



S-5101 (Carbon Filled) Full Functional Novolac Epoxy Grout and Mortar

PRODUCT DESCRIPTION:

Summitville's S-5101 Series are fully functional Novolac systems. S-5101 systems are a New Generation Epoxy for highly chemical resistant mortar and/or grouting epoxy applications. S-5101 is a three-part 100% solids epoxy compound for setting and grouting of floor brick, quarry tile, pavers, porcelain tile and ceramic mosaics. This 100% epoxy solids system is designed for aggressive chemical environments. S-5101 novolac formulation gives superior industrial chemical strength against exposure to concentrated acids, alkaline, corrosive and solvent-based materials.

S-5101 is designed to be used in wide variety of applications. It is designed to resist attacks by many acids, alkalis and other chemical compounds that normally break down cement mortars and standard 100% epoxy grouts. S-5101 resists sulfuric, chromic and nitric acid, which destroys many grouting systems on the market today. It is recommended for use in distilleries, refineries, chemical laboratories, breweries, dairies, food processing plants, etc. S-5101 is sag resistant and should be specified for setting or grouting ceramic tile on any wall or floor installations. S-5101 not only has exceptional bond strength (greater than 1000 P.S.I.), but it will remain rigid and cohesive at intermittent temperatures up to 350°F. S-5101 meets or exceeds ANSI A118.3, ANSI A118.5, ASTM C395, and ASTM C658.

USES:

S-5101 is recommended for use in distilleries, refineries, laboratories, food processing plants, paper mills and commercial kitchens, including fast-food restaurant applications.

ANSI A118.3 Epoxy Requirements

Property	S-5101 Typical Value	Requirement
Water Clean-ability**	80-90 min	80 minutes
Initial Setting Time	3 hours	Greater than 2.0 hours
Service Setting Time	3 Days	Less than 7 days
Shrinkage	0.034%	Less than 0.25%
Sag	Pass	.000 inches
Quarry Shear Bonds	> 1250 PSI (8.6 MPa)	>1000 PSI (6.9 MPa)
Compressive Strength	11900 PSI (82 MPa)	> 3500 PSI (24 MPa)
Tensile Strength	2500 PSI (17 MPa)	> 1000 PSI (6.9 MPa)
Thermal Shock	550 PSI (3.8 MPa)	> 500 PSI (3.4 MPa)

** Clean up should include the use of Summitville's SL-86 cleaner

LIMITATIONS : Surface temperature of substrate should be above 50°F during tile installation and cure. Continuous exposure of cured S-5101 above 250°F is not recommended.

ANSI A118.5 Requirements for Carbon Filled Furan Grout

Property	Test Method Value	S-5101 Typical	Required Carbon Grout Value
Compressive Strength	ASTM C579	11900 PSI (62 MPa)	3000 PSI (21 MPa)
Tensile Strength	ASTM C307	2600 PSI (17.9 MPa)	700 PSI (4.8 MPa)
Absorption	ASTM C413	0.19%	Max. 1%
Modulus of Elasticity	ASTM C580	5800 PSI (40 MPa)	700 PSI (4.8 MPa)
Flexural Strength	ASTM C580	4400 PSI (30 MPa)	1000 PSI (6.9 MPa)
Initial Set, Hours	ASTM C308	3	Max. 5
Final Set, Days	ASTM C308	3	Max. 7
Linear Shrinkage	ASTM C531	0.034%	Max. 1%
Working Time, Minutes	ASTM C308	35	Min. 10
Bond Strength	ASTM C321	Pass	150 PSI (1 MPa)

INSTALLATION:

Substrate: S-5101 is recommended for use on cured concrete, plaster, drywall, masonry surfaces, cement backer units (CBU) and plywood. Substrate shall be prepared in accordance with ANSI A108.6. The surface to receive S-5101 must be structurally sound, dry and free of sealers, coatings, oil, dirt and dust. New masonry surfaces should be sufficiently cured, dimensionally stable and free from cracks. It is advisable to brush all surfaces with a stiff brush to remove any loose material that may be encountered. Consult the Tile Council of North America Handbook for Ceramic, Glass, and Stone Tile Installations, ANSI A-108, and any other applicable standards for specific setting descriptions.

