

**FIVE STAR CHEMICAL RESISTANT FLOWABLE EPOXY NOVOLAC  
GROUT**

**EXCELLENT IMPACT AND WEAR RESISTANCE  
EXPANSIVE, NON-SHRINK PER ASTM C827  
HIGH EARLY STRENGTH  
VERSATILE APPLICATIONS  
ACID RESISTANT BRICK LININGS  
HIGH CHEMICAL RESISTANCE**

**PRODUCT DESCRIPTION:**

A 3 component, solvent-free epoxy novolac aggregate-filled expansive grout which achieves an extremely high cross-linked density resulting in excellent temperature, chemical and solvent resistance. The graded aggregate blend and selected resin to aggregate ratio results in a high compressive strength resulting in an extremely stable grout under dynamic loads.

**USES:**

- Single large volume placement, 13 to 152mm deep.
- Foundation rebuilds and skid mounted equipment.
- Precision alignment under dynamic load conditions.
- Vibration dampening for rotating equipment.
- Support of chemical tanks, vessels and rotating equipment.
- Aggressive chemical environments e.g. secondary containment.
- Setting mortar for acid resistant bricks and tiles.

**PACKAGING & COVERAGE:**

14 Litre kit Part A, B and C (25kg bag). Total kit weight 30kg.  
0,35m<sup>2</sup> at 40mm thick per 14 litre kit

**SURFACE PREPARATION:**

All surfaces to be in contact with Five Star 500 Epoxy Novolac Grout shall be free of oil, grease, laitance and other contaminants. Concrete must be clean, sound, dry and roughened to ensure a good bond. Surfaces should be prepared in accordance with 1 or 3 of "Surface Preparation Methods". Provides SSPC-SP6 commercial finish on all metal surfaces to ensure proper adhesion when required.

**TEMPERATURE CONDITIONS:**

Do not attempt to install material if the temperature of the surface is not within 16°C to 32°C. The cure time and application properties are severely affected – refer to "Extreme Conditions".

**FORMS AND ISOLATION JOINTS:**

Formwork shall be constructed of rigid non-absorbent materials, securely anchored, liquid tight and strong enough to resist forces developed during grout placement. The clearance between formwork and baseplate shall be 75mm to 125mm to allow for headbox. The clearance for remaining sides shall be 25mm to 50mm. Areas where bond is not desired must be treated with paste wax or polyethylene lined. Isolation joints should be placed at 1,2 metre centres.

**TYPICAL PROPERTIES AT 25°C**

Colour	Charcoal
Consistency	Pourable
Volume Solids	100%
Number of Components	3
Mix Ratio by Volume	Mix complete kit
Pot Life	20 to 30 Minutes
Apply Over	Prepared roughened concrete
Apply By	Pouring into formwork
Initial Set	2 Hours at 25°C
Service	24 Hours
Full Cure	7 Days
Application Temperature Range	16°C to 32°C
Maximum Service Temperature	80°C
Clearances	13 to 152mm
Height Change ASTM C-827	Positive Expansion
Effective Bearing Area	95%
Tensile Strength ASTM C-307	15.0 MPa
Flexural Strength ASTM C-580	41.0 MPa
Coefficient of Expansion ASTM C-531	29 x 10 <sup>-6</sup> mm /mm/°C
Bond to Concrete ASTM C-882	17 MPa
Compressive Strength ASTM C-579B	<b>MPa</b>
1 Day	90
7 Days	100
Post cured at 60°C	120
Shelf Life	12 Months

# 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.

## MIXING:

For optimum performance, all components should be conditioned to between 21°C and 27°C prior to use. Add all the activator components to the base components. Mix thoroughly by slow speed mixer for 3 minutes to avoid air entrapment. Pour mixed liquids into mortar mixer. While mixing, slowly add component C (aggregate) and mix only until aggregate is completely wet. Working time is approximately 30 minutes when temperatures are at 25°C.

## METHOD OF PLACEMENT:

Five Star 500 Epoxy Novolac Grout must be placed from one side to the other, maintaining contact with the bottom of the baseplate at all times. For clearances greater than 150mm, contact StonCor Africa Technical Resources at 011-254-5500.

## POST PLACEMENT PROCEDURES:

Final finishing of exposed surfaces is aided by using a solvent-wiped trowel just before material becomes unworkable. In-service operation may begin immediately after minimum required grout strength and modulus have been achieved.

## CLEAN-UP:

Clean equipment immediately after use with Pro-Struct 105 Cleaner and rinse with clean water. Sand may be used as an abrasive.

## LIMITATIONS:

- Flowability and strength gain are adversely affected by low temperatures.
- For placement temperatures below 16°C or above 32°C, refer to "Extreme Weather Conditions".
- To obtain bond, concrete shall be visibly free of surface moisture.
- Do not add solvent to increase flowability.
- For continuous operating temperatures exceeding 60°C, contact the StonCor Africa Technical Resources.
- Construction practices dictate concrete foundation, which should achieve its design strength before grouting.

