



Sheet Steel Building Institute

technical
bulletin
no. 2

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SHEET METAL GAUGES

For some considerable time there has existed confusion regarding Gauges and Gauge Numbers.

The following information has been documented in one place to try to explain what is meant by the names, United States Standard, Manufacturers' Standard, and Galvanized Sheet Gauge. It is felt that if there is a better understanding of the names, the product will also be better understood.

UNITED STATES STANDARD GAUGE FOR SHEET AND PLATE IRON AND STEEL

In 1893 Congress passed an Act establishing a standard gauge for sheet and plate iron and steel, this Act being for the purpose of securing uniformity, particularly in connection with determining import duties levied by the Government on sheets and plates. The basis of each gauge number is the weight per square foot in ounces; consequently, the U.S. Standard Gauge is a WEIGHT GAUGE. This gauge system designates that a section of iron or steel one foot square and one inch thick should weigh 640 ounces. On this basis each U.S. Gauge Number represents a certain number of ounces in weight and a corresponding multiple of 640ths of an inch in approximate thickness. Approximate thicknesses are derived from the weights per square foot, based on the weight of wrought iron, which is two per cent lighter than steel. Therefore these approximate thicknesses

in the U.S. Standard Gauge Table are not correct for steel. In that table, the density of wrought iron is taken at 480 pounds per cubic foot.

MANUFACTURERS' STANDARD GAUGE FOR STEEL SHEETS

Due to inconsistencies encountered in the U.S. Standard Gauge Table in converting from weight to thickness, a gauge table known as the Manufacturers' Standard Gauge for Steel Sheets is used, having a DEFINITE THICKNESS equivalent for each gauge number. In that standard gauge the density of steel is taken as 489.6 pounds per cubic foot, 0.2833 pounds per cubic inch, or 40.80 pounds per square foot per inch thick. However, since sheet weights are calculated on the basis of the specified width and length, with all shearing on the over side, and also since sheets are somewhat thicker at the center than they are at the edges, a further adjustment must be made in order to obtain a closer approximation for interchangeability between weight and thickness. Over a long period of time, this value for sheets has been found to be close to 2.5 per cent heavier than 40.80 pounds per square foot per inch thick or 41.820 pounds per square foot per inch thick. This figure of 41.820 pounds per square foot per inch thick is the one commonly used to express the relationship between weight and thickness.

The **GALVANIZED SHEET GAUGE**, is used primarily by the trade consuming non structural galvanized steel, and the decimal thicknesses in the table are equal to Manufacturers' Standard Gauge plus 0.0037 inches. The CSSBI has, however, promoted the use of Manufacturers' Standard Gauge plus the required coating class, for use in structural applications. Reference to this is made in CSSBI Technical Bulletin No. 1, and in ASTM A-446-60T.

For many years the AISC Handbook has listed sheet metal using the name U.S. Standard, but has noted that the decimal equivalents shown are Manufacturers' Standard Gauge. The CISC in their new Handbook have corrected this and refer only to Manufacturers' Standard Gauge.

The CSSBI has been instrumental in having such a change adopted by the Associate Committee of NBC. The summer 1962 revision series has changed section 4.6.36.5(1) to refer gauge numbers to Manufacturers' Standard Gauge.

Because of these many and confusing gauge numbers designers have often wondered what they were getting when they specified a Gauge Number.

To further clarify this subject it is the recommendation of the CSSBI that all sheet steel for structural purposes be referred to by its nominal thickness, black, plus the coating class required.

Manufacturers' Standard Gauge Number	Nominal Thickness
3.....	0.2391
4.....	0.2242
5.....	0.2092
6.....	0.1943
7.....	0.1793
8.....	0.1644
9.....	0.1495
10.....	0.1345
11.....	0.1196
12.....	0.1046
13.....	0.0897
14.....	0.0747
15.....	0.0673
16.....	0.0598
17.....	0.0538
18.....	0.0478
19.....	0.0418
20.....	0.0359
21.....	0.0329
22.....	0.0299
23.....	0.0269
24.....	0.0239
25.....	0.0209
26.....	0.0179

EXAMPLE

Typical Material Specification

MATERIAL: The exterior side wall panels, shall be formed of zinc coated steel, ASTM Specification A-446-60T Grade A, with a steel core thickness of 0.0359" and a coating class of 1.25 oz. Commercial.