



# 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 dynamic load applications with tight clearances. It is a three component, 100% solids epoxy system that exhibits positive expansion when tested in accordance with ASTM C 827 for precision grouting and alignment of critical baseplates. Five Star® LC Epoxy Grout meets the performance requirements of EN 1504-3 (Class R4) and EN 1504-6.

## ADVANTAGES

- High flow for tight clearances
- Excellent adhesion to steel
- 95% Effective Bearing Area (EBA)
- Expansive, non-shrink per ASTM C 827
- Rapid strength gain for fast turnaround

## USES

- High performance machinery grouting with tight clearances
- Crane rail grouting
- Precision alignment under dynamic load conditions
- Vibration dampening filler for rotating equipment
- Support of chemical tanks, vessels and rotating equipment
- Installation of anchors and dowels

## PACKAGING AND YIELD

Five Star® LC Epoxy Grout is a three-component system consisting of partially filled containers of resin and hardener, and one 20 kg bag of aggregate. The system is packaged in one box with a unit yield is approximately 12.1 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 21°C

Property	Test Standard	Requirement per EN 1504	FSP Result
Compressive Strength	EN 12190:1999	≥ 45 MPa (Class R4) at 28 Days	
	1 Day		80 MPa
	7 Days		90 MPa
Bond Strength	EN 1542:1999	≥ 2 MPa (Class R4)	≥ 2 MPa
Chloride Ion Content	EN 1015-17:2000	≤ 0.05%	≤ 0.05%
Freeze Thaw Cycling	EN 13687-1:2002	≥ 2 MPa	≥ 2 MPa
Modulus of Elasticity	EN 13412:2002	≥ 20 GPa	22 GPa
Pull-out Strength	BS EN 1881:2006	Displacement ≤ 0.6mm @ 75kN	≤ 0.6 mm
Creep under Tensile Load	EN 1544:2007	Displacement ≤ 0.6mm @ 3 months	≤ 0.6 mm
Tensile Strength	BS 6319 Part 7 per ASTM C 307 7 Days	NR <sup>1</sup>	14 MPa
Flexural Strength	EN 12190:1999		
	7 Days	NR	25 MPa
	28 Days	NR	30 MPa
Glass Transition Temperature	EN 12614: 2004	≥ 45°C	≥ 45°C
Fire Classification	EN 1504-3 Section 5.5	Declared	Euroclass B
Dangerous Substances	EN 1504-3 Section 5.4	Declared	Complies
Working Time May be affected by colder & warmer temperatures <sup>2</sup>	ASTM D 2471 Modified	NR	45 minutes

<sup>1</sup> NR = Not Required

<sup>2</sup> Refer to Five Star® Technical Bulletins: *Epoxy Grouting in Cold Weather*; *Epoxy Grouting in Hot Weather*

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 Thickness	10 mm
Placement Depth	10 mm - 75 mm > 75 mm, call Five Star Products

### PLACEMENT GUIDELINES

For optimum performance, install at temperatures between 21°C and 27°C. Maintain grout, substrate, and equipment temperatures above 21°C until grout reaches required compressive strength. Flowability and strength gain are adversely affected by lower temperatures. For hot or cold weather grouting refer to Five Star® Technical Bulletins: Epoxy Grouting in Cold Weather ; Epoxy Grouting in Hot Weather.

- SURFACE PREPARATION:** Construction practices dictate concrete foundation should achieve its design strength before grouting. Epoxy grouting on green concrete (>5% moisture) is not recommended. All concrete surfaces in contact with Five Star® LC Epoxy Grout shall be dry, free of oil, grease, laitance, and other contaminants. To maximize bond, concrete surfaces should be prepared by acceptable means to coarse aggregate exposure. A 12 mm surface profile peak to valley is recommended. Remove all oxidation from exposed reinforcing steel.
- FORMWORK:** It is recommended that shoulders not exceed a maximum of 25 - 75 mm. Formwork should be constructed 24-hours prior to the pour. 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 shall 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 25 - 50 mm. Formwork and areas where bond is not desired must be treated with grease, paste wax, or similar material. Isolation/construction joints should be used on pours of larger dimensions / volumes.
- MIXING:** For optimum performance, all components shall be conditioned to between 21°C and 27°C prior to use. Mix one complete unit at a time. Begin by pouring all of Component B (hardener) into the pail containing Component A (resin). Mix thoroughly for 1 - 2 minutes with a paddle or with a slow speed drill. Avoid air entrapment. Pour mixed liquids (combined Components A & B) into a mortar mixer with blades not moving. Immediately add one bag of Component C (aggregate) and start the mortar mixer blades. Slowly add the remaining bags and mix only until aggregate is completely wet. Do not add solvents or water to increase flowability.
- METHODS OF PLACEMENT:** Five Star® LC Epoxy Grout may be poured or pumped into place. 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. Use of a headbox is highly recommended. Grout should be poured to the bottom of the baseplate. Refer to the Five Star® Technical Bulletin Head Box and Plunger for guidelines. For grout depth less than 10 mm or greater than 75 mm, contact Five Star Products.
- POST-PLACEMENT PROCEDURES:** 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. In-service operation may begin immediately after minimum required grout strength and modulus have been achieved.
- 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.

**PRIOR TO APPLICATION, READ ALL PRODUCT PACKAGING THOROUGHLY.** For more detailed information contact Five Star Products at +44 (0) 7469 746101.

### HEALTH AND SAFETY

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
33205	Five Star® LC Epoxy Grout kit	27	Resin (A): 3.9 kg Hardener (B): 0.78 kg Aggregate (C): One 20 kg bag

**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, EXPRESS 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."

Specifications Subject to Change.

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