



# HIGHWAY PATCH FR

Fiber Reinforced, Fast Traffic Area Repair

## PRODUCT DESCRIPTION

Five Star® Highway Patch FR is a one component, fiber-reinforced, fast-setting, high strength, cement-based repair mortar designed for transportation applications where high early strength gain is needed to reduce down time. Five Star® Highway Patch FR combines a unique chemistry requiring **no wet cure or curing compounds** along with fiber reinforcement for excellent crack resistance and long-term durability.

## ADVANTAGES

- High early strength
- One component for ease of use
- Open to traffic in three hours
- Freeze/thaw resistance
- No Wet Cure or Curing Compounds Required
- Resistant to salts
- Coarse aggregate extension

## USES

- Highways and bridges
- Parking decks and ramps
- Airport runways and taxiways
- Warehouse floors
- Sidewalks
- Cold weather repairs

## PACKAGING AND YIELD

Five Star® Highway Patch FR is packaged in heavy-duty polyethylene lined bags each weighing 50 lb. (22.7 kg) yielding approximately 0.39 cubic feet (11.0 liters) and approximately 0.60 cubic feet (17.0 liters) with a 60% coarse aggregate extension.

## SHELF LIFE

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

### TYPICAL PROPERTIES AT 70°F (21°C)

#### Compressive Strength, ASTM C 109

3 Hours	3,000 psi (20.7 MPa)
1 Day	5,000 psi (34.5 MPa)
7 Days	6,500 psi (44.8 MPa)
28 Days	7,500 psi (51.7 MPa)

#### Bond Strength, ASTM C 882

1 Day	1,500 psi (10.4 MPa)
7 Days	2,000 psi (13.8 MPa)

#### Length Change, ASTM C 157

28 Days Wet	+ 0.05%
28 Days Dry	- 0.05%

#### Freeze/Thaw Resistance, ASTM C 666A

Relative Durability Factor	90% +
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#### Chloride Ion Permeability, ASTM C 1202

28 Days	Low
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#### Working Time at 70°F (21°C)

15 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 FR 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. An ICRI Concrete Surface Profile of 6 or greater shall be achieved. Remove all oxidation from exposed reinforcing steel. 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 40°F and 90°F (4°C and 32°C) at time of placement.
- MIXING:** Pre-wet mortar mixer, empty excess water. Mix Five Star® Highway Patch FR following water requirements on packaging. Slowly add Five Star® Highway Patch FR and mix thoroughly for approximately 3 to 4 minutes to a uniform consistency with a mortar mixer (stationary barrel with moving blades) or a drill and paddle mixer. 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. Do not retemper the mix by adding additional water. 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:** Firmly work Five Star® Highway Patch FR into substrate. Placement must be continuous to prevent cold joints between pours. Finish as necessary.  
**SPECIAL CONDITIONS:** For use in cold temperatures, Five Star® Highway Patch FR must be maintained at a temperature of at least 40°F (4°C) until a compressive strength of at least 1,000 psi (6.9 MPa) is obtained. Faster strength gain will occur when Five Star® Highway Patch FR and mixing water have been conditioned to a higher temperature prior to placement. In hot temperatures, Five Star® Highway Patch FR 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:** No wet cure or curing compound is required. 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 40°F and 90°F (4°C and 32°C) at time of placement. For cold and hot weather placement, call 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 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' Engineering and Technical Service Center at 1-800-243-2206.

SKU / PRODUCT CODE	DESCRIPTION	#UNITS/PALLET	UNIT SIZE
40005	Five Star® Highway Patch FR	56	50 lb. (22.7 Kg) 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."

Specifications Subject to Change.

For most current version of datasheet, go to [FiveStarProducts.com](http://FiveStarProducts.com)

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