

FIVE STAR HIGHWAY & COLD ROOM REPAIR

**FAST TRAFFIC AREA REPAIR
HIGH EARLY STRENGTH
FREEZE / THAW RESISTANCE
RESISTANT TO SALTS
COLD WEATHER INSTALLATION
COARSE AGGREGATE EXTENSION
ADJUSTABLE WORKING TIME
SUITABLE FOR COLD ROOM REPAIRS**

DESCRIPTION:

Five Star Highway Patch is a one-component, fast-setting hydraulic cement material ideal for horizontal patching 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:

- One component, easy to use.
- Open to traffic in 2 hours.

USES:

- Highways and bridges
- Parking decks and ramps
- Airport runways and taxiways
- Expansion joint rebuild
- Steps and sidewalks
- Cold room and cold weather repairs

TECHNICAL SUPPORT:

Five Star products maintain 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 representative for field service.
- Corporate research laboratory available to customise products for unique applications.

TYPICAL PROPERTIES AT 25°C:

Compressive Strength ASTM C109

	<u>At 23°C</u>	<u>At 5°C</u>
2 Hours	13 MPa	10 MPa
3 Hours	24 MPa	20 MPa
24 Hours	34 MPa	30 MPa
7 Days	48 MPa	45 MPa

Bond Strength ASTM C882

1 Day	10,4 MPa
7 Days	13,8 MPa

Length Change ASTM C157

28 Days Wet	+ 0,05%
28 Days Dry	- 0,08%

Scaling Resistance

50 Cycles	0,1
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Freeze / Thaw Resistance ASTM C666A

Relative Durability Factor	90%
Working Time	10 Min

APPLICATION INSTRUCTIONS

These instructions are not intended to show product recommendations for specific service. They are issued as an aid in determining correct surface preparation, mixing instructions and application procedure. It is assumed that the proper product recommendations have been made. These instructions should be followed closely to obtain the maximum service from the materials.

PACKAGING AND YIELD:

Five Star Highway Patch is packaged in heavy-duty polyethylene lined bags, each weighing 25kg, yielding approximately 13,0 litre and approximately 18 litres with Pro-Struct 53MC aggregate extension.

SHELF LIFE:

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

PLACEMENT GUIDELINES:

- SURFACE PREPARATION:** All surfaces in contact with Five Star Highway Patch shall be free of oil, grease, laitance and other contaminants. Concrete must be clean, sound and rough to ensure a good bond. Surfaces should be prepared in accordance with 1 or 3 of "Surface Preparation Methods". A perimeter edge of one inch (25mm) minimum should be provided for a durable repair. Feather edging 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 between 2°C and 32°C at the time of placement.
- MIXING:** Mix Five Star Highway Patch with 3 litres of water thoroughly for approximately 5 minutes with a mortar mixer or drill and paddle mixer. Adjust consistency if necessary, but do not exceed 3,5 litres of water. Do not mix more material than can be placed in 10 minutes. Addition of coarse aggregate, Pro-Struct 53-MC may be necessary for pours greater than 2 inches (50mm). Do not retemper the mix by adding more water – it will cause shrinkage cracking.
- PLACEMENT PROCEDURES:** Whenever possible, place Five Star Highway Patch 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 – COLD WEATHER REPAIRS: All surfaces and materials shall be preconditioned and maintained between 2°C and 32°C. Higher substrate and material mix temperature will result in faster strength development. Below 2°C down to -30°C, preheat mixer with hot water before mixing. Warm substrates with infrared lamps or suitable heater to ensure no ice is present. Pre-condition the repair material to as high a temperature as possible between 2 and 32°C and use mixing water which has been warmed to between 30°C and 35°C. Immediately cover repair with insulating material e.g. polystyrene sheeting to protect from freezing until approximately 7 MPa is reached or the minimum required strength.

SPECIAL CONDITIONS – HOT WEATHER REPAIRS: Material shall be conditioned as necessary so that the mixed material is below 32°C. All surfaces in contact with material must be preconditioned and maintained below 32°C. Cooling of surfaces, materials and equipment can be accomplished by using chilled water for mixing and pre-soaking concrete. If possible, shade area from direct sunlight or pour material when temperatures are decreasing. Protect material from excessive evaporation prior to set, by covering with pre-soaked insulation.

- WET-CURING:** Five Star Highway Patch will be hard after 15 minutes. Wet cure immediately for 2 hours by covering with water saturated hessian. **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 Centre at 011-254-5500.

LIMITATIONS

- Never exceed the maximum water stated.
- Temperature of surface must be between 2°C and 32°C at time of placement. For cold and hot weather placement, refer to Design-A-Spec™.
- Substrate shall be free of frost and ice.
- Repair material shall be protected from freezing until it reaches 100 psi (6,9 MPa).
- Placement shall be continuous to avoid cold joints.

CAUTION

Contains cementitious material and crystalline free silica. 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 THE MATERIAL SAFETY DATA SHEET.

CAUTION: MAY CONTAIN FLAMMABLE SOLVENTS. KEEP AWAY FROM SPARKS AND OPEN FLAMES. IN CONFINED AREAS WORKMEN MUST WEAR FRESH AIRLINE RESPIRATORS. HYPERSENSITIVE PERSONS SHOULD WEAR GLOVES OR USE PROTECTIVE CREAM. ALL ELECTRONIC EQUIPMENT AND INSTALLATIONS SHOULD BE MADE AND GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. IN AREAS WHERE EXPLOSION HAZARDS EXIST, WORKMEN SHOULD BE REQUIRED TO USE NONFERROUS TOOLS AND TO WEAR CONDUCTIVE AND NONSPARKING SHOES



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