



# FIVE STAR<sup>®</sup> NOVOLAC STRUCTURAL CONCRETE

Five Star Novolac Structural Concrete is a three component, 100% solids, highly chemical resistant epoxy mortar for the repair or construction of curbs, trenches, floors and pads. Five Star Novolac Structural Concrete is designed for aggressive chemical environments that may be exposed to concentrated acids, alkalis, corrosives or solvents. Novolac Structural Concrete is moisture insensitive and has excellent working time.

## ADVANTAGES

- High chemical resistance
- Excellent thermal shock, impact and wear resistance
- Low odor
- Versatile application
- Tenacious bond strength

## USES

- Chemical processing plants
- Setting mortar for acid resistant brick and tile
- Concrete pads
- Industrial processing plants
- Precast trenches
- Flooring surfaces

## TECHNICAL SUPPORT

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

- Over 30 years of experience in concrete restoration
- 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 Novolac Structural Concrete is packaged in 0.35 ft<sup>3</sup> and 1.4 ft<sup>3</sup> units. The 0.35 ft<sup>3</sup> unit consists of premeasured containers of resin, hardener and polyethylene lined bag of aggregate packaged in a 7 gallon pail. The 1.4 ft<sup>3</sup> unit consists of containers of resin, hardener, and 4 bags of aggregate. Up to 1/2 bag of aggregate on a large unit or 5 lb. on a small unit may be withheld to increase maximum flow [and consequently reducing yield to 0.33 cubic feet (small unit) and 1.3 cubic feet (large unit)].

**SHELF LIFE** Two years in original unopened packaging.

## TYPICAL PROPERTIES AT 73°F (23°C)

Pot Life	40 minutes
Compressive Strength, ASTM C 579 B*	
24 Hours	9,500 psi (65.5 MPa)
7 Days	13,000 psi (89.6 MPa)
Post cured at 140°F (60°C)	15,500 psi (106.9 MPa)
Tensile Properties, ASTM C 307 Tensile Strength	2,100 psi (14.5 MPa)
Bond Strength, ASTM C 882	Concrete Failure
Flexural Strength ASTM C 580	6,000 psi (41.4 MPa)
Coefficient of Expansion ASTM C531	15 x 10 <sup>-6</sup> in/in/°F (27 x 10 <sup>-6</sup> mm/mm/°C)

## ESTIMATED COVERAGE

@ 1/2" thickness	8.0 ft <sup>2</sup> / 0.35 ft unit	32.0 ft <sup>2</sup> / 1.4 ft <sup>3</sup> unit
@ 1" thickness	4.0 ft <sup>2</sup> / 0.35 ft unit	16.0 ft <sup>2</sup> / 1.4 ft <sup>3</sup> unit

## CHEMICAL RESISTANCE CHART#

### Solvents/Organics

Acetaldehyde  
Acetone  
Acetonitrile  
Acrylonitrile  
Butyl acetate  
Cyclohexane  
Ethanol  
Ethyl acetate  
Ethyl alcohol  
Formaldehyde  
Isopropyl Alcohol  
Jet Fuel  
Kerosene  
Methyl Ethyl Ketone  
Methanol  
Methyl Alcohol  
Rubbing alcohol  
Wood Alcohol  
1,1,1 Trichloroethane  
Phenol

### Acids (Conc.)

Acetic (1-50%)  
Acid plating solutions  
Adipic (1-25%)  
Azotic (1-50%)  
Battery (1-98%)  
Chromic (1-30%)  
Chlorohydric (1-37%)  
Dibasic (1-sat.)  
Ethanoic (1-50%)  
Ethylic (1-50%)  
Engravers (1-50%)  
Hydrochloric (1-37%)  
Hydrofluoric (1-40%)  
Mattling (1-98%)  
Nitric (1-50%)  
Oil of vitriol (1-98%)  
Oleic  
Phosphoric (1-85%)  
Sulfuric (1-98%)  
Vitriol (1-98%)

### Bases/Alkalines (Conc.)

Ammonia (1-25%)  
Ammonium Hydroxide (1-25%)  
Aniline  
Barium Hydroxide (1-sat.)  
Black Pulp Liquor  
Butyl amine  
Cadmium Cyanide Plating  
Calcium Hydroxide (1-25%)  
Chromium Trioxide (1-25%)  
Copper Cyanide Plating  
Dimethyl aniline  
Hydrogen Peroxide (1-30%)  
Green Pulp Liquor  
Soap solutions  
Sodium Cyanide (1-15%)  
Sodium Hypochlorite (1-9%)  
Sodium Hydroxide (1-50%)  
Triethanolamine  
Triethylamine  
Potassium Hydroxide (1 -sat)

\* Rate of loading 0.25 inches per min

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 to be in contact with Five Star Novolac Structural Concrete shall be free of oil, grease, laitance and other contaminants. Substrate must be clean, sound, dry and roughened to ensure a good bond. Provide a SSPC-SPC6 commercial finish on all metal surfaces to ensure proper adhesion when required.
2. **FORMS:** Formwork shall be constructed of rigid nonabsorbent materials, securely anchored, liquid tight and strong enough to resist forces developed during placement. Areas where bond is not desired must be treated with paste wax or polyethylene.
3. **MIXING:** For optimum performance, all components should be conditioned to 70-80°F(21-27°C) prior to use. **SMALL UNIT:** remove all components from the pail. Pour all Component A (resin) and Component B (hardener) into pail and mix thoroughly with slow speed mixer to avoid air entrapment. While mixing, slowly add all of Component C (aggregate) and mix only until no dry pockets remain. Add Component C immediately after mixing Components A and B. **LARGE UNIT:** Pour all Component A (resin) and Component B (hardener) into mortar mixer and mix thoroughly for 1-2 minutes. While mixing, slowly add Component C (aggregate) and mix only until aggregate is completely wet. Working time is limited to 40 minutes when temperatures are 73°F (23°C).
4. **METHODS OF PLACEMENT:** Five Star Novolac Structural Concrete may be poured into place. Whenever possible, place Five Star Novolac Structural Concrete full depth from one side of placement to the other. Placement should be continuous to prevent cold joints between pours. Finish as necessary. For placement thicknesses greater than six inches, call Five Star Products Engineering and Technical Center at 1-800-243-2206.
5. **POST-PLACEMENT PROCEDURES:** Final finishing of surfaces is aided by using a solvent wiped trowel just before material becomes unworkable. For load bearing applications, in-service operation may begin immediately after required strength has been achieved.  
**CLEAN UP:** All tools and equipment may be cleaned with a water and strong detergent solution or solvent before material hardens. Sand may be used as an abrasive.

**NOTE: PRIOR TO APPLICATION, READ ALL PRODUCT PACKAGING THOROUGHLY.** For more detailed placement procedures, refer to Design-A-Spec(TM) or call the Five Star Products Engineering and Technical Center at 203-336-7900.

## LIMITATIONS

- Minimum application temperature of substrate is 40°F (4°C) and rising. Low temperatures adversely affect flowability and strength gain.
- Do not thin with solvents.
- 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 (13 mm), consult Five Star Products Engineering and Technical Center at 203-336-7900.
- Cold temperatures lengthen cure time, hot temperatures decrease cure time.
- Maximum operating temperature is 200°F (93°C)
- Recommended for horizontal applications. For higher build or vertical applications add silica fume.

**Caution: FOR INDUSTRIAL USE ONLY.** 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.

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 203-336-7900.

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