FIVE STAR PRODUCTS, INC.

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DESIGN-A-SPEC™ GUIDELINES
FIVE STAR EPOXY NOVOLAC COATING NON SAG

CONTENTS

This document is provided for informational purposes only and as a general guideline for consideration by contractors and engineers. While every reasonable effort has been made to ensure that this information is accurate and authoritative, Five Star Products does not warrant the accuracy or completeness of this information, or for its appropriateness for any particular purpose. The user of this document remains solely responsible for the specification of all methods, materials and practices.

PART A - GENERAL CONDITIONS - COATINGS

1.01 SCOPE

The work covered by this document consists of furnishing all equipment, materials, labor and performing all operations required for the application of epoxy novolac coatings as directed by the engineer or owner.

1.02 QUALITY ASSURANCE

A. The manufacturer shall have been in the business of manufacturing similar products for over ten years, maintain a strict quality assurance program, offer technical services and provide a representative at the jobsite for product training, prior to product installation, upon written request.
B. The contractor shall submit to the engineer or owner, at least three job references where the contractor has successfully completed similar applications.

1.03 DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered to the jobsite in their original, unopened packages, clearly labeled with the manufacturer's identification, printed instructions and batch code.
B. Store and condition the specified product in accordance with the appropriate product data sheet.
C. For handling instructions, refer to the Material Safety Data Sheet.

1.04 PROJECT/SITE CONDITIONS

Refer to PART C - PREPARATION, ENVIRONMENTAL CONDITIONS, or contact the manufacturer directly for any physical or environmental limitations required by the product.

1.05 MEASUREMENT AND PAYMENT

A. Measurement of the coating application shall be on a square foot (square meter) basis of material applied.
B. Payment for the coating application shall be at the unit price bid on a square foot (square meter) basis. This payment shall constitute full compensation for all labor, materials, tools, equipment and other items as necessary to complete the work as described in the contract documents. Progress payments will be made on the percentage of the work satisfactorily completed during each payment period in accordance with the provisions of the contract documents.

PART B - MATERIAL SPECIFICATION - COATINGS

2.01 MATERIALS

A. The concrete coating material shall be a highly chemical resistant, non sag epoxy novolac based pre-packaged coating consisting of thermosetting resins suitable for vertical application. The manufacturer shall be ISO 9001 certified and have at least ten years experience in the manufacture of concrete coatings. The manufacturer shall offer technical services and provide a representative at the jobsite for product training prior to product installation upon five days advance notice.

B. The concrete coating material shall be suitable for exposure to strong acids, bases and solvents and meet all the following typical performance criteria when cured at 73°F (23°C):

1.	Compressive Strength, ASTM C 109 7 Days	10,000 psi (70 MPa)
2.	In Service Time	72 Hours
3.	Tensile Strength, ASTM D 695	7,200 psi (49.6 MPa)
4.	Film Thickness	20 mils
5.	Pot Life	20 minutes

The data shown above reflect typical results based on laboratory testing under controlled conditions. Reasonable variations from the data shown above may result in the field. Test methods are modified where applicable.

C. An acceptable product which meets these criteria is:

Five Star® Epoxy Novolac Coating Non Sag

As manufactured by Five Star Products, Inc., Fairfield, CT 06824 (203) 336-7900.

D. Subject to meeting the performance criteria stated above, other products may be formally submitted to the engineer for approval up to three days prior to the bid date. All requests for approval shall contain certified test data verifying conformance with this specification. Three references of successfully completed projects of similar nature and scope of the work detailed in this specification shall be provided, as well as a minimum ten year history of use in the industry. The testing laboratory shall certify to any modifications made to the tests performed and provide details of modifications.

PART C – PREPARATION - COATINGS

3.01 CONCRETE SURFACES

A. Surfaces shall be clean, sound and rough. Mechanically prepare all concrete surfaces to an ICRI Concrete Surface Profile (CSP) of 3 – 4 in accordance with ICRI Technical Guideline 03732. All existing coatings, dust, film, dirt, oils and debris must be completely removed. Concrete should be prepared via abrasive (sand) blasting or similar means. For further details on Concrete Surface Profiles, refer to ICRI Technical Guidelines No. 03732 ***Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings and Polymer Overlays.***

B. When coating Structural Concrete systems that require extended wet cure, use Five Star Epoxy Novolac Waterborne Primer or allow a 1 – 3 day air drying time after wet cure period before applying coating.

C. All cracks and joints not subject to movement shall be chipped open and prepared as necessary; then filled with a suitable filler material. Leave the surface rough to ensure bond of the coating.

