



XP 250 EPOXY GROUT

Ultra-High Strength Precision Grout
for Wind Towers

PRODUCT DESCRIPTION

Five Star® XP 250 Epoxy Grout, part of the Xtreme Performance line, offers the industry's highest compressive strength, 25,000 psi in 28 days, achieving 21,000 psi in 24 hours. This three-component engineered system is low exothermic, 100% solids, and solvent-free. XP 250 is non-shrink as tested in accordance with ASTM C1090 with a high fatigue resistance under dynamic loading conditions. With its ultra-high compressive strength, XP 250 delivers the essential connection between a dynamic wind tower and its foundation, often eliminating the need for a steel bearing plate.

ADVANTAGES

Lower Installed Costs

- Ultra-high compressive strength eliminates the high cost steel bearing plates in many large wind tower applications

Increases Performance Confidence

- High dimensional stability, non-shrink per ASTM C1090
- High fatigue resistance under dynamic loading conditions
- Coefficient of Thermal Expansion and Modulus of Elasticity more closely aligned with steel and concrete
- Low exotherm enables higher monolithic pours

Increases Scheduling and Cost Predictability

- Early strength development enables faster jobsite progress (i.e. torquing bolts, stacking additional tower segments)
- Reduces supply chain complexity and scheduling uncertainty associated with steel bearing plates

Easy to Use

- Long working time
- Place up to 18 inches depth in a single pour
- Low dust formula
- Use current epoxy grout installation techniques



USES

- Wind towers or other high load applications

PACKAGING AND YIELD

Five Star® XP 250 Epoxy Grout is a three-component system consisting of resin, hardener, and polyethylene lined bags of aggregate available in a 5-bag unit yielding approximately 1.95 cubic feet (55.2 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 C1090, at 90°F (32°C)	0.0 - 0.3%		
Effective Bearing Area	≥ 85%		
Modulus of Elasticity, ASTM C469, 28 days	4.8 x 10 ⁶ psi (33.1 GPa)		
Tensile Strength, ASTM C307	2,500 psi (17.2 MPa)		
Creep, ASTM C1181, 1 Year, 400 psi (2.8 MPa), 140°F (60°C)	5 x 10 ⁻⁴ in/in (mm/mm)		
Flexural Strength, ASTM C580	5,500 psi (37.9 MPa)		
Coefficient of Thermal Expansion, ASTM C531	10 x 10 ⁻⁶ in/in/°F (18 x 10 ⁻⁶ mm/mm/°C)		
Peak Exotherm, ASTM D2471 (6" x 12" Cylinder)	<125°F (<52°C)		
Bond to Concrete, ASTM C882	Concrete Failure		
Compressive Strength, ASTM C579 B¹	50°F (10°C)**	70°F (21°C)	90°F (°C)
12 Hours	1,000 psi (6.9 MPa)	17,000 psi (117.2 MPa)	21,000 psi (144.8 MPa)
1 Day	13,000 psi (89.6 MPa)	21,000 psi (144.8 MPa)	22,000 psi (151.7 MPa)
7 Days	23,000 psi (158.6 MPa)	24,000 psi (165.5 MPa)	24,000 psi (165.5 MPa)
28 Days	24,000 psi (165.5 MPa)	25,000 psi (172.4 MPa)	25,000 psi (172.4 MPa)
Post-cured at 140°F (60°C)	28,500 psi (196.5MPa)		
Working Time May be affected by colder & warmer temperatures ²	** Product must be preconditioned to 70°F (21°C) to be installed. Product can cure at 50°F (10°C) with strength gains as outlined above.		
		45 Minutes	< 30 Minutes

¹ Materials tested per ASTM C579 B. Rate of loading 0.25 inches per minute.

² 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 may result. Test methods are modified where applicable.

APPLICATION INFORMATION

Minimum Thickness	2 in. (50 mm)	Maximum In-Service Temperature	250°F (121°C)
Placement Depth	2 in. - 18 in. (50 mm - 457 mm) >18 in. (457 mm), call Five Star Products		

PLACEMENT GUIDELINES

For optimum performance, install at temperatures between 70°F and 90°F (21°C and 32°C). Maintain grout, substrate, and equipment temperatures above 70°F (21°C) until grout reaches required compressive strength. Flowability and strength gain are adversely affected by lower temperatures. Refer to Five Star® Technical Bulletin (TB) 200 and 201 Epoxy Cold and Hot Weather Grouting for extreme weather conditions.

- SURFACE PREPARATION:** Construction practices dictate concrete foundation should achieve its design strength before grouting. All surfaces to be in contact with Five Star® XP 250 Epoxy Grout shall be dry and free of oil, grease, laitance, 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. An SSPC-SP6 commercial finish on all metal surfaces is recommended to optimize bond development to steel. 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.
- 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 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 1 to 2 inches (25 - 50 mm). Formwork and areas where bond is not desired must be treated with grease, paste wax, or similar material.
- MIXING:** Pour 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 and mix only until aggregate is completely wetted (no dry aggregate observed). Do not add solvents or water to increase flowability. Do not mix partial units. If unable to follow instructions above, contact Five Star Products.
- METHODS OF PLACEMENT:** Five Star® XP 250 Epoxy Grout may be poured or pumped 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 grout depth greater than 18 inches (457 mm) and/or grout volume more than 80 cubic feet (2.2 cubic meters) 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. Finishing of exposed surfaces is aided by using a solvent wiped trowel just before material becomes unworkable. 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 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)
33620	Five Star® XP 250 Epoxy Grout	36 (4 pallets)	Resin (A): 17.6 lbs. (8.0 kg) 1.82 gal (6.9 L) Hardener (B): 5.5 lbs. (2.5 kg) 0.64 gal (2.4 L) Aggregate (C): 5 Bags 50 lbs. ea. (22.7 kg)

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