



## S-5000 HIGH CHEMICAL RESISTANT EPOXY

### PRODUCT DESCRIPTION:

S-5000 is a highly chemical resistant epoxy mortar and grout that meets or exceeds requirements of ANSI A118.3 (Epoxy) and ANSI A118.5 (Furan). S-5000 is a three part 100% solids epoxy compound for setting and grouting of floor brick, quarry tile, pavers, porcelain tile and ceramic mosaics. S-5000 is designed to be used in many applications where furan grout has been required in the past. 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-5000 resists chlorine and nitric acid, which destroys furan. It is recommended for use in distilleries, refineries, chemical laboratories, breweries, dairies, food processing plants, etc. S-5000 is sag resistant and should be specified for setting or grouting ceramic tile on any wall or floor installations. S-5000 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-5000 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-5000 Typical Value | Requirement          |
|----------------------|----------------------|----------------------|
| Water Clean-ability  | Pass                 | 80 minutes           |
| Initial Setting Time | Pass                 | < 2.0 hours          |
| Service Setting Time | Pass                 | > 7 days             |
| Shrinkage            | 0.03%                | < 0.25%              |
| Sag                  | Pass                 | .000 inches          |
| Quarry Shear Bonds   | > 1000 PSI (6.9 MPa) | > 1000 PSI (6.9 MPa) |
| Compressive Strength | 12,500 PSI (87 MPa)  | > 3500 PSI (24 MPa)  |
| Tensile Strength     | 2000 PSI (14 MPa)    | > 1000 PSI (6.9 MPa) |
| Thermal Shock        | 550 PSI (3.8 MPa)    | > 500 PSI (3.4 MPa)  |

#### ANSI A118.5 Requirements for Silica Filled Furan Grout

| Property              | Test Method Value | S-5000 Typical      | Required Silica Grout Value |
|-----------------------|-------------------|---------------------|-----------------------------|
| Compressive Strength  | ASTM C579         | 12,500 PSI (87 MPa) | 3000 PSI (21 MPa)           |
| Tensile Strength      | ASTM C307         | 2000 PSI (14 MPa)   | 400 PSI (2.75 MPa)          |
| Absorption            | ASTM C413         | 0.12%               | Max. 1%                     |
| Modulus of Rupture    | ASTM C580         | 5000 PSI (3.5 MPa)  | 600 PSI (4.1 MPa)           |
| Initial Set, Hours    | ASTM C308         | 2                   | Max. 5                      |
| Final Set, Days       | ASTM C308         | 2                   | Max. 7                      |
| Linear Shrinkage      | ASTM C531         | 0.05%               | Max. 1%                     |
| Working Time, Minutes | ASTM C308         | 45                  | Min. 10                     |
| Bond Strength         | ASTM C321         | Pass                | 150 PSI (1 MPa)             |

**LIMITATIONS :** Surface temperature of substrate should be above 50°F during tile installation and cure. Continuous exposure of cured S-5000 above 250°F is not recommended.

### INSTALLATION:

**Substrate:** S-5000 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-5000 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 Tile Installations, ANSI A-108, and any other applicable standards for specific setting descriptions.

**Mixing:** S-5000 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 28 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 28 pounds of powder for a 3-gallon unit. For grouting using the “Tilersetters” method, use slightly less than 28 pounds for a 3-gallon unit. Empty contents of part “A” and “B” into mixing bucket and mix well. Then gradually add part “C” powder and mix thoroughly using either hand tools or a slow spin powered 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 8 parts “C”. Clean tools with warm soapy water immediately after use.

**Note:** For special color Confederate Gray only, the mix ratio is 1.75 parts “A”, 1 part “B” and about 7 parts “C”. Failure to mix B before weighing out small batches will result in incorrect color and cure problems.

**Working Characteristics:** S-5000 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-5000 until the temperature of the room and substrate are above 50°F during the curing period. S-5000 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.

