



# FIVE STAR<sup>®</sup> EPOXY NOVOLAC GROUT

## PRODUCT DESCRIPTION

Five Star Epoxy Novolac Grout is a highly chemical resistant three component, 100% solids grout designed for industrial areas where exposures to acids and alkali's can occur. Five Star Epoxy Novolac Grout has excellent flowability, is moisture insensitive and is highly chemical resistant. Five Star Epoxy Novolac Grout meets ASTM C 881 Type I, II, IV and V, Grade-2, Classes B and C.

## ADVANTAGES

- High Chemical Resistance
- 95% Effective Bearing Area (EBA)
- Meets ASTM C827
- Low Exotherm
- Excellent thermal shock, impact and wear resistance
- Expansive, Non-Shrink
- Superior Bond to concrete or steel
- Moisture insensitive

## USES

- Grouting for machinery/pump baseplates
- High chemical resistance requirements
- Process Equipment
- Secondary containment

**TECHNICAL SUPPORT** Five Star Products maintains the industry's foremost Engineering and Technical Support Group with over 30 years of experience in precision grouting.

- Technical Center staffed with experienced engineers available for consultation
- Design-A-Spec<sup>™</sup> for engineering specification assistance
- Experienced representatives for field service
- Corporate research laboratory available to customize products for unique applications

**PACKAGING AND YIELD** Five Star Epoxy Novolac Grout is packaged in .35 cubic feet and 1.4 cubic feet units. Each unit consists of premeasured containers of resin, hardener and polyethylene lined bags of aggregate. Up to 1/2 bag of aggregate on a large unit or 5 lb. on a small unit may be withheld to increase maximum flow [and consequently reducing yield to 0.33 cubic feet (small unit) and 1.3 cubic feet (large unit)].

**SHELF LIFE** Two years in original unopened packaging, when stored in dry conditions.

## TYPICAL PROPERTIES AT 73°F (23°C)

Pot Life	45 minutes
Bond Strength, ASTM C 882, 7 Day	2500 psi (17.3 MPa)
Clearances	1/2- 9 inches (13-229mm)
Height Change ASTM C 827, at 90°F (32°C)	Positive Expansion
Effective Bearing Area	95%
Tensile Strength, ASTM C 307	2300 psi (15.9 MPa)
Flexural Strength, ASTM C 580	6000 psi (41.4 MPa)
Coefficient of Expansion, ASTM C 531	16 x10 <sup>-10</sup> in/in/°F (29 x10 <sup>-10</sup> mm/mm/°C)
Compressive Strength, ASTM C 579 B*	
1 Day	8,500 psi (58.6 MPa)
7 Day	13,000 psi (89.6 MPa)
Post Cured at 140° F (60°C)	15,500 psi (106.9 MPa)

## CHEMICAL RESISTANCE CHART#

### Solvents/Organics

Acetaldehyde  
Acetone  
Acetonitrile  
Acrylonitrile  
Butyl acetate  
Cyclohexane  
Ethanol  
Ethyl acetate  
Ethyl alcohol  
Formaldehyde  
Isopropyl Alcohol  
Jet Fuel  
Kerosene  
Methyl Ethyl Ketone  
Methanol  
Methyl Alcohol  
Rubbing alcohol  
Wood Alcohol  
1,1,1 Trichloroethane  
Phenol

### Acids (Conc.)

Acetic (1-50%)  
Acid plating solutions  
Adipic (1-25%)  
Azotic (1-50%)  
Battery (1-98%)  
Chromic (1-30%)  
Chlorohydric (1-37%)  
Dibasic (1-sat.)  
Ethanoic (1-50%)  
Ethylic (1-50%)  
Engravers (1-50%)  
Hydrochloric (1-37%)  
Hydrofluoric (1-40%)  
Mattling (1-98%)  
Nitric (1-50%)  
Oil of vitriol (1-98%)  
Oleic  
Phosphoric (1-85%)  
Sulfuric (1-98%)  
Vitriol (1-98%)

### Bases/Alkalines (Conc.)

Ammonia (1-25%)  
Ammonium Hydroxide (1-25%)  
Aniline  
Barium Hydroxide (1-sat.)  
Black Pulp Liquor  
Butyl amine  
Cadmium Cyanide Plating  
Calcium Hydroxide (1-25%)  
Chromium Trioxide (1-25%)  
Copper Cyanide Plating  
Dimethyl aniline  
Hydrogen Peroxide (1-30%)  
Green Pulp Liquor  
Soap solutions  
Sodium Cyanide (1-15%)  
Sodium Hypochlorite (1-9%)  
Sodium Hydroxide (1-50%)  
Triethanolamine  
Triethylamine  
Potassium Hydroxide (1 --sat)

