



► Report on:

Member Selection and
Structural Design

Volume 7, Number 2

Standard Thicknesses for Canadian Lightweight Steel Framing Applications

The Canadian manufacturers have adopted a common set of standard base steel thicknesses for lightweight steel framing components (e.g. studs and joists). The North American cold formed steel industry has been pursuing the benefits of standardization by harmonizing both framing products as well as engineering design practices. The *North American Specification for the Design of Cold-Formed Steel Structural members* (the CSA-S136-07 standard in Canada) is the current design document for cold formed steel structural members, and is the first North American structural design standard. This one document applies in Canada, United States and Mexico. With the further adoption of common thicknesses, the manufacturers of lightweight steel framing products in North America can work towards standardizing product geometries that will also benefit the construction industry. The current standard thicknesses are provided in Table 1 shown below.

Designation Thickness	Minimum Base Steel Thickness ⁽¹⁾		Design Thickness		Colour	Steel Framing Gauge No. (for reference only)
	(mils) ⁽²⁾	(in.)	(mm)	(in.)		
18	0.0179	0.455	0.0188	0.478		25
33	0.0329	0.836	0.0346	0.879	White	20
43	0.0428	1.087	0.0451	1.146	Yellow	18
54	0.0538	1.367	0.0566	1.438	Green	16
68	0.0677	1.720	0.0713	1.811	Orange	14
97	0.0966	2.454	0.1017	2.583	Red	12

Table 1 - Canadian Lightweight Steel Framing Standard Thicknesses

(1) Minimum thickness represents 95% of the design thickness, and is the minimum acceptable thickness of the base steel delivered to the jobsite.

(2) A "mil" is 1/1000 of an inch (e.g. 30 mils is 0.030 inches).

The gauge numbers listed in Table 1 are only provided as a convenience and are not to be used when ordering or specifying steel. They are shown for reference purposes only. It is also important to note that these thickness gauge equivalents are different than the more commonly used Manufacturers Standard Gauge (MSG) system used for other structural sheet steel products (e.g. cladding and deck). With these unique LSF thicknesses it is even more important than before not to use gauge numbers: doing so will cause mistakes. Using the decimal thickness is the only way of ensuring that the product specified is the product delivered to the site.

The colours listed in Table 1 are used by the manufacturer to identify the product thicknesses. Typically this colour is spray-painted on the end of a bundle of members (e.g. stud, joist or track) for easy identification. These colour-thickness combinations are consistent with the requirements in the ASTM C955 *Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Track), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases* and the AISI S201 *North American Standard for Cold-Formed Steel Framing - Product Data*.

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Sheet steel products for LSF members must be coated with a metallic coating of either zinc or 55% aluminum-zinc alloy. Zinc coated sheet steel shall conform to ASTM Standard A653/A653M *Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process*. The 55% aluminum-zinc alloy coated sheet steel shall conform to ASTM Standard A792/A792M *Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot Dip Process*. For structural framing members the minimum metallic coating is Z180 (G60) or AZM150 (AZ50). For non-structural steel studs the minimum metallic coating is Z120 (G40) or AZM100 (AZ35).

The minimum thicknesses of typical hot-dipped metallic coatings are given in Table 2. These metallic coating thicknesses must be added to the base sheet thickness when determining the delivered sheet thickness. Metallic coatings are also subject to manufacturing tolerances the same as the base steel. Therefore, the actual thickness of the metallic coating will be greater than the minimum thicknesses listed in Table 2. This factor needs to be considered when attempting to verify the base steel thickness of a coated product. There are other coating types and weights in addition to those listed in Table 2 that may be used with other cold formed steel products.

Imperial Coating Designation	Minimum Thickness (inches)	Metric Coating Designation	Minimum Thickness (mm)
G40	0.0007	Z120	0.018
G60	0.0010	Z180	0.025
AZ35	0.0011	AZM100	0.027
AZ50	0.0016	AZM150	0.040
AZ55	0.0018	AZM165	0.045
AZ60	0.0020	AZM180	0.050

Table 2 - Minimum Metallic Coating Thicknesses

Note: Thickness is total both sides of the sheet.

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