

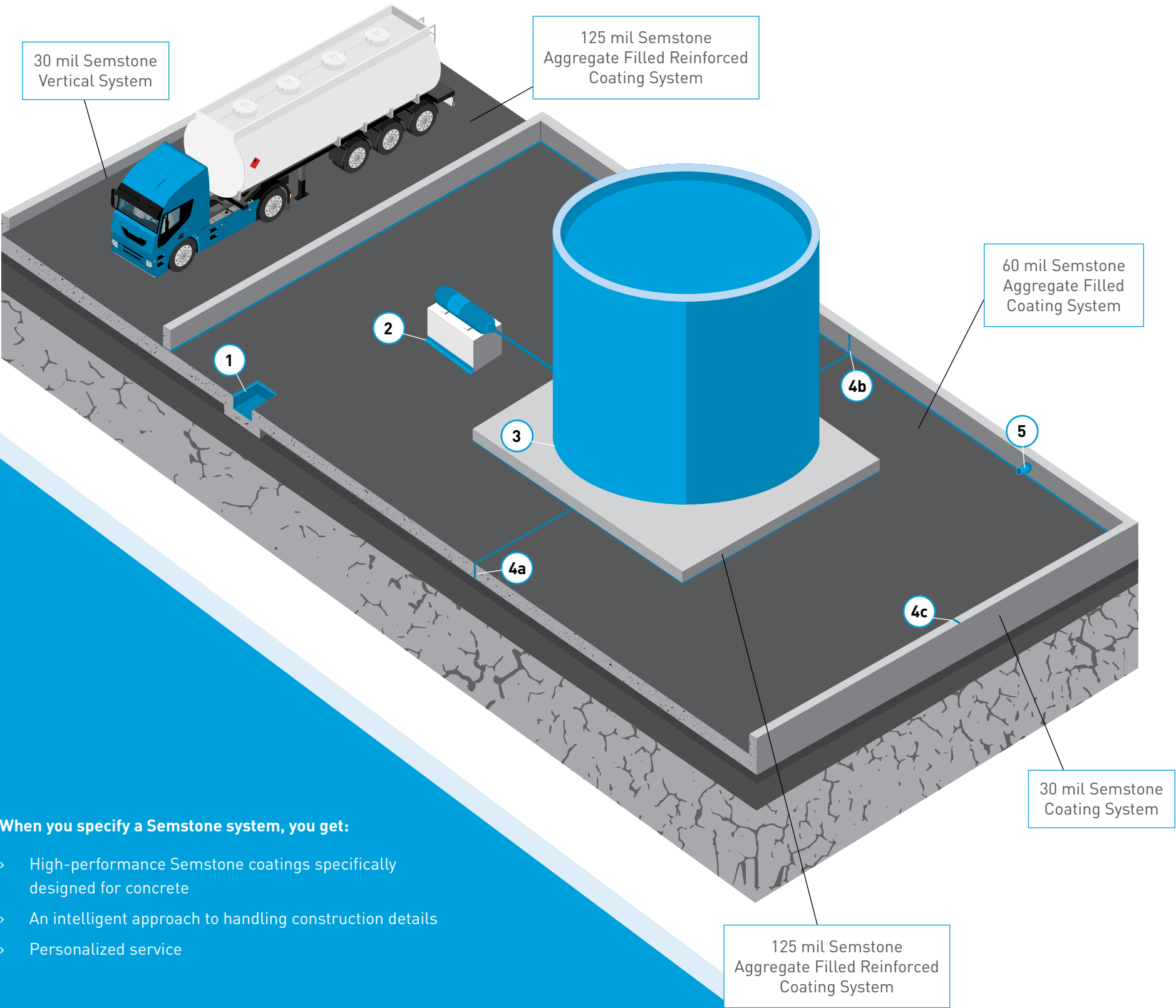
# Semstone<sup>®</sup>

## Secondary Containment Systems



# Successful concrete coatings depend on attention to detail.

With over 70 years of experience in the coatings industry, Carboline understands the needs and concerns of the secondary containment market better than the rest.



