

SECTION 561

SELF-CURING INORGANIC ZINC COATING SYSTEMS

561-1 Description.

Perform the shop, field, and maintenance painting of structural steel surfaces in accordance with this Section, using proprietary inorganic zinc coating materials meeting the requirements of 971-16.

Also, meet the provisions of Section 560 not in conflict with this Section.

561-2 Classification.

The Department classifies self-curing inorganic zinc coating systems into two systems of application and locality of use as follows:

1. Self-Curing Inorganic Zinc Coating System (TWO COATS): For inland non-chemical exposure use.

2. Self-Curing Inorganic Zinc Coating System (THREE COATS): For coastal use, including brackish salt water areas, and other locations where the plans indicate the presence of a corrosive environment.

For the TWO COAT SYSTEM, apply a coat of self-curing inorganic zinc primer and a finish coat. For the THREE COAT SYSTEM, apply a coat of self-curing inorganic zinc primer, an intermediate tie coat, and a finish coat. Use the particular coating system (TWO or THREE COATS), as designated in 1 and 2 above.

Apply the intermediate coat and the finish coat in the "field". Do not apply intermediate coats and finish coats to contact surfaces of members to be joined by high strength bolts.

561-3 Application.

561-3.1 Shop Applied Self-Curing Inorganic Zinc Primer: Clean steel surfaces by either blast cleaning with silica sand or by centrifugal wheel blast cleaning with cast steel shot, cast steel grit, or appropriate mixtures of the shot and grit. Use cast steel abrasives meeting the general requirements of SAE Specification J827. The Engineer will allow the use of steel grit of higher hardness than specified in J827 (Rockwell "C" 40 to 50). Size the cast steel abrasives in accordance with SAE Specification J444.

Clean steel surfaces to a "Near White" condition as defined in SSPC-SP 10. Determine the "Near White" condition according to NACE Visual Standard No. 2, TM-01-70 for sand blast cleaned; or NACE Visual Standard No. 2, TM-01-75 for steel grit cleaning or NACE Visual Standard No. 2, TM-01-75 for steel shot blast cleaning for centrifugal wheel blast cleaned. After blast cleaning, ensure that the anchor pattern is from 1 to 3 mils [25 to 75 μm] deep in a dense and uniform pattern of depressions and ridges. Determine the anchor pattern depth by using a Testex Press-O-Film Tape and micrometer kit or equal approved by the Department.

The Engineer may approve other methods for surface preparation provided the Contractor can demonstrate that satisfactory surface cleaning and anchor patterns can be achieved.

Clean galvanized or electroplated zinc metal parts, used on the structure and required to be painted, with appropriate solvents to remove any oil, grease, or dirt prior to painting.

Mask-off surfaces within 1 inch [25 mm] of welded field connections at the time of shop painting.

For two component products, add the powder component to the liquid component with thorough stirring, and continue stirring until the powder is well dispersed. Strain the mixture through a 30-60 mesh [250 by 600 μm] sieve to remove large particles. Equip pressure pots containing the mixed powder and liquid with a mechanical agitator which will remain in motion throughout the application period. Keep the pressure pots at approximately the same elevation as the spray gun.

Apply the self curing inorganic zinc coating to the "Near White" blast cleaned surfaces as recommended by the manufacturer in a single application using multiple spray "passes" to achieve a dry film thickness of 3.5 to 5.5 mils [90 to 140 μm]. Determine the dry film thickness using an Inspector

Magnetic Dry Film Thickness Gauge or equal approved by the Department. Prior to use, calibrate the Magnetic Dry Film Thickness Gauge according to NIST No. SRM 1362 certified coating thickness calibration standards. Ensure that the applied coating presents a dense and uniform appearance after curing.

The Department considers the applied inorganic zinc primer deficient in thickness for measured dry thickness values less than 3.5 mils [90 µm] dry. Where deficient primer coat thickness measurements are found, apply additional zinc primer to the immediate surface area (1 ft² [0.1 m²] minimum) surrounding the particular measurement in accordance with the recommendations of the coating manufacturer so that the dry film thickness of the repaired area will range between 3.5 and 5.5 mils [90 and 140 µm]. If more than four deficient thickness values (one measurement per 25 ft² [2.25 m²] of surface area) are found in any 200 ft² [20 m²] of continuous metal section, blast clean the entire section to a "Near White" condition. Repaint the section with inorganic zinc primer to achieve a dry film coating thickness of 3.5 to 5.5 [90 to 140 µm].