D. All cracks and joints subject to movement shall be treated as directed by the engineer.

3.02 STEEL SURFACES

A. Steel surfaces should be clean, dry and blasted to an SSPC – SP6 finish. Remove all oils, paints, coatings and debris from steel surfaces prior to coating application.

3.03 ENVIRONMENTAL CONDITIONS

A. Condition and maintain all materials to between 65°F and 85°F (18°C and 29°C). Condition all surfaces that contact coatings to between 50°F and 90°F (10°C and 32°C) at time of application. Shade from direct sunlight as necessary.

3.03 EQUIPMENT AND MATERIALS

A. All necessary tools, equipment and materials shall be in good condition and as close as possible to area being coated.

B. Appropriate clothing and safety equipment shall be worn to avoid breathing dust and prevent eye and skin contact with both dry and mixed repair materials.

C. A suitable solvent such as MEK (methyl ethyl ketone) shall be available for clean up of tolls and equipment.

3.04 MIXING

Drill and Paddle Mixer

A. **Five Star Epoxy Novolac Waterborne Primer** (**When Used**): Pour all of Component B (hardener) into pail containing Component A (resin). Mix for approximately 2 -3 minutes with drill and paddle mixer at slow speed. Avoid air entrapment. Do not mix more primer than can be applied in 30 – 40 minutes.

B. Place mixed material by roller or brush to a 5 mil thickness immediately after mixing.

C. **Five Star Epoxy Novolac Coating**: Pre mix both Component A (resin) and Component B (hardener) with slow speed drill and paddle before combining components. Place Components A and B in a suitable size mixing pail / container and mix for 3 minutes. Avoid air entrapment. Do not mix more material than can be placed in 20 minutes.

PART D – APPLICATION - COATINGS

4.01 PLACEMENT PROCEDURES

A. Primer (When Used): Apply Five Star Epoxy Novolac Waterborne Primer at a 3 – 5 mil thickness using roller, squeegee or brush. Do not puddle primer during placement. Apply primer evenly and allow to dry for 1 – 6 hours prior to coating placement. Primer should be hard and dry to touch prior to coating placement. Place coating within 24 hours of primer placement.

B. Coating: For single coat process apply coating with roller, squeegee or brush at 20 mil thickness. Do not puddle coating. Ensure wet edge is maintained during application.

C. For multiple coat process, apply initial base coat at approximately 10 - 15 mil thickness using roller, squeegee or brush. Do not puddle coating. Ensure wet edge is maintained during application. Allow base coat to cure for approximately 3 – 5 hours depending upon temperatures until base coat is tack free, than apply top coat in similar manner. If topcoat cannot be applied within 24 hours of base coat, solvent wipe all existing base coat surfaces thoroughly leaving no puddles of solvent than apply top coat.

PART E – POST PLACEMENT - COATINGS

5.01 CURING

A. Protect coating from temperature extremes, moisture, rain and freezing for 72 hours after placement.

B. In service operation may begin in 72 hours after placement at 70°F. Allow 5 days for maximum cure at 70°F.

PART F – EXTREME WEATHER CONDITIONS - COATINGS

6.01 COLD WEATHER COATING

[Low temperatures delay the set, increase working time, delay the strength development and in – service time of epoxy products. The procedures below may help compensate for these conditions.]

A. Materials shall be conditioned as necessary so that the mixed material is between 65°F and 85°F (16°C and 29°C). Up to 48 hours of pre-conditioning may be necessary depending upon quantity of material. Store coating components in a warm or heated environment.

B. All surfaces in contact with coating must be preconditioned and maintained at a temperature between 40°F and 90°F (4°C and 32°C) for a minimum of 24 hours.

C. Heating shall be accomplished by indirect exposure. Where used, heated enclosures must be windproof and weatherproof. Combustion heaters must be vented and shall not be permitted to heat and dry the substrate or coating locally. *Caution: Exhaust gases may contaminate or cause carbonation within the enclosed environment.*

PART F – EXTREME WEATHER CONDITIONS - COATINGS

6.01 HOT WEATHER COATING

[High temperatures accelerate the set, decrease working time, and accelerate the strength gain of epoxy products. The procedures below may help compensate for these conditions.]

A. Materials shall be pre-conditioned as necessary so that the mixed material is between 60°F and 90°F (16°C and 32°C). Up to 48 hours of pre-conditioning may be required depending upon quantity of material. Store coating components out of direct sunlight in a cool, shaded area.

B. All surfaces in contact with coating must be pre-conditioned and maintained below 90°F (32°C) for a minimum of 24 hours. Apply coating at night or early morning when temperatures are lowest.

D. Wind breaks shall be provided when necessary to prevent rapid drying.