

MATERIALS SPECIFICATION

ITEM 708.9584--25 HIGH GLOSS ALIPHATIC POLYURETHANE PERFORMANCE CRITERIA

1. SCOPE:

- 1.1 Performance criteria for the lead and chromate free urethane topcoat of the protective coating system for steel.

2. PERFORMANCE:

- 2.1 The coating system prepared for these tests shall consist of steel panels prepared and coated as follows:

Twelve (12) test panels of steel ASTM A-36 having dimensions of 3" x 6" x 1/4" thick shall be abrasive blast cleaned in accordance with the Steel Structures Painting Council Surface Preparation Specification No. 10, Near-White Blast Cleaning (SSPC-SP10). Blast cleaning media shall be sized and graded to derive a blast profile that is in the range of 1.0 - 1.5 mils and that is clean, sharp and free of embedded friable material.

2.2 TESTS:

Test #1: Apply 5 to 7 mils of epoxy mastic to 3 panels and allow the panels to cure at 75°F for a period of 24 hours. Apply 2 to 4 mils of high solids, high gloss, Aliphatic Polyurethane to the epoxy mastic primer and allow to cure at 75°F for a period of 30 days.

Adhesion - Elcometer Adhesion Tester (0-1,000 psi). ASTM D4541.

Epoxy Mastic Primer - Minimum 800 psi with break at the primer/substrate interface.

Total 2 Coat System - System must maintain cohesion with adhesive break within the primer or at the primer/substrate interface.

Test #2: Apply 5 to 7 mils of epoxy mastic to 3 panels and allow the panels to cure at a temperature of 75°F for 5 days. Expose panels to fluorescent ultraviolet (UV) and moisture as per ASTM G53-91 (Operating Light - and Water Exposure Apparatus for Exposure of Nonmetallic Materials) for a period of 672 hours. Steam clean coating surface and allow to dry for 2 hours at 75°F or until the surface is dry. Apply 2 to 4 mils of high solids, high gloss, Aliphatic Polyurethane to the epoxy mastic primer and allow to cure for 30 days.

Adhesion - Elcometer Adhesion Tester (0-1,000 psi). ASTM D4541.

Epoxy Mastic Primer - Minimum 800 psi with clean break at the substrate.

Total 2 Coat System - System must maintain cohesion with adhesive break within the primer or at the primer/substrate interface.

Test #3: Apply 2 to 4 mils of Aliphatic polyurethane to 3 panels and allow the panels to cure at a temperature 75°F for a period of 30 days.

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2. PERFORMANCE: (cont'd)

2.2 **TESTS:** (cont'd)

Test #3: (cont'd)

Salt Fog Resistance - ASTM B117. Total 1 Coat (Topcoat System) for 500 hours.

The coating shall exhibit no delamination, softening, blistering in accordance with ASTM D714. Rust creepage at the scribe shall be no more than 1/16" and no more than 2% rusting at the scribe edges.

Relative Humidity - ASTM D2247. Total 1 Coat (Topcoat System).

Requirements - No blistering, cracking, softening, or delamination of film. No more than 1/32" rust creepage at scribe and no more than 2% rusting at edges after 500 hours exposure.

Abrasion Resistance - ASTM D968, Total 1 Coat (Topcoat System) to be tested.

No less than 50 liters per mil Dry Film Thickness.

Test #4: Apply 2 to 4 mils of Aliphatic polyurethane to 3 panels and allow the panels to cure at a temperature of 75°F for a period of 30 days.

Accelerated Weathering - ASTM G53. Total 1 Coat (Topcoat System) to be tested.

Requirements - Exposed for 1,000 hours - retained 90% of original gloss.

3. STIPULATED ACCEPTANCE LIST:

The following coatings meeting this specification have been thoroughly investigated and/or tested by the Authority:

Sherwin Williams Hi Solids Polyurethane