## EXTREME WEATHER CONDITIONS:

### COLD:

Low temperatures decrease flow, delay set and strength development of epoxy products. The procedure below will compensate for these conditions:

- Materials shall be conditioned for 16 hours so that placed grout is between 21°C and 27°C. All surfaces in contact with grout shall be preconditioned and maintained between 16°C and 27°C for at least 16 hours. Heated enclosures must be windproof and weatherproof. Heaters shall not be permitted to unevenly heat concrete, nor contaminate the concrete with exhaust fumes. Grout temperature shall be maintained above 16°C until grout reaches minimum required strength. Gradually reduce grout temperature to ambient to avoid thermal shock.

### HOT:

High temperatures accelerate set, decrease working time, and accelerate strength gain of epoxy products. The procedure below will compensate for these conditions:

- Materials shall be conditioned for 16 hours so that placed grout is between 21°C and 27°C. All surfaces in contact with grout shall be preconditioned and maintained between 16°C and 27°C and may best be done at night. Shade application areas from direct sunlight and pour grout when temperatures are decreasing. When other cooling methods are used, extreme caution shall be taken to insure all surfaces in contact with grout are completely dry before grouting. Grout shall remain shaded and protected for at least 16 hours after placement.

## PRECAUTIONS:

Five Star 500 Epoxy Novolac Grout cannot withstand the exothermic reaction of water, dew or rain falling on pooled concentrated acids. The temperatures of the acid can reach 160°C and if maintained, will attack the product. Pump and pipe maintenance, the use of drip trays, slopes to sumps, roof protection and good housekeeping practice is critical in avoiding the explosive properties encountered when water is added to acids. Use materials in strict accordance with the manufacturer's Material Safety Data Sheet. Protective clothing and equipment will significantly reduce risk of injury. Body coverage apparel, safety goggles and impermeable gloves are recommended. In case of contact, flush with copious amounts of water and seek immediate medical attention. Dispose of waste materials and containers in strict accordance with Government regulations.

**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 NON-FERROUS TOOLS AND TO WEAR CONDUCTIVE AND NON-SPARKING SHOES.**



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## METHOD STATEMENT FOR THE ACID BRICKING OF CONCRETE FLOORS, WALLS AND COLUMNS

### DESCRIPTION:

This specification deals with the preparation, priming, laminating and grouting of acid resistant bricks using Five Star 500 Epoxy Novolac Grout.

### SURFACE PREPARATION:

#### New Concrete

All concrete prior to application is to be clean, dry and sound and laid to falls. Lightly abrade the entire surface to remove laitance and repair any areas that are not sound using Five Star 500 Epoxy Novolac Grout.

#### Existing Concrete – Minor Contamination

- Prepare concrete surfaces by high pressure water washing until sound uncontaminated surface is achieved.
- Neutralise any traces of acid with lime and clean surface by means of high pressure water washing.
- Reinstate all surfaces to original levels by applying Pro-Struct 529 Five Star Structural Concrete to a minimum thickness of 10mm and allow to cure for a minimum of 48 hours.

#### Existing Concrete – Major Contamination

Completely remove all contaminated concrete and re-establish floor levels with new concrete, allowing up to 28 days curing before application of Acidproofing system. If insufficient time is available, apply Pro-Struct 529 Five Star Structural Concrete to a minimum thickness of 10mm and allow to cure for a minimum period of 48 hours.

### MIXING:

Under no circumstances are the supplied kits to be split. The contents of the components in a kit are to be thoroughly mixed before use, note being taken of the limited pot life necessitating short application times per kit. For priming and laminating, only mix Base and Activator. Mortar required for bricking and grouting, add Five Star 500 Grout Aggregate (Part C).

### PRIMING AND LAMINATING:

Apply a generous primer coat of Five Star 500 Epoxy Novolac Grout Resin and lay in a chopped strand fiberglass mat (300gm/m<sup>2</sup>) saturating from above with Resin. **NB:** Resin only is used for priming and laminating, no Five Star 500 Grout Aggregate (Part C) is added.

While still wet, scatter Pro-Struct 6223 Coarse Aggregate at 1kg/m<sup>2</sup> and allow to cure for 4 to 8 hours. This coating system must be done as one process.

### MORTAR PLACING TO BRICKING:

Sweep off unbonded aggregate and vacuum before placing of mortar. Onto the bonded aggregate, evenly spread the mixed kit Five Star 500 Epoxy Novolac Grout at approximately 5mm thick. Into the wet mortar, embed the acid resistant bricks which have been buttered on the sides with Five Star 500 Epoxy Novolac Grout. Each brick is placed level, butting one against the other such that the grout extrudes from the joint and the excess grout is to be removed from the surface.

### COVERAGE:

Five Star 500 for priming and laminating Resin  $\pm 1.5\text{lt/m}^2$   
Five Star 500 Mortar  $\pm 2\text{m}^2/14$  litre kit

It is, however, imperative that trial consumption figures be obtained on the given surface.

### EXPANSION JOINTS:

Expansion joints in the concrete screed should be carried through the Five Star 500 Epoxy Mortar. Other situations where expansion joints are necessary include:

- Boundaries between different floors or flooring materials.
- Load supporting columns set in the floor.
- Vessel sealing rings.
- Areas around heavy vibrating machinery.
- Major cracks in the concrete screed.

The choice of sealant should be made according to the expected chemical conditions but would generally be Pro-Struct 849 Chemical Resistant Joint Sealant.

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