Mixing: S-5101 is furnished in 3 parts. Exact proportions and thorough mixing of parts “A” and “B” with one another is absolutely essential for satisfactory curing and performance. A 2-gallon unit requires about 11.2 pounds of part C powder. The final working viscosity can be altered by the amount of part “C” added. To “butter” brick for use in the “bricklayers” setting method, use approximately 11.2 pounds of powder for a 2-gallon unit. For grouting using the “tile setters” method, use slightly less than 11.2 pounds for a 2-gallon unit. Empty contents of part “A” and “B” into mixing bucket and mix well, without mixing air into the product. Then gradually add part “C” powder and mix thoroughly using either hand tools or a slow spin powered bucket mixer. Care must be taken to avoid whipping air into this mix. Continue to mix until smooth and free of lumps. It is highly recommended that complete units are mixed at a time; however, if necessary to split a unit, weigh out 2 parts “A”, 1 part “B” and about 3.5 parts “C”. Clean tools with warm water with Summitville’s SL- 86 cleaner immediately after use.

Working Characteristics: S-5101 is ideally installed at temperatures from 70° to 80°F. At higher temperatures the pot life, open time and clean-up time are reduced; however, it is more fluid and easier to work. At lower temperatures, these factors are reversed. Working surface temperature can vary from room temperature and must be taken into consideration. Do not begin application of S-5101 until the temperature of the room and substrate are above 50°F during the curing period. For proper handling S-5101 must be stored at 60-80°F until product has normalized to this temperature before use. Depending upon storage and packaging practices, normalizing time may be significantly longer than 24 hours.

Times

Temperature	Clean Up Time	Set Time
50°F (10°C)	1.5 - 2 hours	15 -30 hours
70°F (21°C)	1 hour	3-6 hours
90°F (32°C)	40 min	<4 hours

High humidity can reduce cure speed for epoxy systems.

SETTING:

Full coverage of the setting material on the back of the tile is desirable to prevent broken and cracked tile. The National Tile Contractors Association recommendation to accomplish full coverage is as follows: Apply mortar to substrate using the flat side of the trowel to fill any voids and “key” the material to the substrate. Using the proper sized notched trowel, comb the mortar evenly in one direction only. Do not “swirl”. Set the tile in the mortar with the edge of the tile parallel to the comb lines. To remove air voids, push the tile back and forth in the mortar perpendicular to the comb lines. S-5100 may also be used to set according to brick layers method however more part C or S-31 may be needed to increase the desired consistency of the mix.

APPLICATION:

As a Setting Mortar: Spread mixed S-5101 with a notched trowel, then set tile. Use a 1/8” notched trowel for ceramic mosaics to achieve a 1/16” bed. Use a ¼” notched trowel for smooth or shallow ribbed pavers providing a finished bed of 1/8”. Use a ¼” x 3/8” square-notched trowel for heavy ribbed backed tile such as Quarry tile. Once the S-5101 begins to set (becomes non-sticky and/or starts to stiffen) it should be discarded, as proper bonding will not be accomplished. Allow 8-10 hours at 70°F to elapse before grouting tile.

As a grout: With a firm, straight edge rubber trowel (*Gundlach GK-2, Barwalt UFF 1B or similar*) force as much S-5101 into joints as possible, using sufficient pressure and flow to avoid air pockets or voids. Before the S-5101 loses its plasticity, remove excess with a rubber float in a scraping or squeegee fashion working diagonally across joints to facilitate removal without pulling material from joints.

VERTICAL SURFACES:

All vertical work must be completed within 20 minutes of mixing product at 70°F. Lower temperatures may result in longer work times and higher temperatures will result in shorter work times.

