Semstone® 145 CT

PRODUCT DATA SHEET

SELECTION & SPECIFICATION DATA

Generic Type	100% Solids, high performance, novolac epoxy liner
Description	Semstone 145 CT is a 100% solids, high performance, novolac epoxy lining system designed for concrete. It is a semi-leveling coating which may be applied as an aggregate filled and/or reinforced coating system. Semstone 145 CT is specially formulated to withstand some of industry's most aggressive chemicals, including 98% sulfuric acid, as well as many organic chemicals and solvents.
Features	• Excellent resistance to chemical attack • Excellent abrasion and impact resistance • Exceptional thermal shock resistance • Superior bonding qualities • High cohesive strength • Low permeability • Low odor • Formulated to resist a variety of chemical solutions. • Suitable for use in USDA-inspected facilities Please consult Carboline Technical Service Department for specific recommendations.
Typical Uses	• Process Slabs • Tank Farm Floors • Chemical Loading and Unloading Areas • Spill Containment Areas
Color	Light Grey (U74P)
Primer	Apply Semstone 110 Primer in accordance with the product data sheet. Allow the primer to cure prior to the application of Semstone 145 CT. **Note:** For substrates with out-gassing concerns use Carboguard 1340. Primer should be applied while the substrate temperature is decreasing.
Dry Film Thickness	30 - 150 mils (762 - 3810 microns) depending on service conditions and system design
Solids Content	By Volume 100%
Coverage Rate	Semstone 145 CT will cover 1,604 sq. ft. at 1 mil DFT per gallon (39.4 sq. m/l). With aggregate included application thickness may vary from 30 to 150 mils (0.75-3.8 mm), depending on expected service conditions and system design. See Application Procedures for more specific coverage information. Consult Carboline's Technical Service Department for specific thickness recommendations. In addition, coverage rates will be affected by the condition of the surface being coated (degraded vs. smooth, steel vs. concrete, etc.).
Theoretical Coverage Rate	1604 ft²/gal at 1.0 mils (39.4 m²/l at 25 microns) 53 ft²/gal at 30.0 mils (1.3 m²/l at 750 microns) 11 ft²/gal at 150.0 mils (0.3 m²/l at 3750 microns) Allow for loss in mixing and application.
VOC Values	**As Supplied** : 0.00 lbs/gal (0 g/l)

SUBSTRATES & SURFACE 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 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.
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 3+ mils (76.2+ microns) anchor profile.
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 4-7.
Special Instruction	Mask surfaces that are not to be coated. This material is difficult to remove once applied.

PERFORMANCE DATA

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

Test Method	System	Results
Bond Strength (ASTM D4541)	Semstone 145 CT	>400 psi (100% concrete failure)
Compressive Strength (ASTM C579: AFC)	Semstone 145 CT	17,000 psi
Flammability	Semstone 145 CT	Non-flammable
Flexural Modulus of Elasticity (ASTM D790) (ASTM C580)	Semstone 145 CT	Neat: 7.9 x 10^5 psi Reinforced: 8.2 x 10^5 psi Aggregate Filled: 14.9 x 10^5 psi
Flexural Strength (ASTM D790) (ASTM C580)	Semstone 145 CT	Neat: 11,500 psi Reinforced: 13,500 psi Aggregate Filled: 6,700 psi
Hardness (ASTM D2240, Shore D)	Semstone 145 CT	Neat: 80
Permeability (ASTM E96)	Semstone 145 CT	0.0042 Perm inches
Tensile Strength (ASTM D638)	Semstone 145 CT	Neat: 8,000 psi Reinforced: 8,500 psi
Water Vapor Transmission (ASTM E96)	Semstone 145 CT	0.0120 grams/hr./ft^2

Twenty-four hours before application, all materials (components A and B, aggregate, etc.) should be stored at 70-85 °F (21-29 °C) to facilitate handling.