When you specify a Semstone system, you get:

- > High-performance Semstone coatings specifically designed for concrete
- > An intelligent approach to handling construction details
- > Personalized service

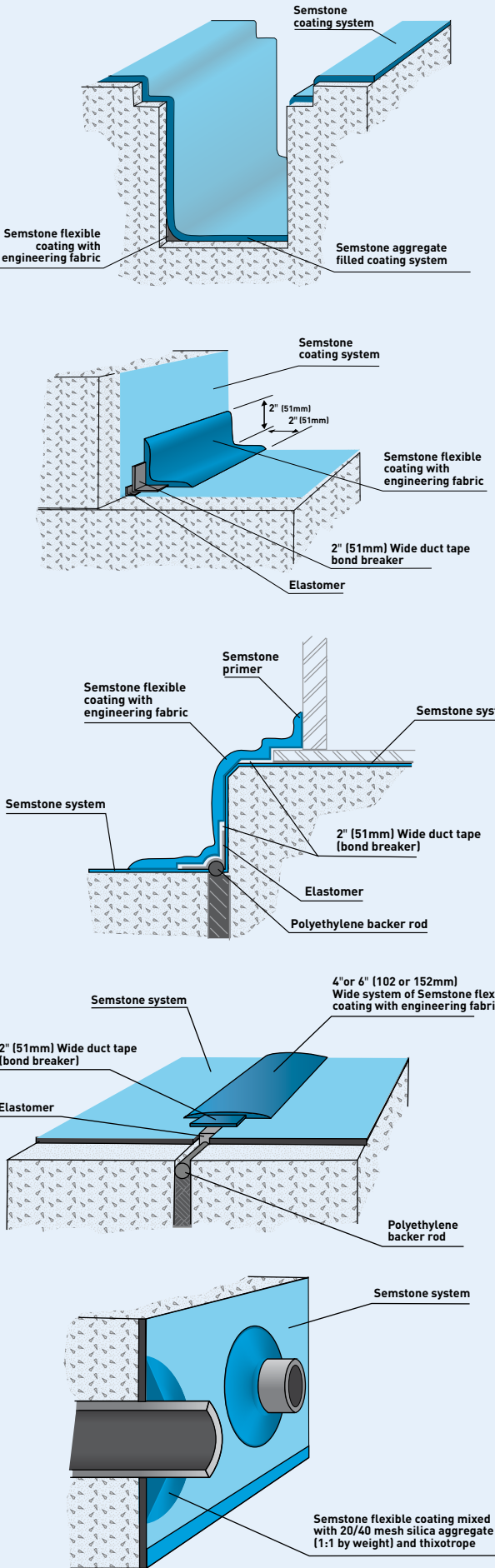
Sump & Trench Coating Detail

Horizontal to Vertical Transition Detail

Seal for Tank Bottom and Foundation Detail

Treatment for Expansion Joints, Structural Joints for Non-Vehicular Traffic

Seal for Pipe Penetrations



# Semstone systems and thickness guide

Semstone system recommendations vary according to expected service conditions. Listed below are a few typical situations and the Semstone system and thickness recommendations. To select a specific Semstone product, consult the Semstone System Selector, Chemical Resistance Guide, or contact your Carboline representative.

NEW CONCRETE OR EXISTING CONCRETE WITHOUT SURFACE DETERIORATION	HORIZONTAL SURFACES	VERTICAL SURFACES
Foot Traffic	20-30 mils Semstone NC <sup>1</sup> 60-75 mils Semstone AFC <sup>2</sup>	30 mils Semstone Vertical System <sup>4</sup>
Soft Wheeled / Rubber Wheeled Hand Carts	60-75 mils Semstone AFC <sup>2</sup>	30 mils Semstone Vertical System <sup>4</sup>
Forklift / Vehicular Traffic	125 mils Semstone AFRC <sup>3</sup>	30 mils Semstone Vertical System <sup>4</sup>
Sumps and Trenches	125 mils Semstone AFRC <sup>3</sup>	125 mils Semstone AFRC <sup>3</sup>

