

# 12 AWG, 12 gauge, and #12



To many contractors, the AWG nomenclature used to specify wire gauge must be one of the more confusing things out there. It starts with the somewhat peculiar abbreviation, AWG, which stands for American Wire Gauge. This numbering scheme was established way back in 1857, and today, remains the standard in North America that specifies the cross-sectional area of a conductor, and therefore its current carrying capability.

The confusion continues with all the ways AWG can be abbreviated. For example, you or I might say or jot down that a conductor is "12 gauge". But, that can also be expressed as 12 AWG, #12, No. 12, No. 12 AWG, or 12 ga. They all mean the same thing and are used interchangeably.

But, the confusion really sets in when we realize that the heavier the wire, the smaller the AWG designation. So, 10 AWG is far heavier than 12 AWG. That leads to the question of, "*what happens when we hit zero?*" Well, we just start adding zeros. For example, 0 AWG, 00 AWG, 000 AWG ... Not to be outdone, 000 AWG can also be expressed as 3/0 and #000. These are commonly pronounced (but not written) as "*aught*". So, "00" is "*2 aught*" and "0000" is "*4 aught*".

This next confusion factor is less obvious. The AWG numbers are not linear. That is, the difference in size between 12 gauge and 10 gauge isn't the same as the difference between 14 gauge and 12 gauge. But, here's a rule of thumb: For every 3 changes in AWG size, the cross-sectional of the wire doubles. So, #9 is twice as heavy in terms of cross-sectional area as #12. The cross-sectional area of 0 AWG is half of 0000 AWG.

A couple of other notes ... Wire gauge has nothing to do with the thickness of the insulation surrounding the conductor; it only defines the total cross-sectional area. I say total cross-sectional area because some wire is solid and some is stranded. Because of the air spaces between the strands, for a given gauge, stranded wire will always be a larger diameter. This larger diameter is offset by the advantage of being easier to manipulate. But, just remember that 10 AWG is 10 AWG regardless of solid or stranded.

The good news here is that although some of this is confusing, most of it is transparent to you, the contractor. For nearly any application, selection of the proper AWG size is a simple matter of referring to a tabulated chart. For example, required cable sizing in terms for Franklin Electric single-phase submersible motors can be found on page 11 of the Franklin Application, Installation, and Maintenance (AIM) Manual. Three-phase starts on page 16.

Probably not a big surprise, but AWG is unique to North America. The "international standard" uses square millimeters. And the music industry, some of which uses a lot of string and cables, has their own standard.