

Coated Galvanized Sheet Steel for Exterior Building Products

Technical Bulletin No. 5



CANADIAN

Sheet Steel Building

INSTITUTE

305—201 Consumers Road, Willowdale, Ontario, M2J 4G8

October, 1974

The purpose of this Bulletin is to:

- 1. Update coating requirements.*
- 2. Set minimum quality and performance standards.*
- 3. Assist in specifying coated galvanized sheet steel for exterior building products.*

Preface

One of the precepts of the Members of the Canadian Sheet Steel Building Institute is the development of, and adherence to, product standards to promote safety and good practices.

This Bulletin is intended to assist in the specifying of coated galvanized sheet steel for exterior building products by defining the minimum quality and performance standards considered appropriate for exterior exposure for usual commercial, industrial and institutional applications.

Reference is made to eight currently available paint systems for which favourable experience has been gained to date. Although each listed paint system is capable of meeting the standards set forth in this Bulletin, the paint systems are not necessarily equivalent in all other respects. For any special requirements beyond the scope of this Bulletin consult CSSBI or a CSSBI Member Company or refer to the specifications of the individual paint systems.

Reference Publications

This Bulletin makes reference to the following:

American Society for Testing and Materials (ASTM)

- D523 — Standard Method of Test for Specular Gloss
- D659 — Standard Method of Evaluating Degree of Resistance to Chalking of Exterior Paints
- D1729 — Standard Method for Visual Evaluation of Color Differences of Opaque Materials
- D2244 — Standard Method for Instrumental Evaluation of Color Differences of Opaque Materials

Canadian Government Specifications Board (CGSB)

- 1-GP-71 — Methods of Testing Paints and Pigments
- 93-GP-3 — Steel Sheet, Zinc Coated (Galvanized), Prefinished, Standard Duty, for Exterior Use.

Canadian Sheet Steel Building Institute (CSSBI)

- 40.3 — Zinc Coated (Galvanized) Sheet Steel for Structural Building Products.

TECHNICAL BULLETIN No. 5

COATED GALVANIZED SHEET STEEL FOR EXTERIOR BUILDING PRODUCTS

1. SCOPE

1.1 The following standards apply to hot dipped galvanized sheet steel used for exterior building products and coated with one of the following paint systems as delivered from the fabricator.

- (a) 5000 Series
- (b) 60 Series
- (c) 10000 Series
- (d) 240 Series
- (e) 1500 Series
- (f) 10-136 Series
- (g) 630 Series
- (h) Super 800 Series

Paint systems (a) through (d) are covered by specifications of steel producers or coil coaters. Paint systems (e) through (h) are covered by specifications of individual fabricators.

1.2 These standards are intended as quality and performance standards between a user (e.g. owner, architect, contractor) and a fabricator.

1.3 Where reference is made to another publication, the reference shall be considered to refer to the latest edition or revision approved by the organization issuing such publication.

2. BASE METAL

The base metal shall be a hot dipped galvanized steel with minimum zinc coating designation G90, as required for exterior exposure in accordance with CSSBI Technical Bulletin No. 3 "Zinc-Coated (Galvanized) Sheet Steel for Structural Building Products".

3. COLOUR DEFINITIONS

3.1 Proven Colour

A proven colour is one which is manufactured from pigments, the stability of which have been established as being durable under exterior exposure conditions.

3.2 Other Colours

Colours other than proven colours are those which are produced from pigments, the stability of which have not been established by exterior exposure and therefore are not covered by the exterior durability requirements (Clause 6) of these standards.

4. GENERAL REQUIREMENTS

4.1 Finish Coat

The finish coat shall be:

- (a) Cured by baking
- (b) Uniform in appearance
- (c) Free of any visible imperfections when examined without magnification in diffused daylight-type lighting at a distance of 30 inches (76 cm).

4.2 Colour of Finish Coat

Colour of the finish coat shall be uniform and match the colour standard when compared visually by an experienced person under daylight and horizon type light source in accordance with ASTM D 1729 or CGSB 1-GP-71, Method 12.9. Instrumental colour evaluation in accordance with ASTM D 2244 shall be used if contradictory findings come from visual comparison.

5. FINISH COAT QUALIFICATION TESTS

5.1 Thickness

Except as noted, the exposed surface shall have a nominal dry film thickness of 1 mil (25 μm) with a minus tolerance of 0.2 mil (5 μm). For 10000 Series and 240 Series the exposed surface shall have a nominal dry film thickness of 0.9 mil (23 μm) with a minus tolerance of 0.2 mil (5 μm).

5.2 Hardness

The pencil hardness of the finish coat shall be HB minimum. Hardness is specified as the hardest pencil which fails to penetrate the surface. Tests shall be conducted in accordance with CGSB 93-GP-3 using an "Eagle Turquoise" pencil.

5.3 Gloss

The specular gloss, when measured on a flat, unformed surface with a Gardner 60 Glossmeter (ASTM D 523), shall be 30 ± 5 units (Super 800 Series, 50 ± 5 units) unless another gloss range is agreed upon mutually.

5.4 Film Adhesion

- 5.4.1 On a flat, unformed surface, using a sharp knife or similar instrument, make 11 parallel cuts through the film at approximately $\frac{1}{16}$ inch (2 mm) spacing. Make 11 similar cuts at 90 degrees to and crossing the first set. Across the scored area apply a strip of fresh 1 inch (25 mm) wide pressure-sensitive No. 600 Scotch cellophane tape that has been stored in an air-tight container. Press the tape firmly to assure close contact over the entire scored area.

- 5.4.2 Remove the tape immediately by pulling it back upon itself at 180 degrees in one rapid motion.

- 5.4.3 There shall be no removal of the film beyond the width of the scored lines when tested in accordance with the foregoing. A visual examination will allow a reasonably accurate estimation of the percentage of finish remaining on the substrate in the test area.

5.5 Film Fracture

After fabrication, no unsightly paint film fracture shall be permitted. Unsightly fracture is considered to be any crack large enough to be seen at a distance of 30 inches (76cm) in a MacBeth Daylight Booth by an observer with 20/20 vision.

6. EXTERIOR DURABILITY

Exterior durability is evaluated from exterior exposure of flat, unformed test panels. The paint film shall show no checking or loss of adhesion and exhibit only slight chalking (No. 6, ASTM D 659) and slight colour change after one year of exterior exposure in Southern Florida and also in Southern Ontario, at 45 degrees to the horizontal facing south; and shall not exhibit a colour change of more than 7 fade units when measured by any accepted colourimeter designed to produce reflecting readings in the Tristimulus Filter System of X-, Y-, and Z- based on the CIE values of illuminant C.