



# **HIGHWAY PATCH**

Fast Traffic Area Repair

## **PRODUCT DESCRIPTION**

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

## **ADVANTAGES**

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

## **USES**

- Highways and bridges
- Parking decks and ramps
- Airport runways and taxiways
- Expansion joint rebuild
- Dowel bar retrofit
- Cold weather repairs

## **PACKAGING AND YIELD**

Five Star® Highway Patch is packaged in heavy-duty polyethylene lined bags each weighing 50 lb. (22.7 kg) yielding approximately 0.39 cubic feet (11.3 liters) and approximately 0.66 cubic feet (16.9 liters) with an 80% coarse aggregate extension. Also available in 3,000 lb. (1,363 kg) bulk bags.

## **SHELF LIFE**

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

<b>TYPICAL PROPERTIES AT 70°F (21°C)</b>	
<b>Compressive Strength, ASTM C 109</b>	
2 Hours	2,000 psi (13.8 MPa)
3 Hours	3,500 psi (24.1 MPa)
1 Day	5,000 psi (34.5 MPa)
7 Days	7,000 psi (48.3 MPa)
<b>Bond Strength, ASTM C 882</b>	
1 Day	1,500 psi (10.4 MPa)
7 Days	2,000 psi (13.8 MPa)
<b>Length Change, ASTM C 157</b>	
28 Days Wet	+ 0.05%
28 Days Dry	- 0.05%
<b>Freeze/Thaw Resistance, ASTM C 666A</b>	
Relative Durability Factor	90%
<b>Flexural Strength, ASTM C 78</b>	
3 Hours	400 psi
<b>Chloride Ion Permeability, ASTM C 1202</b>	
28 Days	Very Low (<1,000 Coulombs)
<b>Working Time at 70°F (21°C)</b>	10 minutes

*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 horizontal and vertical surfaces in contact with Five Star® Highway Patch shall be free of oil, grease, laitance, and other contaminants. All horizontal and vertical concrete surfaces 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 one inch (25 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 or use Five Star® Bonding Adhesive. Surfaces shall be conditioned to between 35°F and 90°F (2°C and 32°C) at time of placement.
- MIXING:** Mix Five Star® Highway Patch thoroughly for approximately four to five minutes to a uniform consistency with a mortar mixer (stationary barrel with moving blades) or a drill and paddle mixer. Mix Five Star® Highway Patch with 2-1/2 to 3 quarts potable water per 50 lb. bag. Adjust consistency if necessary, but do not exceed maximum water content stated on the package or an amount that will cause segregation. Do not mix more material than can be placed in 10 minutes. Addition of coarse aggregate, meeting ASTM C 33, should be used for pours greater than 2 inches (50 mm) in depth. Always add mixing water first to mixer followed by repair material.
- PLACEMENT PROCEDURES:** When bonding adhesive is not used, firmly work Five Star® Highway Patch 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 must be maintained at a temperature of at least 35°F (2°C) until a compressive strength of at least 1,000 psi (6.9 MPa) is obtained. Faster strength gain will occur when the Five Star® Highway Patch and mixing water have been conditioned to a higher temperature prior to placement. In hot temperatures, Five Star® Highway Patch should be kept as cool as possible, but not exceeding 90°F (32°C). Chilled water should be used for mixing to help maintain sufficient working time.
- POST-PLACEMENT PROCEDURES:** Five Star® Highway Patch shall be immediately coated with an approved curing compound meeting the water retention properties of ASTM C 309. 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 Five Star® Design-A-Spec™ installation guidelines or call Five Star Products' Engineering and Technical Service Center at 1-800-243-2206.

## CONSIDERATIONS

- Never exceed the maximum water content as 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 Service Center.
- Repair material shall be protected from freezing until it reaches 1,000 psi (6.9 MPa).
- Placement shall be continuous to avoid cold joints.

## CAUTION

Irritant, toxic, strong sensitizer. International Agency for Research on Cancer has determined that there is sufficient evidence for the carcinogenicity of inhaled crystalline silica to humans. Take appropriate measures to avoid breathing dust. 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.**

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

SKU / PRODUCT CODE	DESCRIPTION	UNIT SIZE
40000	Five Star® Highway Patch	50 lb. Bag

**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, EXPRESS 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."

**Five Star Products, Inc.**  
**Corporate Headquarters**  
750 Commerce Drive  
Fairfield, CT 06825-5519 USA  
Tel: 203-336-7900 • Fax: 203-336-7930  
www.FiveStarProducts.com



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