



Proven Solutions for Crane Rail Grouting Projects



FIVE STAR

Specified by the World's Best™

Infrastructure, construction and civil engineering crane rail projects



Five Star Products offers a family of products suitable for various conditions present in a crane rail environment. These specifically designed grouts are ideal for grouting gaps and voids under crane rails. Five Star® crane rail grouts are proven in the field across the world in many of the most demanding rail environments.

Crane rail expertise

The mechanics of rail dynamics supporting loads from cranes requires expert knowledge in product specifications. Five Star Products offers superior grouts that resist such high dynamic loads, and provide durable, long-term effective use.

Selecting the right crane rail grout

The selection of a suitable rail bearing grout is dependent upon the engineering calculations of loading, size and type of bearing, gap size and grouting method. Applying the right grout to assure performance is critical to your project for efficiency and safety. Application of the improper or inferior grout can result in serious ramifications on safety. Plus, the cost of remediation can considerably outweigh the initial short-term cost benefits.

Rail operations often need to replace equipment quickly, so speed of installation is a vital concern. A grout with poor flow will slow the process. Epoxy grouts that cut back using diluents that improve flow can result in excess shrinkage and loss of Effective Bearing Area (EBA). Five Star crane rail grouts are designed to provide faster flow even in unstable weather conditions without performance concerns. Problems during application can be attributed to poor design, inadequate mixing of grout, ambient temperature, placing procedures, slow pouring/pumping, and inadequate curing. Working with the Five Star family of crane rail grouts will assure that your project is going to perform at the highest levels.

Other applications:

- Runways
- Transit and Track Runway Systems
- Under-Plate Grouting
- Port Harbors
- Power Stations
- Container Depots
- Shipyards and Ship Lifts
- Automated Warehouses
- Construction and Industrial

Select from a wide range of low clearance, low profile applications for infrastructure, construction and civil engineering rail projects.



Product	Min. Pour Depth	1-Day Comp. Strength (PSI)	7-Day Comp. Strength (PSI)	Unit Yield (Cu. Ft.)	Key Attributes
Five Star® Crane Rail Grout	0.4"	13,000	15,000	0.49	Highly flowable and designed for low clearance applications
Five Star® Fluid Epoxy	0.125"	13,000	14,000	0.2	Early high strength, very low viscosity for clearances down to 1/8"
Five Star® DP Epoxy Grout High Flow	0.5"	9,000	13,000	1.75 or *0.44	Versatile placement range, 0.5" to large volume placements
Five Star® Rapid Epoxy	0.5"	14,000	15,000	0.5	Early high strength for fast turn-around high flow applications
Five Star® HP Epoxy Grout High Flow	1.0"	14,000	16,000	1.75	Excellent physical placement properties combined with very low creep value
Five Star® SP Epoxy Grout Pump Grade	1.0"	16,500	17,500	1.75	Extremely high compressive strength, excellent creep value; 30 min working time

* Denotes yield for smaller size unit



Select the Five Star® Grout that meets the crane rail clearance for your project.



Five Star® Crane Rail Grout

0.4" to 3.0" Clearance

Five Star® Crane Rail Grout is a highly flowable, non-shrink, rapid strength gain, epoxy grout for tight clearance applications and dynamic loads. As a three component, 100% solids epoxy system it exhibits positive expansion when tested in accordance with ASTM C 827 for precision grouting and alignment of crane rail. Five Star® Crane Rail Grout has excellent chemical resistance.



- High flow for tight clearances
- Excellent adhesion to steel
- 95% Effective Bearing Area (EBA) is typically achieved by following proper grouting procedures
- Expansive, non-shrink
- Chemically resistant
- Rapid strength gain for fast turnaround
- Crane rail
- Railroad track rehabilitation
- Precision alignment under dynamic loads
- Transfer car runways
- Material handling tracks
- Light rail applications



Five Star® Fluid Epoxy

0.125" to 1.5" Clearance

Five Star® Fluid Epoxy is a two component, all-purpose, rapid cure fluid epoxy system. Five Star® Fluid Epoxy is designed for adhesive grouting, anchoring, anchor bolts, setting of bolts and wedges, and small repairs to concrete. Can be used in operating temperatures up to 150 °F (65 °C).

- High early strength
- Fluid, self-leveling consistency
- Excellent adhesion to steel
- Good impact resistance
- Chemically resistant
- Convenient packaging



Five Star® DP Epoxy Grout High Flow

0.5" to 9.0" Clearance

Five Star® DP Epoxy Grout High Flow is the only expansive, non-shrink, low exothermic epoxy system. This versatile, dual purpose product is formulated for single, large volume placements, and may be used as thin as 0.5" in depth. Five Star® DP Epoxy Grout High Flow 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 High Flow exhibits positive expansion when tested in accordance with ASTM C 827. Five Star® DP Epoxy Grout High Flow also exhibits electrical dampening properties.

- Low exothermal properties with early strength development
- Permanent support for precision alignment
- Long working time
- Solvent-free cleanup
- Adjustable flow for various conditions
- Expansive, non-shrink per ASTM C 827
- Superior creep resistance
- Chemically resistant
- Excellent steel adhesion
- 95% Effective Bearing Area (EBA) is typically achieved by following proper grouting procedures
- Large volume applications
- Aggressive chemical environments



Five Star® Rapid Epoxy Grout

0.5" to 4.0" Clearance

Five Star® Rapid Epoxy Grout is the only expansive, non-shrink, rapid strength gain epoxy grout designed for short turnaround precision grouting. It is a three-component, 100% solids, solvent free system formulated with superior flowability.

