

CANADIAN SHEET STEEL BUILDING INSTITUTE
INSTITUT CANADIEN DE LA TOLE D'ACIER POUR LE BATIMENT

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**CSSBI S8-92: Quality and Performance Specifications for Prefinished Steel
Used for Lightweight Steel Cladding**

1. Scope

1.1 The following specifications shall apply to hot dipped metallic coated sheet steel, maximum 0.019 inches nominal coated thickness, prefinished with colours of proven durability and suitable for exterior exposure as delivered from the coil coater. 5000 Series paint systems have been designed for vertical applications whose surfaces are no more than 30° to the vertical and non-vertical applications whose surfaces range from 16° up to 60° to the horizontal. Applications are limited to moderate exposure. It is not recommended for aggressive exposure.

1.2 The following is a list of "Standard Colours" which meet the requirements for film integrity (see section 4.1).

QC 229 Dark Brown
QC 259 Tile Red
QC 260 Slate Blue
QC 262 Black
QC 273 Bone White
QC 305 Stone Grey
QC 306 Charcoal
QC 315 Tan
QC 317 White White
QC 326 Black Coffee
QC 329 Medium Green
QC 1730 Regent Grey

2. 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 A525 (coating designation G90) or ASTM A525M (coating designation Z275), as applicable.
- (b) Aluminum-zinc alloy coated steel sheet conforming to the requirements of ASTM A792 or A792M as applicable. The coating designation shall be AZ150 or AZ180, as specified; these are metric designations from the coating masses currently produced in Canada (coating mass designations listed in ASTM A792 are not applicable.)

3. Paint Qualification Tests

3.1 Film Thickness

- (a) The exposed surface shall have a dry film thickness of $25 \mu\text{m} \pm 5 \mu\text{m}$ (1.0 ± 0.2 mils).
- (b) The unexposed or reverse side shall have a dry film thickness which will vary in accordance with the customer's requirements.
- (c) Test Method: ASTM D1005 or CGSB 1-GP-71.

3.2 Film Cure

- (a) The baked film shall withstand thirty (30) double MEK rubs in accordance with NCCA II-18.

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 or NCCA II-12.

3.5 Humidity Resistance

- (a) The humidity resistance test shall be conducted at 100 percent relative humidity at a temperature of 38°C (100°F).
- (b) After 1000 hours of exposure, the surface may show only a few scattered blisters no larger than No. 8 (per ASTM D714).
- (c) Test Method: ASTM D2247.

3.6 Formability/Adhesion Test

- (a) When using a representative sample at 20°C $\pm 1.5^\circ\text{C}$ (70°F $\pm 5^\circ\text{F}$) using #600 Scotch cellophane tape, the paint system will show no loss of adhesion when bent 180° around a 3 mm (1/8 inch) diameter mandrel.
- (b) This requirement does not apply to material which is ordered as ASTM A446/A446M Grade E or ASTM A792 Grade 80/ASTM A792M Grade 550.
- (c) Test Method: ASTM D3281.

3.7 Gloss

- (a) The specular gloss shall be 30 ± 5 degrees 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)

For each proven colour of proven durability in the 5000 Series, a production sample complying with the foregoing specifications has been given exposure in Hamilton, Ontario, at 45° to the horizontal facing south and has either successfully met or will successfully meet the following weathering standards:

4.1 Film Integrity

During the first 10 years (20 years for those Standard Colours listed in 1.2) of exterior exposure (and in the absence of aggressive fumes and/or other chemicals not normally encountered in the atmosphere), the paint film shall have no evidence of cracking, chipping, peeling, crazing, spotting or loss of adhesion.

4.2 Chalking

During the first 10 years of exterior exposure the chalking in vertical applications shall not exceed #8 (ASTM D659) and in non-vertical applications shall not exceed #6 (ASTM D659).

4.3 Colour Change

During the first 10 years of exterior exposure the colour change in vertical applications shall not exceed 7 colour units, and in non-vertical applications the colour change shall not exceed 10 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 2244-89; Hunter Lab Units).

5. Colour Match

It is commercially impossible for each lot of prefinished steel to be of an identical match. Colour match problems can be minimized if the following procedures are followed:

- (a) Orders for large projects which 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 be involved in an addition, attempt to minimize colour variation by inserting an elevation change or break in the building structure.

6. 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 stored so it can be used on a first in, first out basis. Plastic wrapping should not be used. Material which becomes wet should be used immediately and dried off in the process.