Repair primed areas having excessive dry film coating thickness, coating "dry spray", visible coating "mudcracking", visible surface hackles, handling abrasions, and missed paint in bolt holes. Repair in accordance with the written recommendations of the paint manufacturer. Obtain the Engineer's approval for all repair recommendations. The repair recommendations should include current product data and application instructions sheets.

Seal all areas inaccessible for blast cleaning 1/2 inch [13 mm] wide or less, such as welded faying surfaces that do not have continuous welds, with a caulking compound approved for use by the Engineer.

After erection, spot repair damaged surfaces in accordance with the written recommendations of the paint manufacturer prior to applying any intermediate coats or finish coats.

Have the Engineer inspect and obtain his approval for each section of steel before painting it. Furnish and erect scaffolding to the satisfaction of the Engineer in order to facilitate a safe inspection of all cleaned areas and for checking paint thickness of individual coats.

The Contractor is responsible for faulty work that may show up or for maintenance work that may be necessary during the life of the Contract.

561-3.2 Field Applied Self-Curing Inorganic Zinc Coatings: Meet the appropriate requirements of 561-3.1, except as specified below.

During all cleaning and painting operations, isolate the work area with appropriate containment devices (canvasses, tarpaulins, screens, etc.) in order to prevent any generated debris from causing violations of current State air and water pollution regulations. Legally dispose of all debris collected by the containment devices. Clean steel surfaces by blast cleaning only. Obtain the Engineer's approval for the use of abrasives other than silica.

561-3.3 Intermediate Coat: Apply the intermediate coat as recommended by the manufacturer in a single application using multiple spray "passes" to achieve a dry film thickness of 1 to 2 mils [25 to 50 µm]. Determine the dry film thickness using a Tooke Gauge or equal approved by the Department. Ensure that the color of the intermediate coat contrasts with both the color of the self-curing inorganic zinc primer and the color of the finish coat.

561-3.4 Finish Coat: The Engineer will select the finish coat color using either the paint manufacturers' color chart or the Federal Standard No. 595B color designations. Apply the finish coat as recommended by the manufacturer in a single application using multiple spray "passes" to achieve a minimum dry film thickness of 3 mils [75 µm]. Determine the dry film thickness using a Tooke Gauge or equal approved by the Department. Apply additional thickness of coating, if required by the Engineer, to ensure that the finish coat is uniform in color and even in appearance. Ensure that the color of the finish coat contrasts with both the color of the self-curing inorganic zinc primer and the color of the intermediate coat.

561-3.5 Painting Conditions: Meet the requirements of 560-7.3.

561-3.6 Additional Requirements for Maintenance Contracts: If any structural steel member is found to be defective and in need of replacement or repairs during the cleaning operation, the Engineer will arrange to have repairs started within 24 hours. Cooperate with personnel making these repairs. After completing repairs, clean and paint the repaired sections at no additional expense to the Department.

Clean electric motors and any other items to which sand blasting and spray painting may be detrimental by wire wheel brushes or any other method satisfactory to the Department, and brush paint them.

Cover all motors, gears and electrical apparatus that may be damaged by sand from the sandblaster. Keep bridges free from sand buildups at all times.

Keep all moving parts of movable spans well greased in accordance with Department lubrication requirements and free of sand at all times.

561-4 Method of Measurement.

The quantities to be paid for will be as specified in 560-15.

561-5 Basis of Payment.

Prices and payments will be as specified in 560-16.

Payment shall be made under:

Item No. 561- 1-	Painting Structural Steel (Inorganic Zinc) - lump sum.
Item No. 2561- 1-	Painting Structural Steel (Inorganic Zinc) - lump sum.
Item No. 561- 2-	Painting Structural Steel - per ton.
Item No. 2561- 2-	Painting Structural Steel - per metric ton.