- 95% Effective Bearing Area (EBA) is typically achieved by following proper grouting procedures
- Expansive, non-shrink per ASTM C 827
- Chemically resistant
- High temperature performance up to 250°F (121°C)
- Excellent adhesion to steel
- Permanent support for machinery requiring precision alignment
- High eight-hour strengths for fast turnaround
- High flow for tight clearances down to 1/2 inch
- Excellent creep resistance





Five Star® HP Epoxy Grout High Flow

1.0" to 4.0" Clearance

Five Star® HP Epoxy Grout High Flow is a high-performance expansive, non-shrink, epoxy system for supporting equipment requiring precision alignment. Five Star® HP Epoxy Grout High Flow 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 High Flow exhibits positive expansion when tested in accordance with ASTM C 827.

- Permanent support
- High early strength
- Startup in 16 hours or less
- 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) is typically achieved by following proper grouting procedures
- Excellent adhesion to steel



Five Star® SP Epoxy Grout Pump Grade

1.0" to 4.0" Clearance

Five Star® SP Epoxy Grout Pump Grade is the next generation in ultra-high performance epoxy grout. Five Star® SP Epoxy Grout Pump Grade has extremely high compressive strength, is expansive non-shrink, with ultra-low creep and outstanding Effective Bearing Area (EBA). Five Star® SP Epoxy Grout Pump Grade is a 100% solids epoxy grout system for high-performance machinery and equipment.

- 95% Effective Bearing Area (EBA) is typically achieved by following proper grouting procedures
- Expansive, non-shrink per ASTM C 827
- Simple soap and water clean-up
- Ultra-high 1 day and 7 day strengths
- Very low creep
- Excellent chemical resistance

SOLUTIONS | Case Study

Port of Brisbane — DP World Terminal (Phases 1-3)

Queensland, Australia

Product:

Five Star® Crane Rail Grout



Date of Project: June 2017 – September 2017

Project Owner: Port of Brisbane

Project Contractor: Ballestrin/McMahon Services

Project Engineer: KBR

Market/Environment: Crane Rail Yard

Substrate: Concrete

Size of Project: Approximately 644 x 12.25 liter units

The Challenge

McMahon Services needed to finish each phase of this project within a very short window of time. They ran day and night shifts to get each phase completed and when it came to the grouting, they needed a product that would be easy to mix and apply, thereby minimizing the time required to get the grout placed. The grout also needed to gain strength quickly to allow them to complete the rest of the rail installation and give the phase back to DP World with minimum down time to the terminal.

Five Star® Solution

Because it readily met all requirements for this job, Five Star® Crane Rail Grout was chosen for this project. The concrete trenches were prepared using high pressure water blasting to provide a coarse, exposed aggregate finish, which served as a mechanical key for the subsequent grout placement. Prior to grouting, compressed air was used to blow out any dirt and debris from the trenches, thereby ensuring that the substrate was clean, dry and sound.

Grout was placed from between 0.75" up to +/- 2" (19mm up to +/- 50mm). In some sections however, the grout exceeded 3" (75mm) in depth. In these areas, the heat sink offered by the rails and the use of isolation joints at approximately 13 foot (4 meter) centers negated the danger of any excessive exotherm.

In each of the phases the grouting was completed efficiently and effectively in a matter of hours. The performance of the Crane Rail Grout more than met the expectations of the team and contributed to the successful, on-time completion of each phase.



About Five Star Products, Inc.

Since 1955, Five Star Products has responded to the global need for precision machinery grouting, concrete repair, corrosion prevention and waterproofing products worldwide. Our products are in use by many of the world's most recognized names and in some of the most challenging environments in the industrial, infrastructure and marine markets.

No matter where and when you require solutions, we can provide you with:

- Five Star® Machinery Grouts
- Epoxy Adhesives
- Epoxy Anchoring Adhesives
- Structural Concrete Repair Products
- Waterproofing materials

Epoxy Grouts for support of heavy machinery, concrete deck repair, underwater grouting/concrete repairs, waterproofing materials, polyurethane sealants, stabilization products, nuclear safety applications and chemical resistant coatings.

Our extensive global presence also includes project specification assistance, on-site technical service and product availability to all points globally. Five Star Products operates seven manufacturing facilities, all of which adhere to a strict quality control system conforming to the ISO 9001-2008 standard.

We serve the most demanding industries throughout the world, including:

- Oil and gas transmission
- Chemical processing
- Mining and metals
- Refineries
- Pulp and paper
- Heavy industry and infrastructure

Our dedicated engineering and research teams provide the technical expertise and creative know-how to assist you with innovative solutions to all of your grouting and concrete repair requirements.

For confidence and performance, always specify Five Star® products.

FIVE STAR PRODUCTS, INC.
60 Parrott Drive, Shelton, CT 06484 USA
Phone: +1 203-336-7900
Fax: +1 203-336-7913
Tech Support: 1-800-243-2206

FiveStarProducts.com

**Five Star®
CEMENTITIOUS
GROUTS**

•

**Five Star®
EPOXY GROUTS**

•

**Five Star®
CONCRETE REPAIR**

•

**Five Star®
CHEMICAL GROUTS
& POLYURETHANES**

•

**Five Star®
ADHESIVES**

•

**Five Star®
COATINGS**

•

**Five Star®
WATERPROOFING**



FIVE STAR

Specified by the World's Best™