MIXING & THINNING

Ratio	4:1 by volume
Pot Life	30 to 40 min @ 35 °F (2 °C) Significantly less at elevated temperatures
Material Temperature	Twenty-four hours before application, all materials (components A and B, aggregate, etc.) should be stored at 55-65°F (13-18°C) to facilitate handling.

APPLICATION PROCEDURES

General	Before mixing and applying any material, make sure environmental conditions are satisfactory for application. Measure the surface temperature with a surface thermometer. Cold areas must be heated until the slab temperature is above 35 °F (2 °C). This will allow the material to achieve a proper cure. Also, a cold substrate will make the material stiff and difficult to apply. Warm areas or areas in direct sunlight must be shaded or arrangements made to work during evenings or at night. A hot substrate (60 °F [16 °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.
Broadcast	***(AFC):*** 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. 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. **Note:** The use of a 20/40 mesh aggregate is highly recommended. One gallon of 20/40 mesh silica weighs 13-14 lbs (5.9-6.4 kg).
Blended	***(AFC):*** 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. Apply the mixture at the desired thickness using a notched trowel. 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. **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 80/120 mesh silica aggregate is highly recommended. One gallon of 80/120 mesh silica weighs approximately 13 lbs (5.9 kg). **Note: For vertical surfaces** use a 1:1:0.5 by volume ratio. Add one part liquid to one part aggregate to a half part (or, up to one part) of Thixotrope D or Cab-O-Sil (TS 720).
Reinforced	***(AFRC – Broadcast):*** A fiberglass scrim cloth may be added to the 125 mil broadcast or 125 mil blended systems. For the 125 mil broadcast system, apply the fiberglass scrim cloth into the base coat prior to applying the aggregate. ***(AFRC – Blended):*** 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. Allow the base coat to become tacky and then apply Semstone 145 CT mortar at 90-100 mils (2.25-2.50 mm). **Note:** Base coat should be mixed with Cab-O-Sil (TS 720) at a 1:1 volume ratio. **Note:** Application of base coat, scrim cloth, and mortar should be completed in the same day.

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	40°F (4°C)	35°F (2°C)	35°F (2°C)	0%
Maximum	60°F (16°C)	60°F (16°C)	60°F (16°C)	85%

Apply only on clean, sound, dry and properly prepared substrates. 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.

CURING SCHEDULE

Surface Temp.	Dry to Touch	Maximum Recoat	Chemical Service
35°F (2°C)	8 Hours	16 Hours	36 Hours
60°F (16°C)	2 Hours	6 Hours	18 Hours

CLEANUP & SAFETY

Cleanup
MEK, Toluene or Xylene solvents are recommended for clean up of Semstone 145CT material spills. Use these materials only in strict accordance with manufacturer's recommended safety procedures. Dispose of waste materials in accordance with government 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. Use adequate ventilation. Keep container closed when not in use.

Ventilation
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.
Use only with adequate ventilation.

PACKAGING, HANDLING & STORAGE

Packaging
1 Gal Kit:
Part A - 0.8 gals (3.03 liters)
Part B - 0.2 gals (0.76 liters)
5 Gal Kit:
Part A - 4 gals (15.14 liters)
Part B - 1 gal (3.79 liters)

Shelf Life
Part A: 12 months
Part B: 24 months
(In the original, unopened container.)

Storage Temperature & Humidity
Store at 40-110°F (4-43°C) out of direct sunlight.
Keep product tightly sealed in its original container until ready for use.
Avoid excessive heat and do not freeze.

Shipping Weight (Approximate)
1 Gallon Kit - 9.9 lbs
1 gallon can of Part A (resin)
1 quart can of Part B (hardener)
5 Gallon Kit - 49.5 lbs
5 gallon pail of Part A (resin)
1 gallon can of Part B (hardener)

PACKAGING, HANDLING & STORAGE

Flash Point (Setaflash)	Part A: 170.6 °F (77 °C) Part B: 203 °F (95 °C)

WARRANTY

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