



FIVE STAR® HIGHWAY PATCH-L

Polymer Modified Fast Traffic Repair

PRODUCT DESCRIPTION

Five Star Highway Patch-L is a two component, polymer modified, fast setting hydraulic cement material ideal for horizontal repairs of concrete in traffic areas. Five Star Highway Patch-L provides resistance to oil, grease, gasoline, salts and other chemicals found in the transportation environment.

ADVANTAGES

- High early strength
- Two component/ease of use
- Open to traffic in two hours
- Freeze/thaw resistance
- Adjustable working time
- Resistant to salts
- Cold weather installation
- Coarse aggregate extension

USES

- Highways and bridges
- Parking decks and ramps
- Airport runways and taxiways
- Expansion joint rebuild
- Walkways and steps
- Cold weather repairs

TECHNICAL SUPPORT

Five Star Products maintains the industry's foremost Engineering and Technical Support Group:

- Over 30 years of experience in concrete repair
- Technical Center staffed with experienced engineers available for consultation
- Design-A-Spec™ for engineering specification assistance
- Experienced representatives for field service
- Corporate research laboratory available to customize products for unique applications

PACKAGING AND YIELD

Five Star Highway Patch-L is packaged in heavy-duty polyethylene lined bags each weighing 50 lb (22.7 kg) and a one gallon plastic jug of Five Star® Polymer Liquid when mixed yielding approximately 0.40 cubic feet (11.3 liters) and approximately 0.66 cubic feet (16.9 liters) with an 80% coarse aggregate extension.

SHELF LIFE

One year in original unopened packaging when stored in dry conditions. Higher humidity will reduce shelf life.

TYPICAL PROPERTIES AT 73°F (23°C)

Compressive Strength, ASTM C 39	
60-80% extension	
2 Hours	2500 psi (17.3 MPa)
1 Day	4000 psi (27.6 MPa)
28 Days	6000 psi (41.4 MPa)
Length Change, ASTM C 157	
28 Days Wet	+0.02%
28 Days Dry	-0.02%
Time of Set, ASTM C 266	
Initial	25-35 minutes
Final	40-50 minutes
Flexural Strength, ASTM C 78	
3 Hours	600 psi
28 Days	1250 psi
Freeze/Thaw Resistance, ASTM C 666A	
Relative Durability Factor	> 90%
Chloride Ion Permeability, ASTM C 1202	
28 Days	Very Low (< 1000 coulombs)

The data shown above reflect 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

1. **SURFACE PREPARATION:** All surfaces in contact with Five Star Highway Patch-L shall be free of oil, grease, laitance, and other contaminants. Concrete must be clean, sound and rough to ensure a good bond. Remove all oxidation from exposed reinforcing steel and for additional protection coat reinforcing steel with Five Star® AC Coat. A perimeter edge and minimum depth of 1/2 inch (13 mm) should be provided for a durable repair. Featheredging is not desirable. Soak concrete surfaces prior to application with liberal quantities of potable water, leaving the concrete saturated and free of standing water. Surfaces shall be conditioned to between 35°F and 90°F (2°C and 32°C) at the time of placement.
2. **MIXING:** Pre-wet mortar mixer, empty excess water. Add approximately 7/8 gallon of Five Star Polymer Liquid into the mixer per bag. While mixing, slowly add repair material and mix to a uniform consistency. If needed, add remaining polymer to achieve desired consistency, up to a maximum of one gallon per bag. Continue to mix to a uniform consistency. Do not mix more material than can be placed within 10 minutes. Do not retemper the mix by adding additional polymer. For pours requiring aggregate extension, add clean and damp coarse aggregate (meeting ASTM C 33) before final polymer adjustment.
3. **PLACEMENT PROCEDURES:** Firmly work Five Star Highway Patch-L into substrate and place full depth from one side of the repair to the other. Where this is not practical, placement must be continuous to prevent cold joints between pours. Finish as necessary.
SPECIAL CONDITIONS: For use in cold temperatures, Five Star Highway Patch-L must be maintained at a temperature of at least 35°F (2°C). Protect from freezing until a compressive strength of at least 1000 psi (6.9 MPa) is obtained. Faster strength gain will occur when the Five Star Highway Patch-L and polymer have been conditioned to a higher temperature prior to placement.
In hot temperatures, Five Star Highway Patch-L should be kept as cool as possible, but not exceeding 90°F (32°C).
4. **POST-PLACEMENT PROCEDURES:** Five Star Highway Patch-L shall be protected until initial set, then immediately coat with an approved curing compound meeting water retention properties of ASTM C 309 or wet cure for a minimum of three days. In-service operation may begin immediately after the required strength has been reached.
NOTE: PRIOR TO APPLICATION, READ ALL PRODUCT PACKAGING THOROUGHLY. For more detailed placement procedures, refer to DESIGN-A-SPEC™, or call the Five Star Products Engineering and Technical Center at 800-243-2206.

LIMITATIONS

- Never exceed the maximum polymer content stated on the package or an amount that will cause segregation.
- Temperature of surfaces must be between 35°F and 90°F (2°C and 32°C) at time of placement. For cold and hot weather placement, call the Five Star Products Engineering and Technical Center.
- Substrate shall be free of frost and ice.
- Repair material shall be protected from freezing until it reaches 1000 psi (6.9 MPa).
- Placement shall be continuous to avoid cold joints.

CAUTION

Contains cementitious material, polymer liquid and crystalline silica. International Agency for Research on Cancer has evaluated that there is sufficient evidence for the carcinogenicity of inhaled crystalline silica to humans. Take appropriate measures to avoid breathing dust. Use with adequate ventilation. Avoid contact with eyes and contact with skin. In case of contact with eyes, immediately flush with plenty of water for at least 15 minutes. Immediately call a physician. Wash skin thoroughly after handling. Keep product out of reach of children. PRIOR TO USE, REFER TO MATERIAL SAFETY DATA SHEET.

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, EXPRESSED 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."

For worldwide availability, additional product information and technical support, contact your local Five Star distributor, local sales representative, or you may call Five Star's Engineering and Technical Center at 800-243-2206.

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