



THE BEST CORROSION CONTROL PERFORMANCE, GUARANTEED!

## **Painting Specification**

### **TERMARUST® PENETRANT/SEALER SERIES TR2200HS HRCSA (HIGH RATIO CO-POLYMERIZED CALCIUM SULFONATE)**

#### **1. SCOPE**

- 1.1 This specification covers Termarust® TR2200HS HRCSA (High Ratio Co-Polymerized Calcium Sulfonate) Penetrant/Sealer which is a proprietary 100% solids, Zero VOC, HRCSA (High Ratio Co-Polymerized Calcium Sulfonate) based rust penetrating sealer. It inhibits corrosion in areas where traditional coatings are ineffective. This penetrant/sealer contains no lead or chromate pigments. It derives its corrosion resistance from the proprietary HRCSA compound's strong affinity for steel and its ability to neutralize corrosion causing acidity on the metal surface. The Termarust® TR2200HS HRCSA Penetrant/Sealer has excellent wetting properties and is designed to creep into seams, joints and other inaccessible areas.

High Ratio Co-Polymerized Calcium Sulfonate (HRCSA) Contains a minimum of 15% active sulfonate, it must maintain a 9-11 to 1 ± 2% ratio Total Base Number to Active Sulfonate i.e.: Total Base Number of 135 - 165 to 15% Active Sulfonate as determined by Titration Testing.

- 1.2 Termarust® TR2200HS HRCSA Penetrant/Sealer can be used as a stand-alone treatment, or wet on wet with our Termarust® TR2100 HRCSA Primer/Topcoat as a treatment for pack rusted joints. It is suitable for overlapping steel plates, joints, interiors of steel tubing, corrosion frozen bearings, pin connections or bolted areas. It is intended for brush, aerosol, hand pump spray, as well as conventional or airless spray. This coating is to be used on fixed structures as part of a long term maintenance program, and as such should be applied in accordance with SSPC-PA1 "Shop, Field, and Maintenance Painting."

#### **2. DESCRIPTION**

- 2.1 Termarust® TR2200HS HRCSA (High Ratio Co-Polymerized Calcium Sulfonate) Penetrant/Sealer proprietary formulation contains approximately 100% by volume of non-volatile film-forming solids (additives and binder). The theoretical spreading rate on non-porous surfaces for a 1 mil dry film thickness is 1604 square feet/U.S. gallon (149.02 sq. meters at 25.4 microns) 100% transfer efficiency. Actual spreading rates will be lower due to the porous nature of the rusted substrate. The sealer shall be applied liberally, to thoroughly wet the rusted areas inside or around the joint seams.

#### **3. REFERENCE STANDARDS**

- 3.1 The standards referenced in this specification are from the American Society for Testing and Materials (ASTM).
  - 3.1.1 Specification for Ingredients:  
D1296 Odor of Volatile Solvents and Diluents
  - 3.1.2 Test Methods for Properties:  
B117 Salt Spray (Fog) Testing  
D5125 Viscosity of paints, Varnishes and Lacquers by Ford Viscosity Cup  
D1475 Density of Paint, Varnish, Lacquer and Related Products  
D3828 Flash Point of Liquids by Small Scale Closed Cup Tester  
D3960 Volatile Organic Content (VOC) of Paints

### 3.2 Federal Standards:

3.2.1 Standard Specifications for Ingredients:  
TT-T-291F Thinner Paint, Mineral Spirits, Regular and Odorless.

3.2.2 Federal Test Method Standard No. 141:  
Method 4021 Pigment Content (centrifuge)  
Method 4041 Volatile and Non-volatile Content  
Method 4053 Non-volatile Vehicle Content  
Method 4061 Drying Time  
Method 4494 Sag Test 9 (multi-notch blade)

3.3 The latest issue, revision, or amendment of the referenced standards in effect on the date of invitation to bid shall govern unless otherwise specified.

3.4 If there is a conflict between the requirements of the cited reference standards and this specification, the requirements of this specification shall prevail.

3.5 Steel Structures Painting Council Specifications:  
SSPC-PA Guide 3 A Guide to Safety in Paint Application  
SSPC-SP7 Brush Off Blast Cleaning  
SSPC-SP6 Commercial Blasting  
SSPC-SP3 Power Tool Cleaning  
SSPC-SP2 Hand Tool Cleaning  
SSPC-SP1 Solvent Cleaning  
SSPC-SPWJ-1 Waterjet Cleaning of Metals – Clean to Bare Substrate  
SSPC-SPWJ-2 Waterjet Cleaning of Metals – Very Thorough Cleaning  
SSPC-SPWJ-3 Waterjet Cleaning of Metals – Thorough Cleaning  
SSPC-SPWJ-4 Waterjet Cleaning of Metals – Light Cleaning

## 4. **PROPERTIES - Termarust TR2200HS Penetrant/Sealer**

### 4.1 **Mixed Penetrant Sealer:**

% Total Solids, min.	100%
Ford#4 cup/ seconds	30-40 seconds
Weight per Gallon, Pounds,	8.60 lbs. ± .25
Volatile Organic Content, grams per litre.	Zero
Drying Time (Optimum Performance) Hrs.	never dries in the joint
Flash Point, degrees C	140.5°C (284°F)
Salt Fog Performance,	750 hours
(Coating applied at 1-2 mils dry film over SSPC-SP5 cold rolled steel panels). Must pass with no rust or creepage at the scribe.	

4.2 ODOR: Shall be normal for the materials permitted (ASTM D-1296). The HRCSA (High Ratio Co-Polymerized Calcium Sulfonate) complex has little or no odor.