1 - Neat Coat    2 - Aggregate Filled Coating    3 - Aggregate Filled Reinforced Coating

4 - Semstone coating mixed with 20/40 mesh aggregate (1:1 by weight) and thixotrope

## Concrete Repair: Restoration and Resurfacing

PRODUCT	HORIZONTAL SURFACES 0" - 1/2" (0-13MM) ERODED:	HORIZONTAL SURFACES 1/2" - 4" (13-102MM) ERODED:	VERTICAL SURFACES 0" - 1" (0-13MM) ERODED:
Carboguard 510 (epoxy)	✓	✓	✓
Semstone 110 (blended) *	✓		✓
Semstone 800 Series (vinyl ester)	✓		
Carbocrete 522		✓	
Semstone Polymer Concrete		✓	✓
Semstone 800 PM	✓		

\* Semstone coating mixed with 20/40 mesh aggregate (1:1 by weight) and thixotrope

**Carboguard® 510 is a patching and surfacing compound that repairs and restructures damaged concrete, and exhibits excellent bond strength to concrete and other masonry surfaces.**

We offer a number of concrete repair products for deteriorated concrete from 1/8" to 4" (3 to 102mm). Contact your Carboline representative or Carboline Technical Service to determine the product that's correct for your environment.





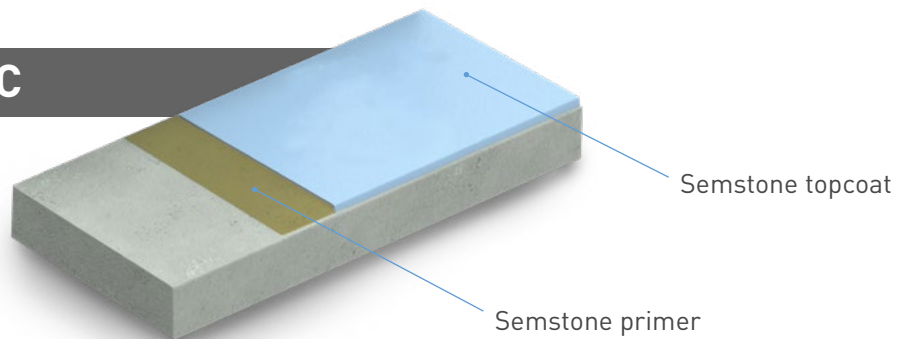
## The “Why” behind the systems

**NC** - Neat Coat system that is an easy to install solution for light industrial secondary containment with chemical resistance expected from Semstone products.

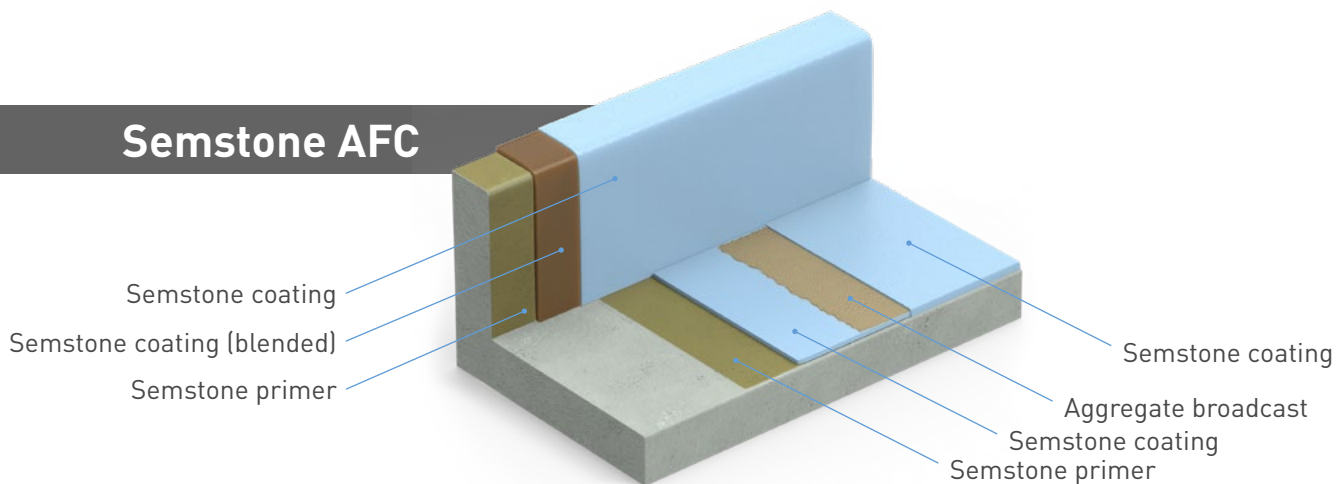
**AFC** - Aggregate filled coating system used for process slabs, tank farm floors, chemical loading and unloading areas, and spill containment areas.

