



LC EPOXY GROUT

High-Flow Epoxy for Low Clearance Applications
formerly Crane Rail Grout

PRODUCT DESCRIPTION

Five Star® LC Epoxy Grout is a highly flowable, non-shrink, rapid strength gain, epoxy grout for tight clearance applications and dynamic loads. This versatile product is formulated for placement into low clearance applications as thin as 3/8 inches (10 mm) in depth dependent on specific placement requirements while achieving very high mechanical properties. Five Star® LC Epoxy Grout is a three component, 100% solids epoxy system that exhibits positive expansion when tested in accordance with ASTM C 827 and has excellent chemical resistance.

ADVANTAGES

- High flow for tight clearances
- Excellent adhesion to steel
- 95% Effective Bearing Area (EBA) is typically achieved following proper grouting procedures
- Expansive, non-shrink per ASTM C 827
- Chemically resistant
- Rapid strength gain for fast turnaround

USES

- Tight clearance grouting of dynamic loads
- Crane rails / Light rail applications
- Railroad track rehabilitation
- Transfer car runways
- Material handling tracks

PACKAGING AND YIELD

Five Star® LC Epoxy Grout is a three-component system consisting of partially filled containers of resin and hardener, and one 50 lb. polyethylene lined bag of aggregate. Unit yield is approximately 0.49 cubic feet (13.9 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)	
Height Change, ASTM C827, at 90°F (32°C)	Positive Expansion
Effective Bearing Area	95%
Compressive Strength, ASTM C579 B*	
1 Day	13,000 psi (90 MPa)
7 Days	15,000 psi (103 MPa)
28 Days	16,000 psi (110 MPa)
Post Cure @ 140°F (60°C)	17,000 psi (117 MPa)
Tensile Strength, ASTM C307	
7 Days	2,500 psi (17.2 MPa)
Bond to Concrete, ASTM C882	
7 Days	3,000 psi (20.7 MPa)
Flexural Strength, ASTM C580	5,500 psi (37.9 MPa)
Working Time at 70°F (21°C)	30 minutes

**Materials tested per ASTM C 579 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

Minimum Plate Clearance $\frac{3}{8}$ in. (10 mm)

Maximum In-Service Temperature 180°F (82°C)

Placement Depth $\frac{3}{8}$ - 3 in. (10 mm - 75 mm)
> 3 in. (75 mm), contact Five Star

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 affected by lower and higher temperatures.** Refer to Five Star® Technical Bulletin (TB) 200 and 201 *Epoxy Cold and Hot Weather Grouting* for installation temperatures outside recommended ranges.

- SURFACE PREPARATION:** Construction practices dictate concrete foundation should achieve its design strength before grouting. All surfaces to be in contact with Five Star® LC Epoxy Grout 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 Five Star® TB213 *Epoxy Grout Concrete Surface Preparation*, TB415 *Expansion joints in Grout Placement* for further details.
- 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.
- MIXING:** For mixing one unit, refer to TB416 *Single Unit Mixing Instructions*. For mixing multiple units in a mortar mixer (recommended maximum eight units at a time) begin by combining all the Component A (resin) into a separate container(s). Pour all corresponding Component B (hardener) jug into the container containing all 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. Add the remaining corresponding Component C (aggregate) bags. 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.
- PLACEMENT:** Five Star® LC Epoxy Grout 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 placements less than $\frac{3}{8}$ inch (10 mm) or greater than 3 inches (75 mm), contact 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 - Grouts*; TB417 *Field Sampling for Testing Requirements*.
- 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 psi (6.9×10^3 MPa) has been achieved. Refer to Five Star® TB413 *Grout Finishing* for further details.
- 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)
33195	Five Star® LC Epoxy Grout	48 (3 pallets)	Resin (A): 10 lb (4.5 kg) Pail 1.09 gal (4.13 L) Hardener (B): 1.7 lb (0.77 kg) Can 0.21 gal (0.79 L) Aggregate (C): 50 lb (22.7 kg) Bag

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