



# CSSBI S8-2001:

## Quality and Performance Specification for Prefinished Sheet Steel Used for Building Products

### 1. Scope

1.1 The following specifications shall apply to hot dipped metallic coated sheet steel prefinished with colours of proven durability and suitable for exterior exposure as delivered from the coil coater. Proven paint systems for building products have been designed for vertical applications whose surfaces are no more than 30° to the vertical and non-vertical applications whose surfaces ranging from 5° up to 60° to the horizontal. It is not recommended for aggressive atmospheric exposure.

1.2 The prefinish system shall consist of a primer and topcoat continuously applied and cured within the paint manufacturer's specifications on cleaned, pretreated, metallic coated substrate. The pretreatment specified shall be micro-crystalline zinc phosphate for galvanized steel and metal oxide pretreatment for aluminum-zinc alloy coated steel, applied in accordance with the pretreatment manufacturer's specifications.

### 2. Base Steel

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

- (a) Zinc coated (galvanized) sheet steel to the requirements of ASTM A653/A653M *Standard Specification for Steel Sheet Zinc-Coated (galvanized) by the Hot-Dip Process*, with metallic coating designation Z275 (G90).
- (b) Aluminum-zinc alloy coated sheet steel conforming to the requirements of ASTM A792/A792M *Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process*, with a metallic coating designation AZM150 (AZ50).

### 3. Paint Qualification Tests

#### 3.1 Film Thickness

- a) The exposed surface shall have a dry film thickness of  $25 \pm 5 \mu\text{m}$  ( $1.0 \pm 0.2$  mils).

- b) The unexposed or reverse side shall have a dry film thickness that can be customized to meet customer requirements (i.e. wash coat only, primer + wash coat, or full coat).
- c) Test Method: ASTM D1005

#### 3.2 Film Cure

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

#### 3.3 Film Hardness (Pencil Method)

- a) The hardness of the paint film may be measured by means of Eagle Berol 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.
- b) Test Method: ASTM D3363.

#### 3.4 Formability/Adhesion Test

- a) When using a representative sample at  $20 \pm 1.5^\circ\text{C}$  ( $70 \pm 5^\circ\text{F}$ ) using #610 Scotch brand cellophane tape, the paint system will show no loss of adhesion when subjected to a 3T 180° bend and tape pull test.
- b) This requirement does not apply to Grade 550 (Grade 80) material that is ordered as ASTM A653/A653M or ASTM A792/A792M.
- c) Test Method: ASTM D4145.

#### 3.5 Gloss

- a) The specular gloss shall be within 5 units of the agreed upon specified target when measured with a Gardner 60° Glossmeter. When other than the standard film build is ordered, the gloss range shall be mutually agreed upon prior to purchase.
- b) Test Method: ASTM D523.

## 4. Exterior Exposure (Weathering)

Each proven colour of proven durability shall successfully meet the following weathering standards in Canada (in the absence of aggressive fumes and/or other chemicals not normally encountered in the atmosphere) and shall be tested in North America.

### 4.1 Film Integrity

During the first 25 years of exterior exposure, the paint film shall have no evidence of cracking, chipping, peeling, crazing, spotting or loss of adhesion.

### 4.2 Chalking

As a minimum, during the first 20 years of exterior exposure, the chalk rating in vertical applications shall not be worse than #8 (ASTM D659) and in non-vertical applications shall not be worse than #6 (ASTM D659).

### 4.3 Colour Change

As a minimum, during the first 20 years of exterior exposure, the colour change in vertical applications shall not exceed 5 colour units and in non-vertical applications the colour change shall not exceed 8 colour units. Colour change is measured on any accepted colourimeter designed to produce reflectance readings in the Tristimulus Filter System of X, Y and Z based on the CIE values of illuminant C. (ASTM 2244, Hunter L, a&b Units).

## 5. Accelerated Corrosion Tests

### 5.1 Prohesion (Modified Cyclic Salt Spray)

- a) After 500 hours, typical average cut-edge corrosion of production samples shall not exceed 3 mm (1/8").
- b) Test Method: ASTM G85, Method A5.  
The Prohesion test is a cyclic test incorporating corrosive sulphates, which has been demonstrated to correlate well with natural exposure testing.

### 5.2 Salt Spray Resistance

- a) After 1000 hours the surface shall show only a few #8 blisters, and less than 3 mm (1/8") creep from the scribe line.
- b) Test Method: ASTM B117.

### 5.3 Humidity Resistance

- a) The humidity resistance test shall be conducted at 100% relative humidity at a temperature of 38°C (100°F).
- b) After 1000 hours of exposure, the surface should not exceed only a few scattered blisters no larger than No. 8 (per ASTM D714).
- c) Test Method: ASTM D2247.

## 6. Colour Match

Colour match problems can be minimized if the following procedures are followed:

- a) Orders for larger projects that could involve more than one production order should be discussed with the supplier on the basis of one lot.
- b) Attempt to ensure that each building is clad with material from the same production lot.
- c) When a different production lot must be used for one elevation, such as could happen with an addition to an existing building, attempt to minimize colour variation by inserting at an elevation change or break in the building structure.

## 7. Shipping and Storage

It is important to keep prefinished steel dry in transit, storage and on site. The material is subject to wet storage stain and/or paint deterioration if moisture is allowed to remain between the laps or sheets. Prefinished steel must not be stored outside. Ideal storage consists of a clean dry warehouse where the steel can be used on a first in, first out basis. Plastic wrapping should not be used. Material that becomes wet should be used immediately and dried off in the process.

## 8. Other Prefinished Systems

There are other paint systems available for prefinished sheet steel building products to be used in applications where additional corrosion protection or weathering resistance is required. Consult a CSSBI sheet steel building products fabricator for more information.