If manufacturer's date is over 1 year, S-31 should be added to thicken the unit. If necessary, add up to 0.2 lbs of S-31 per 3-gallon unit. Mix S-31 into part A of the epoxy a minimum of 8 hours before use.

CLEAN-UP:

For initial clean up: Use a white plastic scrub pad or an epoxy sponge and a sufficient amount of clean warm water with SL-86 added. Avoid water migration into un-grouted joints. For easy initial cleaning, apply SL-86 without water to the floor and use with Scotchbrite® or epoxy sponge, taking care not to allow SL-86 and soapy epoxy into ungrouted areas. It is designed to aid in clean up without breaking down the chemical resistance of the epoxy grout. Change cleaning water and scrub pads/sponges often to avoid leaving a sticky film on the tile. Do not leave standing liquid on uncured epoxy joints after initial cleaning. At 70°F, all final clean up may be performed after 10 hours but before 24 hours. During final cleanup, add SL-86 to warm water at approximately 2-4 ounces per gallon of water. Use cure time chart to estimate and adjust accordingly for other temperatures. Use a white scrub pad or epoxy sponge, SL-86 and water. At final cleanup, clean completely, as S-5101 is difficult to remove after it cures for over 24 hours. Wide tile joints may have a slight concave appearance after grout cure. Cover with Kraft paper after final clean up to protect from other construction debris during cure period. Marine Grade/Industrial Strength Methylene Chloride may be used to remove cured epoxy residue. If steam cleaning S-5100 from waxed brick/tile, allow 48 hours minimum cure time at 70°F before removal of wax by steam cleaning.

CAUTION:

Protect from dirt and all traffic for 16 hours, heavy traffic and dirt for 48 hours. Do not grout in direct sunlight. Cure S-5101 a minimum of 5-7 days at 70°F before chemical exposure.

PROTECTING NEW TILEWORK:

To avoid damage to finished tile work, schedule floor installations to begin only after all structural work, building enclosure and overhead finished work, such as ceilings, painting, mechanical and electrical work are completed. Keep all traffic off finished tile floors until the floor has fully cured or provide up to ¾" thick plywood protection over Kraft paper to protect floors before installation materials have fully cured.

PACKAGING:

<u>2 Gallon Units</u> , Net Wt. = 21 lb	<u>OR:</u> <u>Industrial Units</u> , 18.5 Gal, Net Wt. = 195 lb
Gross Wt. = 24 lb	Gross Wt. = 209 lb
<u>Part A:</u> Resin 6.4 lbs.	<u>Part A:</u> Resin 60.0 lbs
<u>Part B:</u> Hardener 3.2 lbs.	<u>Part B:</u> Hardener 30.0 lbs.
<u>Part C:</u> Silica or NovaColor 11.2 lbs.	<u>Part C:</u> Silica or NovaColor 105 lbs.

COLOR:

S-5101 is only available in black. S-5101 CARBLACK 991CA

COVERAGE:

Setting: square feet/gallon: using
¼" x ¼" square notch trowel 18 to 20 sq. ft./gallon
¼" x 3/8" square notch trowel 12 to 15 sq. ft./gallon
Volume: ~19.75 g/cubic inch ~239 cubic inches/gallon

Please Refer to Grout Coverage Tables at www.Summitville.com for Grouting Coverage