**AFRC** - Aggregate filled reinforced coating system design for ultimate concrete protection. The reinforcement adds extra protection for containments with vehicular traffic.

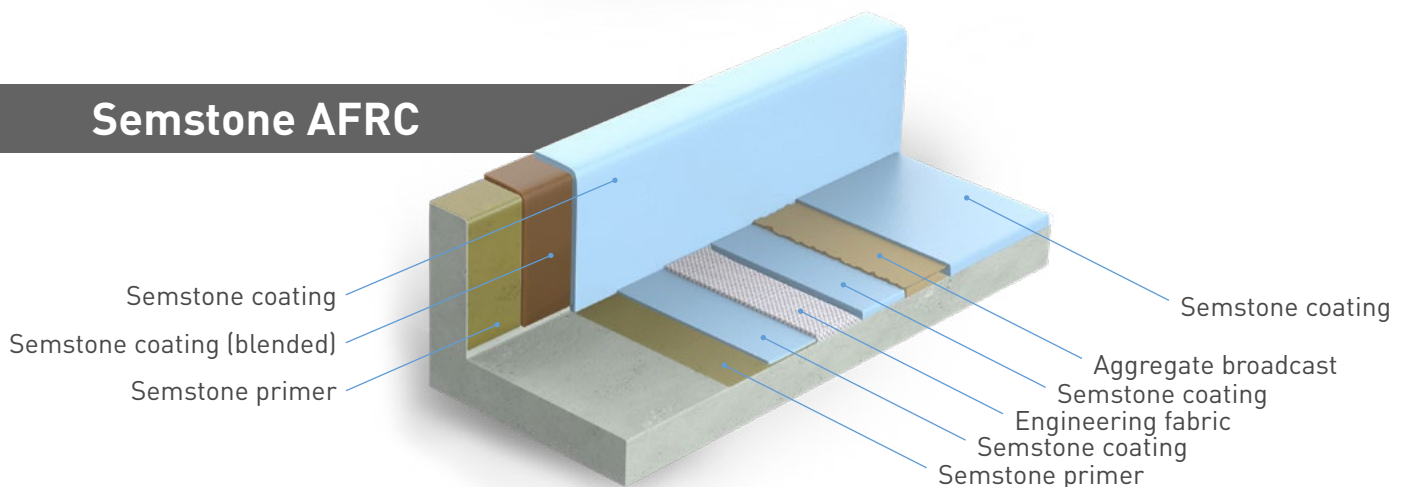
### Semstone NC



### Semstone AFC



### Semstone AFRC



# PRODUCTS

SEMSTONE COATINGS	DESCRIPTION
<b>Semstone 140</b>	Amine epoxy coating with great chemical resistance to most common industrial chemicals.
<b>Semstone 145</b>	Novolac-epoxy coating with superior chemical resistance to the harshest of industry chemicals, including 98% sulfuric acid.
<b>Semstone 245</b>	Novolac-epoxy coating with outstanding chemical resistance to the industry's most aggressive chemicals, including chlorinated solvents.
<b>Semstone 870</b>	Vinyl ester epoxy coating formulated to be more flexible to tolerate movement of concrete. Withstands the industry's most aggressive chemicals, including a broad range of organic chemicals.

