

Clipay Building Products Company

TECHNICALLY SPEAKING

Steel Gauge vs. Decimal Thickness of Steel

Are you getting what you specify?

The Door and Access Systems Manufacturing Association (DASMA) with the help of Clipay Building Products Co. recently completed a new specification sheet that will be used as a standard within the garage door industry when specifying steel thickness.

Too often, sectional steel doors are being specified by gauge numbers alone which can lead to considerable variations in strength, dent resistance, and durability because it seems that everyone has a different definition of “gauge”. DASMA hopes that specifying sheet steel by minimum decimal thickness will help guarantee the performance of sectional overhead doors.

Defining Gauge Number: In the metal working industry, the number of ounces per square foot of area or the weight of the steel defines gauge. This base definition applies to bare steel before any galvanizing, paint or other type of coating. When galvanized steel is being considered, the steel gauge is determined by adding the weight of the bare steel and weight of the galvanizing material. For example, the American Iron and Steel Institute (AISI) defines 24 gauge standard bare steel as 16 ounces per square foot and 24 gauge G-60 galvanized steel as 16.6 ounces per square foot. While galvanizing adds to the weight of the steel, it has little effect on the strength of the steel, and because galvanizing is an applied coating, the actual steel thickness of the 24-gauge material could vary as much as the coating thickness varies.

In addition to the inconsistencies of the weight measurement weighing a square foot piece of steel is inconvenient in today’s manufacturing environment, therefore, the weight measure is converted to a more usable form- decimal thickness. According to AISI, a one-inch thick piece of bare steel weighs 41.82 pound (669.12 oz.) per square foot. In our example of 24 gauge material, (16 oz.) the thickness of the steel is .0239” (16/669.12). Galvanizing adds .0010 inches for a total thickness of the galvanized steel of .0249”.

Tolerances: The above mathematical process gives us the theoretical decimal thickness for each gauge of material. The theoretical thickness cannot be maintained precisely in the steel forming process, therefore, AISI has established a tolerance range for each gauge. In the case of 24-gauge steel the tolerance is plus or minus .003 inches. This means that the 24 gauge G-60 galvanized material could vary in thickness from .0279” to a minimum of .0219”.

Nominal gauge: Manufacturers that use sheet steel typically order the material by the desired decimal thickness, not the gauge number. The decimal thickness is usually ordered to the minimum acceptable to the customer. Some customers, however, specify that “nominal” tolerances be used. Nominal means in name only, and the tolerances are split evenly around the decimal thickness, which is ordered. Nominal means that the customer could order the minimum 24 gauge material thickness (.0219”) with the same .003” tolerance. The result is that even though the customer ordered a metal thickness within the 24-gauge range, the material received and subsequently processed and sold is in the 25-gauge range. In this case, the customer is truly selling a product that is 24 gauge in name only.

DASMA Standard: The problems of consistently defining gauge and thickness led DASMA to look for ways of developing an industry standard that would be beneficial to customers and to the manufacturers. DASMA decided that the best way to represent gauge is to determine a specific minimum thickness for the appropriate gauge and galvanizing weights used in the garage door industry. Using the standards established by AISI, DASMA developed the Gauge Thickness Chart. (See below)

By specifying a product, such as garage doors, by its minimum decimal thickness and, if possible, model number and manufacturer, users can ensure that they receive a product that meets the strength and durability standards they are looking for.

