HP EPOXY GROUT

High Performance Precision Grout
Standard/High Flow

PRODUCT DESCRIPTION

Five Star® HP Epoxy Grout is a high-performance expansive, non-shrink, epoxy system for supporting equipment requiring precision alignment. Five Star® HP Epoxy Grout is a three component, 100% solids, solvent-free system formulated to exhibit high early strength combined with the highest creep resistance at elevated temperatures. Five Star® HP Epoxy Grout exhibits positive expansion when tested in accordance with ASTM C827.

ADVANTAGES

- Permanent support for machinery requiring precision alignment
- High early strength
- Start-up in 16 hours or less
- Solvent-free clean up
- Adjustable flow for various conditions
- Expansive, non-shrink per ASTM C827
- Superior creep resistance
- Chemically resistant
- 95% Effective Bearing Area (EBA) is typically achieved following proper grouting procedures
- Excellent adhesion to steel

USES

- High performance machinery grouting
- Crane rail grouting
- Precision alignment under dynamic load conditions
- Vibration dampening filler for rotating equipment
- Support of chemical tanks, vessels and rotating equipment
- Aggressive chemical environments
- Installation of anchors and dowels
- Wind turbine baseplates

PACKAGING AND YIELD

Five Star® HP Epoxy Grout is a three-component system consisting of partially filled containers of resin, hardener, and polyethylene lined bags of aggregate. Five Star® HP Epoxy Grout (Standard) includes five bags of aggregate for a unit yield of approximately 2.0 cubic feet (56.6 liters) of hardened material. Five Star® HP Epoxy Grout High Flow is available with four bags of aggregate for a unit yield of approximately 1.75 cubic feet (49.6 liters) of hardened material.

SHELF LIFE

Two years in original unopened packaging when stored in dry conditions; high relative humidity will reduce shelf life.

TYPICAL PROPERTIES AT 70°F (21°C)

	HP Epoxy Grout High Flow 4-bag	HP Epoxy Grout (Standard) 5-bag
Height Change, ASTM C827, at 90°F (32°C)	Positive Expansion	Positive Expansion
Effective Bearing Area	95%	95%
Creep, ASTM C1181, 1 year 400 psi (2.8 MPa) 140°F (60°C)	2.0 x 10^{-3} in/in (mm/mm)	1.2 x 10^{-3} in/in (mm/mm)
Tensile Strength, ASTM C307	2,000 psi (13.8 MPa)	2,400 psi (16.6 MPa)
Flexural Strength, ASTM C580	4,400 psi (30.4 MPa)	4,800 psi (33.1 MPa)
Coefficient of Expansion, ASTM C531	18 x 10^{-6} in/in/°F (32 x 10^{-6} mm/mm/°C)	17 x 10^{-6} in/in/°F (30 x 10^{-6} mm/mm/°C)
Bond to Concrete, ASTM C882	Concrete Failure	Concrete Failure
Working Time at 70°F (21°C)	45 minutes	60 minutes

Compressive Strength, ASTM C579 B*	**High Flow Compressive Strength** psi (MPa)	**High Flow Compressive Modulus** psi (MPa)	**Standard Compressive Strength** psi (MPa)	**Standard Compressive Modulus** psi (MPa)
16 Hours	10,000 (69.0)	1.5 x 10^6 (10.4 x 10^3)	11,000 (75.9)	1.6 x 10^6 (11.0 x 10^3)
1 Day	14,000 (96.6)	1.9 x 10^6 (13.1 x 10^3)	15,000 (103.5)	2.0 x 10^6 (13.8 x 10^3)
7 Days	16,000 (110.4)	2.1 x 10^6 (14.5 x 10^3)	16,500 (113.9)	2.2 x 10^6 (15.2 x 10^3)
Post cured at 140°F (60°C)	17,000 (117.3)	2.3 x 10^6 (15.9 x 10^3)	17,500 (120.8)	2.5 x 10^6 (17.2 x 10^3)

**Materials tested per ASTM C579 B. Rate of loading 0.25 inches per minute.*
The data shown above reflects typical results based on laboratory testing under controlled conditions. Reasonable variations from the data shown above may result. Test methods are modified where applicable.

APPLICATION INFORMATION

HP Epoxy Grout High Flow	4-bag
Minimum Plate Clearance	1 in. (25 mm)
Placement Depth	1 - 4 in. (25 - 100 mm) > 4 in. (100 mm), contact Five Star
Maximum In-Service Temperature	180°F (82°C)

HP Epoxy Grout	5-Bag
Minimum Plate Clearance	4 in. (100 mm)
Placement Depth	4 - 6 in. (100 - 150 mm) > 6 in. (150 mm), contact Five Star
Maximum In-Service Temperature	180°F (82°C)

PLACEMENT GUIDELINES

The grout is capable of being installed at an ambient temperature range from 55°F – 95°F (13°C – 35°C), however for optimum performance, the grout, environment, mixing equipment, and all surfaces in contact with the grout should be at temperatures between 70°F - 90°F (21°C and 32°C). After installation, maintain grout, substrate, and baseplate/equipment temperatures above 55°F (13°C) until grout reaches required compressive strength. **Flowability and strength gain are by lower and higher temperatures.** Refer to Five Star® Technical Bulletin (TB) 200 and 201 *Epoxy Cold and Hot Weather Grouting* for for installation temperatures outside recommended ranges.

