



Underwater Epoxy Gel

Epoxy Gel Adhesive

Description

Five Star® Marine Underwater Epoxy Gel is a multi-purpose, two component, 100% solids, moisture insensitive structural epoxy adhesive used in filling cracks up to 1/2 inch (13 mm). Ideal for steel, concrete, and masonry applications, Five Star® Underwater Epoxy Gel is a smooth, nonabrasive gel that can be pressure injected or hand applied. Five Star® Underwater Epoxy Gel meets ASTM C 881 Types I, II, IV and V, Grade 3, Classes B & C.

Uses

- Sealing jacket seams
- Pressure injection of cracks in structural concrete, masonry, wood and other substrates
- Surface repair of non-moving cracks on new or existing structures
- Anchoring of bolts, dowels, pins and special fasteners
- General purpose gel adhesive
- Re-pointing concrete block and timber drydocks.

Benefits

- VOC compliant
- Excellent adhesion to masonry, concrete, wood, steel and most structural materials
- High strength
- Gel consistency ideal for vertical and non-mating surfaces
- Moisture insensitive
- Convenient 1:1 mixing ratio
- Unique nonabrasive texture permits applications with automated pressure-injection equipment

Packaging and Yield

Five Star® Underwater Epoxy Gel is available in 2 x one gallon (7.4 liters) pails yielding approximately 460 cubic inches of material or 22 oz. (600 ml) cartridges yielding 37 cu. in. (600 cu. cm).

Shelf Life

Two years in original unopened packaging when stored in dry conditions at 45°F to 90°F (5°C - 35°C).

*TYPICAL PROPERTIES AT 70°F (21°C)	
Color	Gray
Viscosity	Gel
Flexural Strength, ASTM D 790	5,500 psi (38.0 MPa)
Water Absorption, ASTM D 570	0.10%
Bond Strength, ASTM C 882	
2 Day Cure	2,600 psi (17.9 MPa)
14 Day Cure	4,600 psi (31.7 MPa)
Shrinkage, ASTM D 2566	0.0007 in/in (mm/mm)
Shear Strength, ASTM D 732	3,500 psi (24.2 MPa)
Compressive Properties, ASTM D 695	
Compressive Strength	10,000 psi (68.9 MPa)
Compressive Modulus	2.80 x 10 ⁵ psi (1930 MPa)
Gel Time, ASTM C 881	35 minutes

**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.*

Placement Guidelines

1. **Surface Preparation:** Surface must be clean and sound. For best results surfaces should be dry. Remove dust, laitance, grease, curing compounds, impregnations and waxes. Concrete may be sandblasted or prepared by other approved mechanical means. Steel should be sandblasted to an SSPC-SP6 commercial finish.
2. **Mixing:** Material should be preconditioned to between 70°F and 80°F (21°C and 26°C) before using. **Gallon Pails:** Pre-mix each component thoroughly. Proportion equal parts by volume of Component A and Component B into a clean pail. Mix thoroughly for three minutes with a low speed drill (400-600 rpm) to avoid air entrapment. Do not mix more material than can be placed in 40 minutes at 70°F (21°C). **Dual Cartridges:** Remove plug from cartridge ends. Slide retaining nut over static mixer and secure to cartridge firmly. For easier application, static mixer tip may be cut down to the second or third notch. Place cartridge in gun and dispense epoxy until a uniform color is achieved – discard material that is not uniform in color.
3. **Methods of Placement:**

Pressure Injection: Use automated equipment. Set appropriate injection ports based on system used. Seal ports and cracks with Five Star® Underwater Epoxy Gel or Five Star® RS Anchor Gel. When the epoxy adhesive seal has cured, inject Five Star® Underwater Epoxy Gel with steady pressure until crack is filled.

Structural Adhesive: Apply Five Star® Underwater Epoxy Gel to the mating or non-mating prepared substrates. Work into the substrates for positive adhesion. Secure the bonded unit firmly into place until the adhesion has cured. Glue line should not exceed 1/8 inch (3 mm).

Anchor bolts, dowels, pins and plates: Annular space around bolt should not exceed 1/8 inch (3 mm); depth of embedment is typically 10 to 15 times the bolt diameter. Place material in hole, starting from the rear to avoid air pockets. For best results, coat anchor with adhesive, insert and rotate slowly into hole.

4. **CLEAN-UP:** Use an appropriate solvent to clean uncured material. Cured material can only be removed mechanically.

NOTE: PRIOR TO APPLICATION, READ ALL PRODUCT PACKAGING THOROUGHLY. For more detailed placement procedures, refer to *Design-A-Spec™* installation guidelines or call the Five Star Marine Engineering and Technical Service Center at (800) 338-3145.

Considerations

- Minimum application temperature of substrate is 40°F (4°C) and rising. Precondition components to 70°F - 80°F (21°C - 26°C) prior to use in cold weather.
- Cold temperatures lengthen gel time, hot temperatures decrease gel time.
- Do not thin with solvents.
- Do not inject moving or leaking cracks.
- Minimum age of concrete must be 21 to 28 days, depending on curing and drying conditions prior to application.
- For cracks over 1/2 inch (12 mm), call the Five Star Marine Engineering and Technical Service Center at (800) 338-3145.
- Material is vapor barrier after cure.

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 MATERIAL SAFETY DATA SHEET.**

For worldwide availability, additional product information and technical support, contact your local Five Star Marine sales representative, or call the Five Star Marine Engineering and Technical Service Center at (800) 338-3145.

Warranty

Five Star Marine warrants that at the time and place we make shipment, our materials will be of good quality and will conform to our published specifications in force on the date of acceptance of the order. THE FOREGOING WARRANTY SHALL BE EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ALL OTHER WARRANTIES OTHERWISE ARISING BY OPERATION OF LAW, COURSE OF DEALING, CUSTOM OR TRADE OR OTHERWISE. As the exclusive remedy for breach of this Warranty, we will replace defective materials, provided, however, that the buyer examines the materials when received and promptly notify in writing of any defect before the materials are used or incorporated into a structure. Twelve (12) months after Five Star Marine has shipped the materials, all our Warranty and other duties with respect to the quality of the materials delivered shall conclusively be presumed to have been satisfied, all liability therefore terminates, and not acting for breach of any duties may thereafter commence. Five Star Marine shall in no event be liable for consequential damages. Unless otherwise agreed to in writing, no warranty is made with respect to materials not made by Five Star Marine. We cannot warranty or in any way guarantee any particular method of use of application or the performance of materials under any particular condition. Neither this Warranty nor our liability may be extended or amended by our sales people, distributors or representatives or by any sales information or drawings.



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