

CANADIAN SHEET STEEL BUILDING INSTITUTE

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ALUMINUM-ZINC ALLOY (AZ) COATED STRUCTURAL QUALITY STEEL SHEET FOR STEEL DECK CSSBI SPECIFICATION 201-84 (Imperial Units)

1.0 SCOPE

- 1.1 This specification covers continuously hot-dipped aluminum-zinc alloy (AZ) coated structural quality steel sheet in coils and cut lengths, intended for the manufacture of steel deck. AZ coated steel sheet is not currently recommended for steel deck on which fresh concrete will be placed.

NOTE: In Canada, the product is currently marketed under the tradename Galvalume Steel.

- 1.2 Unless otherwise specified herein, steel sheet supplied to this specification shall meet all applicable requirements of the latest issue of ASTM Standard A792, *General Requirements for Sheet Steel, Aluminum-Zinc Alloy Coated by the Hot-Dip Process.*

NOTE: For zinc coated (galvanized) structural quality steel sheet, refer to CSSBI Specification 101-84.

2.0 LIMITATIONS

- 2.1 Steel sheet supplied to this specification shall be limited to the following base steel nominal thicknesses: 0.030, 0.036, 0.048 and 0.060 inch. The maximum available width is 48 inches.
- 2.2 The aluminum-zinc alloy coating on steel sheet supplied to this specification shall be limited to one of the following coating designations: AZ150 or AZ180.

NOTE: AZ150 and AZ180 are metric designations for the aluminum-zinc alloy coating masses currently produced in Canada, expressed in g/m², total both sides of sheet by triple spot test. Coating weight designations listed in ASTM Standard A792 are not applicable.

3.0 BASIS OF PURCHASE

- 3.1 AZ coated steel sheet in coils and cut lengths is produced to decimal thickness and thickness tolerances apply to the base steel nominal thickness, as given in Table 5. Order thickness, given in Table 6, is overall sheet thickness consisting of the base steel nominal thickness and an allowance for the thickness of the coating.
- 3.2 Orders for material to this specification shall include the following information, as necessary, to adequately describe the desired product.
- 3.2.1 State specification designation (CSSBI 201-84) and grade of material (33 or 37).
- 3.2.2 Specify aluminum-zinc alloy (AZ) coating designation (AZ150 or AZ180).
- 3.2.3 Specify whether chemically treated (passivated) or not chemically treated.
- 3.2.4 Specify whether oiled or not oiled.
- 3.2.5 Specify dimensions; thickness, width and length, if cut lengths.
- 3.2.6 Specify coil-size requirements; maximum weight, acceptable inside diameter (ID), maximum outside diameter (OD).

3.2.7 State intended end application.

3.2.8 State any special requirements.

NOTE: A typical ordering description is as follows:

"Aluminum-Zinc Alloy (AZ) Coated Structural Quality Steel Sheet, CSSBI 201-84, Grade 33, Coating Designation AZ150, Chemically Treated, Oiled, 0.032 x 39.4 in. by Coil, 20,000 lb. maximum, 24 in. ID, for Exposed Roof Deck."

4.0 CHEMICAL REQUIREMENTS

- 4.1 The base steel shall conform to the requirements of chemical composition by cast or heat analysis, as prescribed in Table 1.

TABLE 1 — CHEMICAL REQUIREMENTS, BASE STEEL

	Composition %	
	Grade 33	Grade 37
Carbon, max.	0.20	0.20
Phosphorus, max.	0.04	0.10
Sulphur, max.	0.04	0.04

5.0 MECHANICAL REQUIREMENTS

- 5.1 The base steel shall conform to the mechanical properties prescribed in Table 2 and in 5.2.

TABLE 2 — MECHANICAL REQUIREMENTS, BASE STEEL

	Grade 33	Grade 37
Yield Strength, min.	33 ksi	37 ksi
Tensile Strength, min.	45 ksi	52 ksi
Elongation in 2 in. min.	20%	18%

- 5.2 The base steel bend test shall be made on coated material. The specimen shall be capable of being bent at room temperature through 180 degrees, longitudinal or transverse, without major cracking of the base steel on the outside of the bent portion (as observed following removal of the coating). The inside diameter of the bend shall be 1.5 times the thickness of the specimen for Grade 33 material and 2.0 times for Grade 37 material.
- 5.3 Two tension tests and two bend tests for base steel shall be made on random samples of finished material from each cast or heat, except that one tension test and one bend test will be sufficient when the finished material from a cast or heat is less than 50 tons. When material rolled from one cast or heat differs 0.050 inch or more in thickness, one tension test and one bend test shall be made from both the thickest and thinnest material rolled, regardless of the weight represented. Samples shall be prepared and tested in accordance with the methods specified in ASTM Standard A792, latest issue.

6.0 COATING BEND TEST

- 6.1 Material shall be capable of being bent through 180 degrees in any direction without flaking of the coating on the outside of the bend. Flaking of coating within 1/4 inch of the edge of the bend specimen shall not be cause for rejection. The radius of the bend shall be as prescribed in Table 3.
- 6.2 Coating bend test specimens shall be 2 to 4 inches wide. The specimen shall be cut not less than 2 inches from the edges of the test sheet.

TABLE 3 — COATING BEND TEST

Coating Designation	Ratio of Bend Diameter to Thickness of Specimen	
	Grade 33	Grade 37
AZ180	1.5	2.0
AZ150	1.5	2.0

7.0 DIMENSIONS AND TOLERANCES

- 7.1 Except for flatness tolerances of cut lengths, and thickness tolerances of base steel, all dimensions and tolerances shall be subject to the requirements of ASTM Standard A792, latest issue.
- 7.2 Flatness tolerances of cut lengths shall not exceed those given in Table 4.

TABLE 4 — FLATNESS TOLERANCES OF CUT LENGTHS

Ordered Thickness, inches	Ordered Width, inches		Flatness Tolerance, inches
	To 36 incl.	Over 36 to 48 incl.	
To 0.060 incl.			1/2 3/4

NOTE: Flatness tolerance is defined as the maximum deviation from a horizontal flat surface.

- 7.3 Thickness tolerances of base steel shall not exceed those given in Table 5.

TABLE 5 — THICKNESS TOLERANCES, BASE STEEL

Base Steel Nominal Thickness, inches	Tolerance on Base Steel Nominal Thickness, Over (+) and Under (-), inches	
	0.060	+.006
0.048	+.005	-.003
0.036	+.004	-.002
0.030	+.004	-.002

NOTE: Thickness is measured on uncoated base steel at any point across the width not less than 3/8 inch from an edge.

8.0 ORDER THICKNESS

- 8.1 Order thickness, selected from Table 6, shall be shown on the purchase order.

TABLE 6 — ORDER THICKNESS

Base Steel Nominal Thickness, inches	Order Thickness, inches	
	Aluminum-Zinc Alloy Coating Designation AZ150	AZ180
0.060	0.062	0.062
0.048	0.050	0.050
0.036	0.038	0.038
0.030	0.032	0.032

NOTE: The difference in the thickness allowance for AZ150 and AZ180, as calculated from minimum mass by triple spot test, is not significant when thickness is given in inches to 3 decimal places.