1. **SURFACE PREPARATION:** Construction practices dictate concrete foundation should achieve its design strength before grouting. All surfaces to be in contact with Five Star® HP Epoxy Grout / High Flow shall be dry and free of oil, grease, and other contaminants. Surfaces where epoxy grout bond is not desired must have a bond breaking material applied to them. To maximize bond, concrete surfaces shall be prepared by acceptable means to remove the top surface to coarse aggregate exposure. A minimum 1/4 inch (6 mm) peak to valley surface profile is recommended. The steel baseplate bonding surface should be dry, clean, and free of oil, grease, and other bond inhibiting materials. To optimize bond development to steel, refer to TB419 *Steel Baseplate Considerations.* Isolation/expansion joints should be used on installations of larger dimensions/volumes and should be installed prior to equipment placement. Any existing cracks shall be brought to the project engineer's attention prior to grout installation. Refer to TB213 *Epoxy Grout Concrete Surface Preparation*, TB415 *Expansion joints in Grout Placement* for further details.
2. **FORMWORK:** Formwork should be constructed and sealed 24-hours prior to the grout installation. Formwork shall be constructed of rigid non-absorbent materials, securely anchored, liquid-tight and strong enough to resist forces developed during grout placement. The clearance between formwork and baseplate should be sufficient to allow for a headbox to be placed between the edge of the baseplate and the form. The clearance for remaining sides shall be 1 to 2 inches (25 - 50 mm). Refer to Five Star® TB411 *Grout Shoulder Configurations* for further details. Formwork and areas where bond is not desired should be treated with grease, paste wax, or similar material. Refer to Five Star® TB410 *Grout Formwork* for further details.
3. **MIXING:** Begin by pouring all of Component B (hardener) into the pail containing Component A (resin). Mix thoroughly for 1 - 2 minutes (or until separate materials cannot be observed) with a paddle or with a slow speed drill. Mix slowly to avoid air entrapment. Immediately pour the mixed liquids (combined Components A & B) into a mortar mixer with blades not moving. Add one bag of Component C (aggregate) and start the mortar mixer blades. Slowly add the remaining bags (4 bags HP Epoxy Grout; 3 bags HP Epoxy Grout High Flow) and mix only until aggregate is completely wetted out (no dry aggregate observed). Do not reduce aggregate loading or add solvents or water to increase flowability. Do not mix partial units. If unable to follow instructions above, contact Five Star Products.
4. **PLACEMENT:** Five Star® HP Epoxy Grout / High Flow may be poured into place. Use of a headbox is highly recommended. Placement should always be across the shortest distance. All grout shall be placed from one side to the other, maintaining contact with the bottom of the baseplate at all times until final set. For clearances greater than 6 inches (150 mm) with HP Epoxy Grout or greater than 4 inches for HP Epoxy Grout High Flow, call Five Star Products. Refer to Five Star® TB412 *Grout Placement* for further details. If field testing of the grout is required, refer to TB210 *Proper Compressive Strength Testing - Epoxy Grouts*; TB417 *Field Sampling for Testing Requirements*.
5. **POST-PLACEMENT:** Until initial set, ensure that grout maintains continuous contact with the bottom of the baseplate and formwork remains leak-free. No wet curing is allowed. Protect from direct sun exposure until initial set. Finishing of exposed surfaces is aided by using a solvent wiped trowel just before material becomes unworkable. Final anchor bolt torque and in-service operation may begin immediately after minimum required grout strength and a minimum compressive modulus of 1.0×10^6 (6.9×10^3 MPa). Refer to Five Star® TB413 *Grout Finishing* for further details.
6. **CLEAN UP:** All tools and equipment may be cleaned with soap and water before the material hardens. Sand or a similar abrasive may be used with the soap and water to aid in the clean-up.

For additional Five Star® Technical Bulletins, visit FiveStarProducts.com. For further questions, or if additional information is required, contact your local Five Star® Technical Sales Representative at 1-800-243-2206.

CAUTION

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 SAFETY DATA SHEET.**

SKU / PRODUCT CODE	DESCRIPTION	# UNITS/PALLET	UNIT SIZE (WEIGHT | VOLUME - A & B)
33100	Five Star® HP Epoxy Grout	36 (packaged on 4 pallets)	Resin (A): 23.8 lbs. (10.8 kg) | 2.60 gal (9.82 L) Hardener (B): 4.2 lbs. (1.9 kg) | 0.51 gal (1.95 L) Aggregate (C): Five 50 lb. (22.7 kg) Bags
31600	Five Star® HP Epoxy Grout High Flow	36 (packaged on 4 pallets)	Resin (A): 23.8 lbs. (10.8 kg) | 2.60 gal (9.82 L) Hardener (B): 4.2 lbs. (1.9 kg) | 0.51 gal (1.95 L) Aggregate (C): Four 50 lb. (22.7 kg) Bags

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Specifications Subject to Change.
For most current version of datasheet, go to FiveStarProducts.com

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