

1.0 Scope

This specification shall apply to hot dip metallic coated sheet steel prefinished with colours of proven durability and suitable for exterior exposure as delivered from the coil coater. Polyurethane paint systems have been designed for sidewall (vertical) applications and roofing (non-vertical) applications in the construction market that are the most demanding for both aesthetic and corrosion performance. The paint system chemistry consists of a polyurethane primer and topcoat that in combination provides a tough and highly flexible coating system. High grade pigments have also been selected to provide a pallet of colours including metallic and bright systems that can be chosen to suit your application requirements. Applications are not recommended for severe aggressive exposures where corrosion protection is the primary concern.

2.0 Base Metal

The base metal furnished before painting shall conform to one of the following specifications:

- (a) Zinc coated (galvanized) sheet steel conforming to the requirements of ASTM A653 or A653M as applicable.
- (b) 55% Aluminum-zinc (Galvalume™) alloy coated steel sheet conforming to the requirements of ASTM A792 or A792M as applicable.

3.0 Paint Qualification Tests

3.1 Film Thickness

The exposed surface shall have a nominal topcoat dry film thickness of 0.8 mils (20 µm) and 0.3 mils (7 µm) primer. These thicknesses are for conventional

applications specifying a smooth topcoat finish. Textured topcoats and a thick film primer can also be specified for target applications, depending on the end-use requirements and thicknesses will vary accordingly.

The unexposed or reverse side shall have a dry film thickness that will vary in accordance with the customer's requirements.

Test Method: ASTM D1005.

3.2 Film Cure

The baked film shall withstand one hundred (100) double MEK rubs in accordance with ASTM D5402.

3.3 Film Hardness

The hardness of the paint film may be measured by means of Eagle/Berol turquoise T-2375 or equivalent pencils using a flat round head applied at a 45° angle to the paint film. A minimum hardness of HB shall be obtained. Pencil Hardness is specified as the first pencil number that will not rupture the paint film when tested as described above.

Test Method: ASTM D3363.

3.4 Formability/Adhesion Test

When using a representative sample at 25°C +/- 2° and using #610 Scotch cellophane tape, the paint system will show no loss of adhesion when subjected to a 3T 180° bend test. This requirement does not apply to material that is ordered as ASTM A653 or A792 Grade 80, and ASTM A653M or A792M Grade 550.

Test Method: ASTM D4145.

3.5 Gloss

The specular gloss shall be +/- 5 gloss units of the agreed upon specified target when measured with a Gardner 60° Gloss meter.

Test Method: ASTM D523.

4.0 Accelerated Corrosion

4.0.1 Humidity Resistance

After exposure to condensing humidity at a temperature of 38°C (100°F) for 1,500 hours, the surface will not show any evidence of blisters.

Test Method: ASTM D2247.

4.0.2 Accelerated Atmospheric Corrosion

After exposure to cyclic salt spray testing for 800 hours the surface shall not show any evidence of blisters and average drip edge corrosion of 5 mm.

Test Method: ASTM G85 Method A5.

4.1 Accelerated Weathering

4.1.1 QUV-A

After 2,500 hours of exposure to cyclic condensation (4 hrs) and UV-A (8 hrs) irradiation, there shall be only slight colour change and greater than 50% gloss retention.

Test Method: ASTM D4587.

5.0 Exterior Exposure (Weathering)

Each proven colour of Polyurethane prepaint will meet the following weathering standards (in the absence of aggressive fumes and/or other chemicals not normally encountered in the atmosphere) for applications located in Canada and the continental United States.

5.1 Film Integrity

During the first thirty (30) years of exterior exposure, the paint film shall have no evidence of cracking, flaking, or checking to an extent that is apparent on ordinary outdoor visual observations.

5.2 Chalking

Within the first twenty-five (25) years after application the degree of chalking will not exceed rating #8 for vertical (walls) and #6 for non-vertical (roofs) applications when measured per ASTM D4214.

5.3 Colour Change

Within the first twenty-five (25) years after application the change in colour will not be greater than five (5) ΔE colour units for vertical (walls) and eight (8) ΔE colour units for non-vertical (roofs) applications. Colour measurements are to be made per ASTM D2244 and only on clean surfaces after removing surface deposits and chalk per ASTM D3964.

Product Attributes and Applications

Prepainted Polyurethane is available as smooth, textured or metallic appearance finishes. The topcoat can be textured to provide both flexibility and durability (toughness) properties. The textured surface and tough structured resin gives the coating ideal properties for roofing applications that require damage resistance.

The combined use of high grade pigments for maximum colour retention and an optional primer thicknesses for added corrosion protection, gives the polyurethane system the optimum balance in properties for long-term weathering and corrosion performance. They also offer improved gloss retention properties compared to silicon polyester and plastisol paint systems.

The paint system is available in a wide range of colours that represent the most common colours used in the building industry. It is also available in metallic appearances and a limited number of bright vivid colours.

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