal 125 mils / 3.1 mm
Semstone 110 Primer	200-250 sq. ft./gal
Semstone 145 CT Mortar 125 mils	20 sq. ft./gal

### Reinforced (AFRC – Broadcast)

A fiberglass scrim cloth may be added to the 125 mil broadcast system. For the 125 mil broadcast system apply the fiberglass scrim cloth into the base coat prior to applying the aggregate.

### Reinforced (AFRC – Blended)

A fiberglass scrim cloth may be added to the 125 mil blended system. For the 125 mil blended system apply a 25-35 mil/0.63-0.88 mm base coat and lay the fiberglass scrim cloth into the base coat.

**Note:** For a vertical surface, the base coat should be mixed with Cab-O-Sil (TS 720) at a 1:1 volume ratio.

Allow the base coat to become tacky and then apply Semstone 145 mortar at 90-100 mils/2.25-2.50 mm.

**Note:** Application of base coat, engineering fabric, and mortar should be completed in the same day.

## RECOMMENDATIONS

- Apply only on clean, sound, dry and properly prepared substrates.
- Minimum ambient and surface temperatures are 50°F/10°C at the time of application.
- Maximum surface temperatures should not exceed 90°F/32°C during the time of application.
- Substrate temperature should be greater than 5°F/3°C above dew point.
- Application and curing times are dependent upon ambient and surface conditions. Consult Carboline's Technical Service Department if conditions are not within the recommended guidelines.

## PRECAUTIONS

- MEK, Toluene or Xylene solvents are recommended for clean up of Semstone 145 material spills. Use these materials only in strict accordance with manufacturer's recommended safety procedures. Dispose of waste materials in accordance with government regulations.
- The use of a NIOSH/MSHA approved respirator using a #TC-23C-738 organic vapor or a #TC-23C-740 organic vapor acid gas cartridge is mandatory.
- The selection of proper protective clothing and equipment will significantly reduce risk to injury. Body covering apparel, safety goggles and impermeable gloves are highly recommended.
- In case of contact, flush the area with water for 15 minutes and seek medical attention. Wash skin with soap and water.
- Use only with adequate ventilation.

## NOTES

- Material Safety Data Sheets on Semstone 145 are available on request.
- Specific information regarding chemical resistance of Semstone 145 is available in the Semstone Chemical Resistance Guide.
- A staff of technical service engineers is available to assist with product application or to answer questions related to Carboline products.
- Requests for technical literature or service can be made through local sales representatives and offices, or corporate offices located worldwide.

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An  Company

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