



DP EPOXY GROUT

Dual-Purpose, Deep Pour Precision Grout
Standard/High Flow
For Nuclear Safety Zone Applications

PRODUCT DESCRIPTION

Five Star® DP Epoxy Grout is the only expansive, non-shrink, low exothermic epoxy system for machinery grouting. This versatile, dual purpose product is formulated for single, large volume placements and may be used as thin as 1/2 inch (13 mm) in depth dependent on specific placement requirements. Five Star® DP Epoxy Grout is a three component, 100% solids, solvent-free system formulated to provide high-strength and superior creep resistance combined with the highest effective bearing area. Five Star® DP Epoxy Grout exhibits positive expansion when tested in accordance with ASTM C 827. This specialized version of Five Star® DP Epoxy Grout is compliant with NRC 10CFR50 Appendix B and ASME NQA-1 Quality Programs.

ADVANTAGES

- Permanent support for machinery requiring precision alignment
- Low exothermal properties with early strength development
- Long working time
- Solvent-free clean up
- Adjustable flow for various conditions
- Expansive, non-shrink per ASTM C 827
- Superior creep resistance
- Chemically resistant
- 95% effective bearing area (EBA) when following proper grouting procedures
- Excellent adhesion to steel

USES

- Large volume applications
- Foundation rebuilds and skid mounted equipment
- Precision alignment under dynamic load conditions
- Vibration dampening for rotating equipment
- Aggressive chemical environments
- Support of tanks, vessels and rotating equipment
- Installation of anchors and dowels
- Wind turbine baseplates

PACKAGING AND YIELD

Five Star® DP Epoxy Grout is a three-component system consisting of resin, hardener and polyethylene lined bags of aggregate. Five Star® DP Epoxy Grout - Standard Flow includes five bags of aggregate for a unit yield of approximately 2.0 cubic feet (56.6 liters) of hardened material. When maximum flow is required, Five Star® DP 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. Five Star® DP Epoxy Grout - High Flow is also available in a smaller unit size yielding approximately 0.44 cubic feet (12.5 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)

	DP Epoxy Grout (Standard)		DP Epoxy Grout (High Flow)	
Clearances	1 to 18 inches (25 - 457 mm)		1/2 to 9 inches (13 - 220 mm)	
Height Change, ASTM C 827, at 90°F (32°C)	Positive Expansion		Positive Expansion	
Effective Bearing Area	95%		95%	
Creep, ASTM C 1181, 1 year 400 psi (2.8 MPa) 140°F (60°C)	3.7 x 10 ⁻³ in/in (mm/mm)		4.3 x 10 ⁻³ in/in (mm/mm)	
Tensile Strength, ASTM C 307	2,100 psi (14.5 MPa)		2,000 psi (13.8 MPa)	
Flexural Strength, ASTM C 580	3,800 psi (26.2 MPa)		4,000 psi (27.6 MPa)	
Coefficient of Expansion, ASTM C 531	17 x 10 ⁻⁶ in/in/°F (30 x 10 ⁻⁶ mm/mm/°C)		18 x 10 ⁻⁶ in/in/°F (32 x 10 ⁻⁶ mm/mm/°C)	
Bond to Concrete, ASTM C 882	Concrete Failure		Concrete Failure	
Working Time at 70°F (21°C)	90 Minutes		60 Minutes	
Compressive Strength ASTM C 579 B*	Standard Compressive Strength psi (MPa)	Standard Compressive Modulus psi (MPa)	High Flow Compressive Strength psi (MPa)	High Flow Compressive Modulus psi (MPa)
1 Day	11,000 (75.9)	1.5 x 10 ⁶ (10.4 x 10 ³)	9,000 (62.1)	1.4 x 10 ⁶ (9.7 x 10 ³)
7 Days	14,000 (96.6)	2.0 x 10 ⁶ (13.8 x 10 ³)	13,000 (89.7)	1.9 x 10 ⁶ (13.1 x 10 ³)
Post-cured at 140°F (60°C)	15,500 (106.9)	2.2 x 10 ⁶ (15.2 x 10 ³)	14,500 (100)	2.0 x 10 ⁶ (13.8 x 10 ³)

*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.