4.3 COLOR: The color shall be that of a tan, milky fluid.

4.4 COMPATIBILITY: This coating has infinite compatibility with mineral spirits, however no solvent reduction of this material is permitted.

4.5 PIGMENT SETTLEMENT: The penetrant shall show perfect suspension after mixing when tested as specified in ASTM D869, when stored for six (6) months.

- 4.6 **WORKING PROPERTIES:** The coating shall be easily spray applied when tested in accordance with Federal Standard No.:141, Method 4331.
- 4.7 **CONDITION IN CONTAINER:** The paint shall show no thickening, curdling, gelling, or hard caking when tested as specified in Federal Standard No. 141, Method 3011 after storage for six (6) months from date of delivery in tightly covered containers at a temperature of 41°F -86°F (5°C - 30°C). The coating shall be filtered before application.

## **5. LABELING**

- 5.1 **MARKING OF CONTAINER:** Each container shall be marked with the following information:
  - Name:
  - Color:
  - Lot Number:
  - Date of Manufacture:
  - Quantity of Paint in Container:
  - Manufacture's Name and Address:

## **6. SURFACE PREPARATION**

- 6.1 **PRE-SURFACE PREPARATION** - Before the actual removal of old paint and/or rust commences, all organic material such as bird nests, bird droppings, insect nests and all other non-metallic obstructions or pollutants attached to the steel structures are to be removed.
- 6.2 **SSPC-SP1 SOLVENT CLEANING** - The entire steel structure to be painted shall be inspected to determine the degree of chemical contamination. All oil and grease shall be manually removed from the steel with proper solvent cleaning as per SSPC-SP1. Areas that appear contaminated with road salts should be cleaned with high pressure water washing before being sandblasted.
- 6.3 **BEFORE APPLICATION** - The loose thick, porous and highly salt contaminated rust scale present must be removed by sandblasting, water jetting to SSPC-SP2 or SP3 standard or by high pressure water cleaning to SSPC-SPWJ1 to SPWJ4. No loose rust scale shall be allowed to remain at the joint surface. The cleaning shall be performed in such a manner as to not contaminate freshly painted sections. Freshly prepared steel shall be treated as quickly as practical. In cases where exposed, freshly prepared steel may be exposed to direct contact with aqueous solutions of highway salts, the steel must be treated immediately after cleaning, and the steel must be protected from highway runoff for at least 24 hours.

## **7. HRCSA PENETRANT/SEALER APPLICATION**

- 7.1 **THINNING:** The coating may NOT be thinned.
- 7.2 **SPRAY EQUIPMENT:** The penetrant sealer may be applied by brush, aerosol, hand pump, airless, air assisted airless, HVLP, LVLP or conventional air atomize spray equipment.
- 7.3 **APPLICATION TEMPERATURE:** The coating should not be applied at temperatures below 2°C or 35.6°F. No Coatings should be applied unless the steel surface temperature is 3°C or 5°F above the dew point.
- 7.4 **APPLICATION INSTRUCTIONS:** Mix the coating thoroughly by hand to insure homogeneity. Screen coating before applying, as solid particulates will inhibit the penetrating effects of the coating. Excess coating and moisture will exit from the lower edge of the treated joints. If the coating runs or sags, smooth out runs with a brush. An excessive surplus of TR2200HS Penetrant/Sealer should be brushed out from adjacent or other surfaces given it would inhibit the dry of the topcoat which would be applied in a following step, when required.

7.5 **FILM THICKNESS:** This low viscosity, penetrating coating is intended for use as a penetrant for jointed or bolted areas, corrosion frozen bearings of steel structures which suffer from pack-out rusting or as an anti-corrosive treatment for steel tubing. Deposit enough coating to thoroughly wet the joint seams and the interior of the tubing. Coat the upper edge of all seams first, working down the sides of the joint from top to bottom thoroughly wetting the seam with coating in a manner as to propel the material into the joint. Moisture will be displaced from the joint and should be allowed to exit freely from the bottom of the jointed area. (Note: Joint geometries vary widely. It is not the intent of this specification to address application to each joint type. The applicator must evaluate individual joint geometries to determine the application method which will result in optimal joint penetration coverage). Because of the porous nature of the rust layer and the inaccessibility of the area inside the joint, wet film thickness measurements will not be taken.

7.6 **RECOAT TIME:** When used alone optimum penetration takes 24 hours.

If top coated, the Termarust<sup>®</sup> TR2200HS HRCSA Penetrant/Sealer may be recoated wet on wet with Termarust TR2100 HRCSA Primer/Topcoat. In a first step, apply a caulk coat of 15 to 18 wet mils (375 to 450 microns) of Termarust<sup>®</sup> TR2100 HRCSA Primer/Topcoat to the joint areas treated with the Termarust<sup>®</sup> TR2200HS HRCSA Penetrant/Sealer. The wet penetrant will thin the topcoat and thus help to draw it into the connection. The Termarust<sup>®</sup> TR2200HS HRCSA Penetrant/Sealer stays wet under the topcoat and keeps working its way into the joints or connections as the structure expands, contracts and flexes. Apply enough Termarust<sup>®</sup> TR2100 HRCSA Primer/Topcoat to the joints to insure a paint tight seal. See the Painting Specifications for the Termarust<sup>®</sup> TR2100 HRCSA Primer/Topcoat for more details)

7.7 **INSPECTION** - The inspector should insure that all joints are treated and any excess coating has been brushed out.

**Reviewed September 15, 2014**



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