



S-5100 Full Functional Novolac Epoxy Grout and Mortar

PRODUCT DESCRIPTION:

Summitville's S-5100 Series are fully functional Novolac systems. S-5100 systems are a New Generation Epoxy for highly chemical resistant mortar and/or grouting epoxy applications. S-5100 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-5100 novolac formulation gives superior industrial chemical strength against exposure to concentrated acids, alkaline, corrosive and solvent-based materials.

S-5100 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-5100 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, paper mills, food processing plants, etc. S-5100 is sag resistant and should be specified for setting or grouting ceramic tile on any wall or floor installations. S-5100 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.

USES:

S-5100 is recommended for use in distilleries, refineries, laboratories, food processing plants and commercial kitchens, including fast-food restaurant applications.

ANSI A118.3 Epoxy Requirements

Property	S-5100 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	9000 PSI (62 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 60°F during tile installation and cure. Continuous exposure of cured S-5100 above 250°F is not recommended.

ANSI A118.5 Requirements for Silica Filled Furan Grout

Property	Test Method Value	S-5100 Typical	Required Silica Grout Value
Compressive Strength	ASTM C579	9000 PSI (62 MPa)	3000 PSI (21 MPa)
Tensile Strength	ASTM C307	2500 PSI (17 MPa)	400 PSI (2.75 MPa)
Absorption	ASTM C413	0.25%	Max. 1%
Modulus of Elasticity	ASTM C580	8000 PSI (55 MPa)	600 PSI (4.1 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-5100 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 A108.4. The surface to receive S-5100 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-5100 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 3-gallon unit requires about 32.4 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 32.4 pounds of powder for a 3-gallon unit. For grouting using the tilesetters method, use slightly less than 32.4 pounds for a 3-gallon unit. Empty contents of part "A" and "B" into mixing bucket and mix well, taking care not to stir air into the mix. 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 10 parts C. Clean tools with warm water with Summitville SL- 86 cleaner immediately after use.

Working Characteristics: S-5100 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-5100 until the temperature of the room and substrate are above 50°F during the curing period. S-5100 must be stored at 60-80°F for at least 24 hours before use. Depending upon storage and packaging practices, normalizing time may be significantly longer.

Times

Temperature	Clean Up Time	Set Time
60°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 reduces cure speed.

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 rib direction. 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-5100 with a notched trowel, then set tile. Use a 1/8" notched trowel for ceramic mosaics to achieve a 1/16"bed. Use a 1/4" notched trowel for smooth or shallow ribbed pavers providing a finished bed of 1/8". Use a 1/4" x 3/8" square notched trowel for heavy ribbed backed tile such as Quarry tile. Once the S-5100 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-5100 into joints as possible, using sufficient pressure and flow to avoid air pockets or voids. Before the S-5100 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 water. Avoid water migration into un-grouted joints. **Warm water with SL-86 added MUST BE USED for clean up.** Summitville's SL-86 works great for initial cleanup. 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 water on uncured epoxy joints after initial cleaning. At 70°F, all final clean up may be performed after 10 hours but before 24 hours. 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-5100 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.

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-5100 a minimum of 5-7 days at 70°F before chemical exposure.

PROTECTING NEW TILEWORK:

To avoid damage to finished tilework, 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:

3 Gallon Units, Net Wt. = 42 pounds
Gross Wt. = 45 pounds

<u>Part A:</u> Resin	6.40 lbs.
<u>Part B:</u> Hardener	3.20 lbs.
<u>Part C:</u> Silica or NovaColor	32.4 lbs.

Industrial Units, Net Wt. = 390 pounds
Gross Wt. = 404 pounds

<u>Part A:</u> Resin	60.0 lbs.
<u>Part B:</u> Hardener	30.0 lbs.
<u>Part C:</u> Silica or NovaColor	300.0 lbs.

COLOR:

S-5100 is available in a Silica grade and a colored Ceramic Industrial Grade (NovaColor).

Silica Grade is a high performance material used for setting and grouting flooring systems by tile setter's method. S-5100 is resistant against many organic acids as well as concentrated Sulfuric Acid 98%. It exhibits excellent performance against solvents like methyl ethyl ketone, benzene, xylene, and acetone. **Silica Grade:** #991 Black, #961 Gray, 998# Red. Custom colors available with minimum order.

NovaColor is a high performance speciality ceramic coated material used for grouting flooring systems by tile setter's method. NovaColor is resistant against the same materials as the S-5100 Silica Grade however gives the user a more versatile array of colors to choose from. The NovaColor system is a specialized quartz coated material to resist color bleeding when in contact against highly concentrated acids and solvents. Excellent resistance against strong muratic acid or chlorine systems

Nova Color: #S2063 Red, #S2163 Plum, #S3033 Green, #S3143 Teal, #S4013 Brown, #S5013 Black, #S6073 Buff, #S6023 Tan, S7133 Smoke, #S8043 Blue.

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

S-5100 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%	C	**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%	N
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%	C	Sodium Bicarbonate	R
Amyl Acetate	N	Corn Oil	R	**Lactic Acid > 10%	C	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 %	C
Beer	R	Egg, raw		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	N	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%	N	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		

**Note for Better Color Stability use Nova Color Quarts or S-5101 Carbon Filled System

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