



# Wire and Cable Marking Considerations

*One glance at a piece of wire and cable reveals an abundance of markings, including identification acronyms, sizes, ratings, and intended applications. Deciphering this information can be a daunting task, made much simpler with UL's help. The purpose of this article is to give you the tools needed to understand these markings and to determine if these wires and cables are being used correctly.*



## Listed, Recognized, Verified

For applications in accordance with the National Electrical Code® (NEC®), requirements for conductors for general wiring are covered in NEC Article 310. As noted in Section 310.1, the requirements of this section do not apply to conductors that form an integral part of the equipment or to conductors specifically described elsewhere in the code. For compliance with requirements for general wiring, UL provides Listing service.

Internal wiring of equipment may employ UL Listed conductors for general wiring, or alternatively, use UL Recognized Component Appliance Wiring Material (AWM), which signifies that the wiring has been subjected to limited testing and evaluation and will be further evaluated in the end-product. AWM wire styles are selected by end-product manufacturers based on their specific voltage and temperature ratings,

mechanical abuse, environmental exposure, flame ratings, etc. AWM has not been evaluated for general wiring applications in accordance with the NEC.

The UL Verification Mark is used to identify wiring that has been evaluated under UL's Performance Verification Services, typically needed for the telecommunications industry. For this program, transmission performance specifications are verified by UL. The

## UL Wire & Cable Marking Guide

UL publishes a handy and free Wire & Cable Marking Guide, which helps specifiers, contractors, installers, and AHJs alike in determining the correct wire for the intended application. This marking guide (as well as others) are available online for download at [www.ul.com/regulators/index\\_lib.cfm](http://www.ul.com/regulators/index_lib.cfm). UL Marking Guides are also included in Appendix A of the UL White Book (also available free of charge).



## Wire and Cable Marking Considerations (continued)

### Wire and Cable Types

Wire and cable types are divided into three tables in the Wire & Cable Marking Guide:

**Table 1** — Building wires and cables, including some industrial cables

**Table 2** — Low voltage cables, flexible cords, and fixture wires

**Table 3** — Special purpose wire and cable

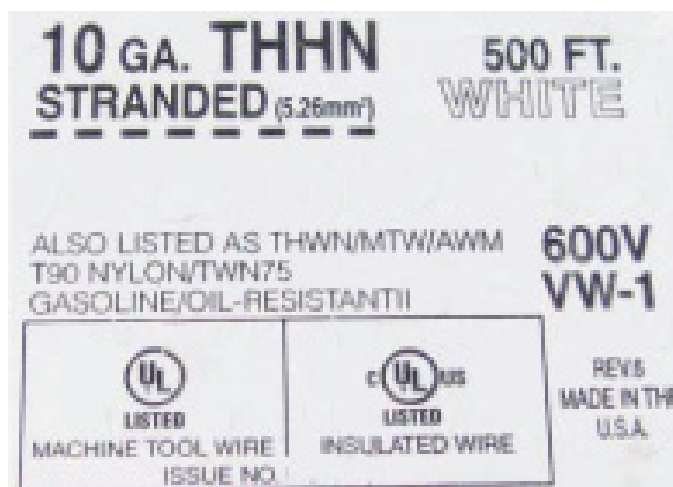
Each type of wire or cable is identified by type designation, followed by associated NEC Article (if applicable), and followed by the respective UL product category (not marked on the wire).

### The UL Mark

Not all types of wire and cable are required to display the UL Mark. Instead, the complete Listing Mark (all elements) may be applied to a coil, reel, flange, or box. The UL Listing Mark is the only means used to indicate that the product is Listed. The UL symbol or the letters “UL” on the product is only a supplemental method of identifying UL coverage and should not be considered primary evidence of UL Listing. A product bearing the UL Mark for Canada is Listed to Canadian Standards for that specific product. A product bearing the combined Canada/U.S. Mark is Listed to both U.S. and Canadian Standards for that specific product.

### Temperature/Voltage Ratings

Temperature and voltage ratings are provided to enable the user to determine the correct application. You will note that wires and cables may have separate temperature ratings for dry and wet locations, which may also require variations of the type designation. For example, in the wet temperature column for several types of flexible cord in Table 2, there is a footnote “(3)” specified. This footnote alerts the user that cords evaluated for water resistance have a “W” in the type designation, such as SJTW. As another example, Type GTO cable for use in accordance with NEC Article 600 will have a suffix -5, -10, or -15 to denote the voltage rating of the cable, in kilovolts. If the table entry shows “-” (dash), this signifies that the particular wire or cable has not been evaluated for the indicated use, either as a requirement or an option.



### Intended Uses

Tables 1, 2, and 3 then identify the intended use(s) for each type of wire and cable, either signified by a specific statement, such as “yes” or “no,” or by a footnote, which indicates a specific marking that would appear on the product. Such intended uses are as follows:

- Outdoor use
- Sunlight resistance
- Cable tray use
- Oil resistance
- Gasoline resistance
- Direct burial
- Submersible pump use
- Other

### Wire, Cable and Code Designations

Appendix A of the Wire & Cable Marking Guide provides further description of many of the conductor and flexible cord types that are used in NEC applications, as well as a key to deciphering the various type designations.

#### For Type THWN conductors:

- T** — Thermoplastic insulation
- H** — 75°C
- W** — Moisture resistant
- N** — Nylon jacket

#### For SJTOW flexible cord:

- SJ** — Hard usage flexible cord
- T** — Thermoplastic insulation
- O** — Oil resistant jacket only
- W** — Moisture and sunlight resistant



## Wire and Cable Marking Considerations (continued)

UL's Wire and Cable Marking Guide is a valuable resource for any electrical industry professional, and only one of several free UL marking guides available. Marking Guides have been included in the UL White Book since the 2006 edition, so if you're still using an earlier edition, it's time to update.

### Complimentary UL Marking Guides

- Commercial Cooking Equipment
- Dampers for Fire Barrier and Smoke Applications & Ceiling Dampers
- Dead-Front Switchboards
- Electrical Heating and Cooling Equipment
- Luminaires
- Molded Case Circuit Breakers
- Panelboards
- Swimming Pool Equipment, Spas, Fountains and Hydromassage Bathtubs
- Wire & Cable