

SELECTION & SPECIFICATION DATA

Generic Type	A high performance, vinyl ester lining
Description	Semstone 870 is a high performance, vinyl ester lining system designed for concrete. Semstone 870 is formulated to be more flexible than typical vinyl esters to tolerate more concrete movement. It is a semi-leveling coating which may be applied as an aggregate filled and/or reinforced coating system. Semstone 870 is specially formulated to withstand some of industry's most aggressive chemicals, including a broad range of organic chemicals. A cooler temperature version (870 CT) is available on special order.
Features	<ul style="list-style-type: none"> • Excellent resistance to chemical attack • Built from flexible vinyl ester binders • Excellent abrasion and impact resistance • Exceptional thermal shock resistance • Superior bonding qualities • High cohesive strength • Low permeability • Low odor
Color	U74P (Light Grey)
Primer	Apply Semstone 800 Series Primer in accordance with the product data sheet. Allow the primer to cure prior to application of Semstone 870.
Typical Uses	<ul style="list-style-type: none"> • Process slabs • Tank farm floors • Flue gas desulfurization equipment • Chemical loading and unloading areas • Spill containment areas
Solid(s) Content	99.07% by volume
Coverage Rate	<p>Semstone 870 will cover 1,363 sq. ft. at 1 mil DFT per gallon (33.4 sq. m/l) . With aggregate included application thickness may vary from 30 to 150 mils (0.75 to 3.8 mm), depending on expected service conditions and system design.</p> <p>See Application Procedures for more specific coverage information.</p>
VOC Values	As Supplied : 0.08 lbs/gal (9 g/l)

SUBSTRATES & SURFACE PREPARATION

General	<p>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.</p> <p>For recommendations or additional information regarding substrate preparation, please contact Carboline's Technical Service Department.</p>
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.

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 4-7.
------------------------	---

PERFORMANCE DATA

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

Test Method	System	Results
Bond Strength (ASTM D-4541)	Semstone 870 Series	>400psi (100% concrete failure)
Compressive Strength (ASTM C-579: AFC)	Semstone 870 Series	17,500 psi
Flammability	Semstone 870 Series	Non-flammable
Flexural Modulus of Elasticity (ASTM D-790) (ASTM C-580)	Semstone 870 Series	Neat: 10.9 x 10 ⁵ psi Reinforced: 15.6 x 10 ⁵ psi Aggregate Filled: 15.3 x 10 ⁵ psi
Flexural Strength (ASTM D-790) (ASTM C-580)	Semstone 870 Series	Neat: 8,200 psi Reinforced: 22,000 psi Aggregate Filled: 5,800 psi
Hardness (ASTM D-2240, Shore D)	Semstone 870 Series	Neat: 80
Permeability (ASTM E-96)	Semstone 870 Series	0.0042 perm. -in.
Tensile Strength (ASTM D-638)	Semstone 870 Series	Neat: 5,300 psi Reinforced: 10,000 psi
Water Vapor Transmission (ASTM E-96)	Semstone 870 Series	0.0120 grams/hr./ft ²

Characteristics are shown to indicate the nature of this product. They represent typical values that would be achieved using commonly used aggregates and reinforcing mesh. Different aggregate blends or reinforcing mesh will alter these values accordingly.

MIXING & THINNING

Mixing	Pre-mix Part A (resin) for 30 seconds using a Jiffy Mixer. Pour Part B (catalyst) into the Part A pail and mix thoroughly for 2 minutes.
Pot Life	45-60 minutes at 75 °F (24 °C) Or less at higher temperatures

APPLICATION PROCEDURES

General	<p>Before mixing and applying any material, make sure environmental conditions are satisfactory for application. For optimal working conditions, substrate temperature must be between 70-80 °F (21-27 °C). Measure the surface temperature with a surface thermometer. Cold areas must be heated until the slab temperature is above 65 °F (18 °C). This will allow the material to achieve a proper cure.</p> <p>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 warm substrate (70-80 °F [21-27 °C]) will aid in the material's workability; however, a hot substrate (80-90 °F [27-32 °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.</p> <p>Substrate temperature should be greater than 5°F/3°C above dew point.</p> <p>If the temperature is expected to drop below 65 °F (18 °C) use Semstone 870 CT.</p>
----------------	---

APPLICATION PROCEDURES

Broadcast	<p>(AFC) 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.</p> <p>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).</p> <p>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.</p>
Blended	<p>(AFC) 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. If desired, the surface may be recoated after it has finally cured.</p> <p>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. The use of a 20/40 mesh silica aggregate is highly recommended. One gallon of 20/40 mesh silica weighs 13-14 lbs. 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-OSil to liquid volume ratio.</p> <p>Note: After an initial cure of 48 hours, the surface must be sanded and solvent wiped prior to recoating.</p>
Reinforced	<p>(AFRC - Broadcast) A fiberglass scrim cloth may be added to the 125 mil broadcast system. For the 125 mil (3.18 mm) broadcast system, apply the fiberglass scrim cloth into the base coat prior to applying the aggregate.</p> <p>(AFRC - Blended) A fiberglass scrim cloth may be added to the 125 mil blended system. For the 125 mil (3.18 mm) blended system apply a 25-35 mil (0.63-0.88 mm) base coat and lay the fiberglass scrim cloth into the base coat.</p> <p>Note: For a vertical surface, the base coat should be mixed with Cab-OSil (TS 720) at a 1:1 volume ratio. Allow the base coat to become tacky and then apply Semstone 870 mortar at 90-100 mils (2.25-2.50 mm).</p> <p>Note: Application of base coat, the fiberglass scrim cloth, and mortar should be completed in the same day.</p>

APPLICATION CONDITIONS

Condition	Material	Surface	Ambient	Humidity
Minimum	65°F (18°C)	65°F (18°C)	65°F (18°C)	0%
Maximum	85°F (29°C)	85°F (29°C)	90°F (32°C)	90%

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	Firm	Chemical Service
75°F (24°C)	12 Hours	24 Hours	48 Hours

CLEANUP & SAFETY

Cleanup	MEK, Toluene or Xylene solvents are recommended for clean up of Semstone 870 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.

PACKAGING, HANDLING & STORAGE

Packaging	<u>1 Gallon Unit</u> Part A: 1 gal (resin) Part B: 2.14 oz in a 6 oz jar (catalyst) <u>5 Gallon Unit</u> Part A: 4.99 gal (resin) Part B: 11 oz in a quart jar (catalyst)
Shelf Life	Part A: 6 months Part B: 12 months
Storage Temperature & Humidity	Store all components between 50-65 °F (10-18 °C) in a dry area. Twenty-four hours before application, all materials (components A and B, aggregate, etc.) should be stored at a 60-75 °F (18-21 °C) to facilitate handling.
Storage	Keep out of direct sunlight. Avoid excessive heat and do not freeze.
Shipping Weight (Approximate)	1 Gallon Unit: 10.4 lbs 5 Gallon Unit: 52 lbs 10.4 lbs per mixed gallon
Flash Point (Setaflash)	Part A: 73.4 °F (23 °C) Part B: 176 °F (80 °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 Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance, injuries or damages resulting from use. Carbolines sole obligation, if any, is to replace or refund the purchase price of the Carboline product(s) proven to be defective, at Carbolines option. Carboline shall not be liable for any loss or damage. 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.