PLACEMENT GUIDELINES

- SURFACE PREPARATION:** All surfaces to be in contact with Five Star® DP Epoxy Grout shall be free of oil, grease, laitance and other contaminants. Concrete must be clean, sound, dry and roughened to ensure a good bond. An SSPC-SP6 commercial finish on all metal surfaces will optimize bond development to steel.
- FORMWORK:** 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. The clearance for remaining sides shall be 1 to 2 inches (25 - 50 mm). Areas where bond is not desired must be treated with paste wax or polyethylene. Isolation joints may be necessary depending on pour dimensions. Contact Five Star Products for further information.
- MIXING:** For optimum performance, all components should be conditioned to between 70°F and 80°F (21°C and 27°C) prior to use. Pour all Component B (hardener) into pail containing Component A (resin). Mix thoroughly by hand with a paddle or with a slow speed drill and paddle mixer to avoid air entrapment. Pour mixed liquids into mortar mixer (stationary barrel with moving blades). While mixing, slowly add Component C (aggregate) and mix only until aggregate is completely wet. Add Component C (aggregate) immediately after mixing Component A (resin) and Component B (hardener). Working time is approximately 90 minutes (60 minutes High Flow) when temperatures are at 70°F (21°C). Mix with 4 or 5 bags of aggregate normally, using 4 bags for better flow. Under special conditions, aggregate may be reduced further to 3½ bags where clearances are 1" or less and areas involve larger footprints.
- METHODS OF PLACEMENT:** Five Star® DP Epoxy Grout may be poured into place. All grout shall be placed from one side to the other, maintaining contact with the bottom of the baseplate at all times. When possible, use of a headbox is highly recommended (refer Five Star Products' Technical Bulletin "Head Box and Plunger" for guidelines). For clearances greater than eighteen inches (457 mm) and/or more than 100 cubic feet (2.8 cubic meters), call Five Star Products.
- POST-PLACEMENT PROCEDURES:** Final finishing should ensure material is flush with bottom edge of baseplate. 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 a water and strong detergent solution before material hardens. Sand may be used as an abrasive. A suitable solvent is required for clean up of material after hardening.

NOTE: PRIOR TO APPLICATION, READ ALL PRODUCT PACKAGING THOROUGHLY. For more detailed placement procedures, refer to Design-A-Spec™ installation guidelines or Five Star Products at 1-800-243-2206.

CONSIDERATIONS

- Yield at 3½ bags is approximately 1.54 cubic feet. Physical properties will be lower than 4 bag properties.
- Flowability and strength gain are adversely affected by lower temperatures.
- For placement temperatures below 55°F (13°C) or above 90°F (32°C), refer to Design-A-Spec™.
- To obtain bond, concrete shall be visibly free of surface moisture.
- When clearances are outside the recommended range or when exceeding maximum placement volumes, contact Five Star Products.
- Do not add solvents to increase flowability.
- For continuous operating temperatures exceeding 180°F (82°C), contact Five Star Products.
- Construction practices dictate concrete foundation should achieve its design strength before grouting.

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.**

For worldwide availability, additional product information and technical support, contact your local Five Star® distributor, local sales representative, or call Five Star Products at 1-800-243-2206.

SKU / PRODUCT CODE	DESCRIPTION	# UNITS/PALLET	UNIT SIZE
33610N	Five Star® DP Epoxy Standard Grout for Nuclear Safety Zone	36 (4 pallets)	Resin (A): 20.9 lbs. (79.1 kg) Hardener (B): 6.3 lbs. (23.8 kg) Aggregate (C): Five 50 lb. (22.7 kg) Bags
33155N	Five Star® DP Epoxy High-Flow Grout for Nuclear Safety Zone	36 (4 pallets)	Resin (A): 20.9 lbs. (79.1 kg) Hardener (B): 6.3 lbs. (23.8 kg) Aggregate (C): Four 50 lb. (22.7 kg) Bags
33175N	Five Star® DP Epoxy High-Flow Grout (small unit) for Nuclear Safety Zone ¹	24	Resin (A): 5.3 lbs. (2.4 kg) Hardener (B): 1.6 lbs. (0.7 kg) Aggregate (C): One 50 lb. (22.7 kg) Bag

Compliant with NRC 10CFR50 Appendix B and ASME NQA-1 Quality Programs

¹Uses standard aggregate

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Specifications Subject to Change.
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