POLYMER CONCRETES	DESCRIPTION	USES
<b>Semstone 300</b>	Semstone 300 provides a monolithic surfacing that has excellent resistance to impact and can be used to restore and protect new or severely degraded surfaces in moderately aggressive chemical exposures and persistent mechanical abuse.	It is used to protect concrete integrity from attack from a wide range of aggressive chemicals and extreme physical service conditions.
<b>Semstone 305</b>	Semstone 305 polymer concrete is an excellent alternative to acid brick. Semstone 305 polymer concrete can be applied from 1/2" (13mm) to several inches thick.	It is used to protect Portland cement concrete from attack from a wide range of aggressive chemicals.
<b>Semstone 884</b>	Semstone 884 is a vinyl ester polymer concrete which incorporates proprietary non-shrink technology into its formulation, making it the first practical vinyl ester polymer concrete for use as a concrete topping.	It is an excellent alternative to acid brick. Can be used as a construction material for pouring pump and small tank foundations, and pre-casting of sumps and trenches.
<b>Carboguard 510</b>	An economical epoxy patching and surfacing compound that exhibits excellent bond strength to concrete and other masonry surfaces. It is ideally suited for patching spalled concrete and masonry wall surfacing to accept subsequent topcoats.	Carboguard 510 repairs damaged concrete, fills large cracks, and can be used as a coving and sloping material for floor-wall transitions.

FLEXIBLE COATINGS	DESCRIPTION	USES
<b>Semstone 805</b>	Semstone 805 is a flexible epoxy polymer coating and lining providing a chemical, water and abrasion resistant barrier for steel and concrete.	This versatile coating system was developed as a self-leveling, flexible chemical resistant coating and lining and can also be used as a high build coating and lining system with the addition of a third component.
<b>Semstone 806</b>	Semstone 806 is a 100% solids, low odor, rubberized epoxy. It is used as a chemically resistant coating for concrete.	When reinforced with our flexible reinforcing fabrics it provides a system which will bridge working cracks as well as expansion joints.
<b>Reactamine Joint Seal</b>	Reactamine Joint Seal is a two-component 100% solids, polyurea-based joint sealant that is self-leveling and cures in approximately 60 minutes.	It works equally well with asphalt and concrete and protects interior horizontal concrete expansion and control joints from spalling, chipping and breakdown.
<b>Semstone 6325 Sealant</b>	Two-component, self-leveling, polyurethane sealant. It exhibits excellent flexibility with moderate hardness and good chemical resistance to organic acids, alkalis and most solvents.	Can be used in conjunction with all lining systems in a wide range of applications. All high movement joints: isolation, expansion or control thermal shock situations, and exterior applications.

MISCELLANEOUS	DESCRIPTION	USES
<b>Semstone Scrim Cloth</b>	Scrim Cloth is a woven, Type "E", borosilicate glass fiber reinforcing fabric, specially designed for Semstone Systems. The glass filament fibers are bundled and woven at right angles to each other, which affords bidirectional strength.	When Scrim Cloth is incorporated in a Semstone Epoxy, Novolac or Vinyl Ester coating/lining system, impact resistance, tensile strength and fatigue resistance of the system is increased.
<b>Semstone Thixotrope C</b>	Crushed newspaper for adding body to Semstone products.	Added to increase viscosity of products for vertical hang and film build.
<b>Semstone Thixotrope D</b>	Cabosil for film build properties for Semstone products.	Added to increase viscosity of products for vertical hang and film build.

This guide is intended as an aid in determining the potential usefulness of the listed Semstone products as coatings to protect concrete and incidental steel from chemical exposure. For a full list of our tested chemical resistances, consult the Semstone System Selector, or contact your Carboline representative.