**Working and Cure Times**

| Temperature | Pot Life  | Open Time | Clean Up Time | Set Time    |
|-------------|-----------|-----------|---------------|-------------|
| 50°F (10°C) | 1.5 hours | 3.5 hours | 2 hours       | 24-30 hours |
| 70°F (21°C) | .75 hours | 2 hours   | 1.5 hours     | 10-14 hours |
| 90°F (32°C) | 0.5 hours | 1.5 hours | 1 hour        | 8-10 hours  |

High humidity slows/inhibits 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 comb lines.

**APPLICATION:**

**As a Setting Mortar:** Spread mixed S-5000 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-5000 begins to set (becomes non-sticky and/or starts to stiffen) it should be discarded, as proper bonding will not be accomplished. Allow 16 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-5000 into joints as possible, using sufficient pressure and flow to avoid air pockets or voids. Before the S-5000 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 a small amount of SL-86 added will speed clean up. 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, perform final clean up 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-5000 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. SL-100 may be used to remove cured epoxy residue.

**Note:** If steam cleaning S-5000 EZ 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-5000 a minimum of seven 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 of 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, Gross Wt. = 41 pounds

**COLOR:**

Color is #991 Black, #961 Gray. Custom colors available with minimum order.

### S-5000 Chemical Resistance

| Chemical             |   | Chemical                     |   | Chemical                 |    | Chemical                        |   |
|----------------------|---|------------------------------|---|--------------------------|----|---------------------------------|---|
| Acetic Acid 10%      | R | Calcium Hydroxide            | R | Hydriotic Acid 20%       | R  | Sodium Carbonate                | R |
| Acetic Anhydride     | N | Carbon Disulfide             | C | Hydrobromic Acid 10%     | R  | Sodium Hydroxide 35%            | R |
| Acetone              | C | Carbon Tetrachloride         | R | Hydrochloric Acid 50%    | R  | Sodium Hydroxide Saturated      | R |
| Ammonia (household)  | R | Chloroacetic 10%             | N | Lactic Acid 10%          | R  | Sodium Hypochlorite (Bleach) 5% | R |
| Ammonium Bromide 30% | R | Chlorobenzene                | N | Methylene Chloride       | NR | Sodium Gluconate (saturated)    | R |
| Alcohol              | R | Chlorine water (bleach)      | R | Mineral Spirits          | R  | Soy Sauce                       | R |
| Aniline              | N | Chromic Acid 10%             | R | Nitric Acid 30%          | R  | Sulfuric Acid 50%               | R |
| Barium Hydroxide     | R | Citric Acid 20%              | R | Nitrobenzene             | N  | Tetrahydrofuran                 | N |
| Beer                 | R | Cooking Grease               | R | Nitrotoluene             | R  | Toluene                         | R |
| Benzyl Acetate       | C | Cresol                       | N | Oleic Acid 10%           | R  | Trisodium Phosphate             | R |
| Benzyl Alcohol       | N | Ethyl Alcohol                | R | Phenol                   | N  | Vegetable Oil                   | R |
| Benzaldehyde         | N | Ethyl Bromide                | N | Phosphoric Acid 10%      | R  | Wine                            | R |
| Bromine Water        | R | Ethylene Glycol Monobuturate | R | Potassium Hydroxide 5%   | R  | Xylene                          | R |
| Butanol              | R | Ferric Chloride              | R | Potassium Persulfate 50% | R  |                                 |   |
| Butyl Acetate        | C | Formic Acid 10%              | C | Pyridine 20%             | C  |                                 |   |
| Calcium Chloride     | R | Formic Acid Glacial          | N | Saturated Sugar Solution | R  |                                 |   |

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

**COVERAGE:**

**Setting:** square feet/gallon: using

¼" x ¼" square notch trowel

¼" x 3/8" square notch trowel

18 to 20 sq. ft./gallon

12 to 15 sq. ft./gallon

Please Refer to Grout Coverage Tables at [www.Summitville.com](http://www.Summitville.com) for Grouting Coverage