\* Rate of loading 0.25 inches per minute

# NOTE: Many factors effect chemical resistance. Application design, service and exposure temperatures, and the type and amount of impurities in the chemical or in the environment are some important considerations. These test results are reported to serve as a guide to the applicability of the Novolac system. The data shown above reflect typical results based on laboratory testing under controlled conditions. Reasonable variations from the data shown above may result. Test methods are modified where applicable



## PLACEMENT GUIDELINES

1. **SURFACE PREPARATION:** Surface must be clean and sound. Remove dust, laitance, grease, curing compounds, impregnations and waxes. Concrete may be sandblasted or prepared by other approved mechanical means. Steel should be sandblasted to an SSPC-SP-5 commercial finish.
2. **MIXING:** For optimum performance, all components should be conditioned to between 65°F and 85°F (18°C and 29°C). Pour all of Component B (hardener) into a pail containing all of Component A (resin). Mix Component A and Component B thoroughly by hand or with slow speed mixer to avoid air entrapment. For large units pour mixed liquids into a mortar mixer. While mixing, slowly add Component C (aggregate) and mix only until the aggregate is completely wet. Add Component C (aggregate) immediately after thoroughly mixing component A (resin) and component B (hardener).
3. **METHODS OF PLACEMENT:** Five Star Epoxy Novolac Grout may be poured into place. For vertical flow applications simply pour from the top of the opening. For horizontal applications, pour from one side to the other.
4. **POST PLACEMENT PROCEDURES:** In-service operation may begin immediately after minimum required grout strength and modulus have been achieved.
5. **CLEAN UP:** All tools and equipment may be cleaned using a solution of water and strong detergent. Use an appropriate solvent to clean uncured material. Cured material can only be removed mechanically.  
**NOTE: PRIOR TO APPLICATION, READ ALL PRODUCT PACKAGING THOROUGHLY.** For more detailed placement procedures, refer to Design-A-Spec™ or call the Five Star Products Engineering and Technical Center at 203-336-7900.

## LIMITATIONS

- Flowability and strength gain are adversely affected by lower temperatures.
- For placement temperatures between 50°F and 70°F (10°C and 21°C) or above 90°F (32°C), refer to Design-A-Spec™.
- To obtain bond, concrete shall be visibly free of surface moisture.
- Do not add solvents to increase flowability.
- When clearances are outside the recommended range or when exceeding maximum placement volumes, contact the Five Star Products Engineering and Technical Center.
- For continuous operating temperatures exceeding 180°F (82° C), contact the Five Star Products Engineering and Technical Center.
- Construction practices dictate concrete foundation should achieve its design strength before grouting.

**CAUTION: FOR INDUSTRIAL USE ONLY.** Irritant, toxic, strong sensitizer. Contains epoxy resin and amine. This product may cause skin irritation. Do not inhale vapors. Provide adequate ventilation. Protect against contact with skin and eyes. Wear rubber gloves, long sleeve shirt, goggles with side shields. In case of contact with eyes, flush repeatedly with water and contact a physician. Areas of skin contact should be promptly washed with soap and water. Do not take internally. Keep product out of reach of children. **PRIOR TO USE, REFER TO MATERIAL SAFETY DATA SHEET.**

WARRANTY: "FIVE STAR PRODUCTS, INC. (FSP) PRODUCTS ARE MANUFACTURED TO BE FREE OF MANUFACTURING DEFECTS AND TO MEET FSP'S CURRENT PUBLISHED PHYSICAL PROPERTIES WHEN APPLIED IN ACCORDANCE WITH FSP'S DIRECTIONS AND TESTED IN ACCORDANCE WITH ASTM AND FSP STANDARDS. HOWEVER, SHOULD THERE BE DEFECTS OF MANUFACTURING OF ANY KIND, THE SOLE RIGHT OF THE USER WILL BE TO RETURN ALL MATERIALS ALLEGED TO BE DEFECTIVE, FREIGHT PREPAID TO FSP FOR REPLACEMENT. THERE ARE NO OTHER WARRANTIES BY FSP OF ANY NATURE WHATSOEVER, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IN CONNECTION WITH THIS PRODUCT. FSP SHALL NOT BE LIABLE FOR DAMAGES OF ANY SORT, INCLUDING PUNITIVE, ACTUAL, REMOTE OR CONSEQUENTIAL DAMAGES, RESULTING FROM ANY CLAIMS OF BREACH OF CONTRACT, BREACH OF ANY WARRANTY, WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR FROM ANY OTHER CAUSE WHATSOEVER. FSP SHALL ALSO NOT BE RESPONSIBLE FOR USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT HELD BY OTHERS."

For worldwide availability, additional product information and technical support, contact your local Five Star distributor, local sales representative, or you may call Five Star's Engineering and Technical Center at 203-336-7900.

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