SEMSTONE	140/300	145/305	245	870	805
ACETIC ACID, 10%	1	1	1	1	1
ACETIC ACID, 30%	2	2	1	1	2
ACETIC ACID, 50%	2	2	2	1	2
ACETONE	1	1	1	2	2
ACRYLIC ACID	NR	2	1	1	T
ALUMINUM CHLORIDE	1	1	1	1	1
ALUMINUM HYDROXIDE	1	1	1	1	1
ALUMINUM NITRATE	1	1	1	1	1
AMMONIA	1	1	1	1	1
AMMONIUM BISULFITE	1	1	1	1	1
AMMONIUM CHLORIDE	1	1	1	1	1
AMMONIUM FLUORIDE	1,A	1,A	1,A	1,A	1,A
AMMONIUM HYDROXIDE	1	1	1	1	1
AMMONIUM LAURYL SULFATE, 30%	1	1	1	1	1
AMMONIUM NITRATE	1	1	1	1	1
AMMONIUM PERSULFATE	1	1	1	1	1
AMMONIUM SULFATE	1	1	1	1	1
AMMONIUM SULFIDE	1	1	1	1	1
AMMONIUM SULFITE	1	1	1	1	1
BLACK LIQUOR (PAPER)	1	1	1	1	1
BLEACH	2,C	2,C	2,C	1,C	2,C
BRINE	1	1	1	1	1
CALCIUM HYDROXIDE	1	1	1	1	1
CALCIUM HYPOCHLORITE	2,C	2,C	2,C	1,C	2,C
CALCIUM NITRATE	1	1	1	1	1
CALCIUM SULFATE	1	1	1	1	1
CARBON DIOXIDE GAS	1	1	1	1	1
CASTOR OIL	1	1	1	1	1
CHLORINE WATER SATURATED	1	1	1	1	1
CHROMIC ACID, 10%	1	1	1	1	1
CHROMIC ACID, 50%	2	2	2	2	2
CITRIC ACID	1	1	1	1	1
CORN OIL	1	1	1	1	1
CRUDE OIL, SOUR	1	1	1	1	1
CRUDE OIL, SWEET	1	1	1	1	1
DIESEL FUEL	1	1	1	1	1
FERROUS CHLORIDE	1	1	1	1	1
FORMIC ACID	NR	2	1	1	NR

SEMSTONE	140/300	145/305	245	870	805
FUEL OIL	1	1	1	1	1
GASOLINE	1	1	1	1	1
GREEN LIQUOR	1	1	1	1	1
HEXANE	1	1	1	1	1
HYDRIODIC ACID, 20%	2	2	1	1	T
HYDROCHLORIC ACID, 10%	1	1	1	1	1
HYDROCHLORIC ACID, 20%	1	1	1	1	2
HYDROCHLORIC ACID, 37%	1,D	1,D	1,D	1,D	1,D
HYDROFLUORIC ACID, 10%	1,A	1,A	1,A	1,A	1,A
HYDROFLUORIC ACID, 20%	1,A	1,A	1,A	1,A	1,A
HYDROFLUORIC ACID, 48%	2,A	1,A	1,A	1,A	2,A
HYDROFLUOSILICIC ACID, 10%	1,A	1,A	1,A	1,A	1,A
HYDROFLUOSILICIC ACID, 25%	1,A	1,A	T	1,A	1,A
ISOPROPYL ALCOHOL	1	1	1	1	1
JET FUEL	1	1	1	1	1
KEROSENE	1	1	1	1	1
LACTIC ACID	1	1	1	1	1
LECITHIN	1	1	1	1	1
MALIC ACID	1	1	1	1	1
METHANOL	1	1	1	1	2
METHYL ETHYL KETONE	1	1	1	1	2
METHYL ISOBUTYL KETONE	1	1	1	1	2
MINERAL SPIRITS	1	1	1	1	1
MURIATIC ACID	1	1	1	1	1
NAPHTHA	1	1	1	1	1
NITRIC ACID, 5%	1,D	1,D	1,D	1,D	1,D
NITRIC ACID, 10%	2,D	2,D	2,D	1,D	2,D
NITRIC ACID, 30%	NR	NR	2,D	1,D	NR
NITRIC ACID, 50%	NR	NR	NR	1,D	NR
PHENOL, 5%	1	1	1	1	1
PHENOL, 85%	NR	NR	1	NR	NR
PHOSPHORIC ACID, 20%	1	1	1	1	1
PHOSPHORIC ACID, 50%	1	1	1	1	1
PHOSPHORIC ACID, 85%	1	1	2	1	1
PHOSPHORIC ACID, 100%	NR	2	2	1	NR
POTASSIUM ACETATE	1	1	1	1	1
POTASSIUM BROMIDE	1	1	1	1	1
POTASSIUM CARBONATE, 10%	1	1	1	1	1
POTASSIUM CARBONATE, 25%	1	1	1	1	1
POTASSIUM CHLORATE	1	1	1	1	1