S-5101 Chemical Resistance

Chemical		Chemical		Chemical		Chemical	
Acetaldehyde	C	Chromic Acid 5%	R	Hydrocyanic Acid	R	Phenol Alcohol	N
Acetic Acid, Glacial	N	Chromic Acid 10%	R	Hydrofluoric Acid to 20%	C	Phosphoric Acid 10%	R
Acetic Acid 3%	R	Chromic Acid 20%	R	Hydrofluosilicic Acid	C	Phosphoric Acid 25%	R
Acetic Acid 10%	R	Chromic Acid 32%	C	Hydrogen Peroxide	C	Phosphoric Acid > 25%	R
Acetic Acid over 10%	C	Cider	R	Ice Cream	R	Phosphorous Acid	R
Acetic Anhydride	N	Citric Acid 20%	R	Iron Chlorides	R	Potassium Bicarbonate	R
Acetone	R	Citric Acid full	R	Iron Nitrates	R	Pyridine 20%	C
Alcohol	R	Citric Acid Dry	R	Iron Sulfates	R	Pyridine	N
Alum or Aluminum Sulfate	R	Citrus fruits	R	Ketchup	R	Rochelle Salt	R
Ammonia (household)	R	Coffee	R	Lactic Acid 3%	R	Saturated Sugar Solution	R
Ammonium Hydroxide to 30%	R	Cooking Grease	R	Lactic Acid 10%	R	Sodium Bicarbonate	R
Amyl Acetate	N	Corn Oil	R	Lactic Acid > 10%	R	Sodium Carbonate	R
Amyl Alcohol	R	Corn Syrup	R	Linseed Oil	R	Sodium Hydroxide up to 30%	R
Aniline	N	Cresol	C	Magnesium Chloride	R	Sodium Hydroxide 35%	R
Animal Oils	R	Dichloroacetic Acid, 10%	N	Magnesium Hydroxide	R	Sodium Hydroxide over 35%	R
Aqua Regia	N	Dichlorobenzene	N	Magnesium Nitrate	R	Sodium Hypochlorite, up to 8 %	R
Bakery Products	R	Diethyl Ether	N	Magnesium Sulfate	R	Sodium Hypochlorite, over 15 %	R
Beer	R	Egg, raw	R	Methyl Acetate	N	Sodium Nitrate	R
Benzene	R	Ethyl Acetate	N	Methyl Alcohol	R	Soy Sauce	R
Benzene Sulfonic Acid, 10%	R	Ethyl Alcohol	R	Methyl Ethyl Ketone	R	Stearic Acid	C
Benzoic Acid	R	Ethyl Bromide	N	Methyl Sulfate	N	Sugar, Saturated Solution	R
Boric Acid	R	Ethyl Sulfate	N	Methylene Chloride	N	Sulfuric Acid, 50%	R
Bromine Water	N	Ethylene Chloride	N	Milk	R	Sulfuric Acid, 75%	R
Butter	R	Ethylene Glycol Monobuturate	R	Mineral Oil	R	Sulfuric Acid, 93%	R
Butyl Acetate	N	Ethylene Glycol	R	Mineral Spirits	R	Sulfuric Acid, 98%	R
Butyl Alcohol	R	Ferric Chloride	R	Molasses	R	Tetrahydrofuran	N
Butyric Acid	N	Ferric Nitrate	R	Muriatic Acid	R	Tin Chloride	R
Cadmium Chloride	R	Ferric Sulfate	R	Nitric Acid 5%	R	Tin Sulfate	R
Cadmium Nitrate	R	Fluosilicic Acid	C	Nitric Acid 10%	R	Toluene	R
Cadmium Sulfate	R	Formaldehyde	C	Nitric Acid 20%	R	Trisodium Phosphate	R
Calcium Bisulfite	R	Formic Acid 10%	C	Nitric Acid 30%	R	Urea	R
Calcium Chloride	R	Formic Acid Glacial	N	Nitric Acid 40%	N	Vinegar	R
Calcium Hydroxide	R	Glucose	R	Nitric Acid 50%	N	Wine	R
Carbonated Water	R	Glycerine	R	Oleic Acid 5%	R	Xylene	R
Casein	R	Grape Juice	R	Oleic Acid 10%	R		
Cheese	R	Gold Cyanide	R	Oleic Acid > 10%	C		
Chloroacetic Acid, 10 %	N	Hexane	N	Oxalic Acid	R		
Chlorobenzene	N	Hydrobromic Acid 10%	R	Perchloric Acid	N		
Chloroform	N	Hydrochloric Acid 37%	R	Phenol	N		

R=	Recommended	N=	Not Recommended	C=	Conditional Contact Summitville Tiles, Inc.
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