SEMSTONE	140/300	145/305	245	870	805
POTASSIUM CHLORIDE	1	1	1	1	1
POTASSIUM FLUORIDE	1,A	1,A	1,A	1,A	1,A
POTASSIUM HYDROXIDE, 10%	1	1	1	1	1
POTASSIUM HYDROXIDE, 25%	1	1	1	1	1
POTASSIUM HYDROXIDE, 50%	1	1	1	1	1
POTASSIUM NITRATE	1	1	1	1	1
POTASSIUM SULFATE	1	1	1	1	1
PROPIONIC ACID, 50%	2	2	1	1	NR
PROPIONIC ACID, 100%	NR	NR	2	1	NR
SALICYLIC ACID	1	1	1	1	1
SALT BRINE	1	1	1	1	1
SODIUM BICARBONATE	1	1	1	1	1
SODIUM CARBONATE	1	1	1	1	1
SODIUM CHLORIDE	1	1	1	1	1
SODIUM CHLORITE	1	1	1	1	2
SODIUM HYDROSULFIDE	1	1	1	1	1
SODIUM HYDROXIDE, 10%	1	1	1	1	1
SODIUM HYDROXIDE, 50%	1	1	1	1	1
SODIUM HYPOCHLORITE, 5%	NR	NR	NR	1,C	NR
SODIUM PHOSPHATE (ACID)	1	1	1	1	1
SODIUM PHOSPHATE (TRI)	1	1	1	1	1
STYRENE	1	1	1	1	2
SUGAR/SUCROSE	1	1	1	1	1
SULFUR DIOXIDE	1	1	1	1	1
SULFURIC ACID, 10%	1	1	1	1	1
SULFURIC ACID, 25%	1	1	1	1	1
SULFURIC ACID, 50%	1	1	1	1	1
SULFURIC ACID, 75%	1	1	1	1	2
SULFURIC ACID, 98%	NR	1,D	1,D	NR	NR
TOLUENE	1	1	1	1	2
TURPENTINE	1	1	1	1	1
UREA	1	1	1	1	1
VINEGAR	1	1	1	1	1
WATER, DEIONIZED	1	1	1	1	1
WATER, DEMINERALIZED	1	1	1	1	1
WATER DISTILLED	1	1	1	1	1
WHITE LIQUOR (PAPER)	1	1	1	1	1
WINE	1	1	1	1	1
XYLENE	1	1	1	1	1

## Key:

1 = Suitable for constant flow and/or areas with frequent spills and/or poor drainage (i.e. sumps, trenches, and pits).

2 = Suitable for intermittent spills that are cleaned up within 72 hours.

T = Insufficient data available to provide rating. Testing is recommended.

Consult Carboline Technical Service.

NR = Not Recommended. May be suitable for limited exposure applications under certain conditions. Consult Carboline Technical Service.

A = This chemical will attack silica aggregate. Silica must be totally encapsulated. Consult Carboline Technical Service for non-silica aggregate recommendations.

B = For constant immersion service, coating must be postcured 12 hours

at 150°F (66°C). Consult Carboline Technical Service for alternate cure schedules.

C = This chemical is unstable under some conditions, resulting in aggressive behavior. Consult Carboline Technical Service.

D = Coating may show some staining or color change when exposed to this chemical.

**NOTE:** Ratings are based on 135°F (57°C) maximum exposure temperature. In many cases service temperature can be as high as 200°F (93°C), but consult Carboline for recommendations beyond the 135°F (57°C) limit.

# GLOBAL COATINGS LEADERS™

RIGHT PEOPLE • RIGHT PRODUCTS • RIGHT LOCATIONS



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