

Some of the terms used in the cable business can be vexing to even the most seasoned folks in the industry. If any of this terminology has ever made you scratch your head, you are certainly not alone. Below you will find a list that will give you a breakdown of those abbreviations, acronyms and other confusing industry lingo. These definitions have been compiled to answer the most common questions about cable terminology that our tech support team here at CableWholesale receives every day.

**AWG:** Short for "American Wire Gauge," this specification is used to measure the diameter of solid and round electrical conducted wire. This measurement helps determine a wire's current carrying capacity as well as its voltage and level of resistance. The standard way that a wire gauge rating is determined is that the larger the number, the smaller the actual AWG. For example, 14 AWG is smaller and contains less copper than a wire with a 12 AWG rating. See also: "[Wire Gauge](#)."

**Cat5e:** Short for "[Category 5e](#)", this is an Ethernet network cable standard which carries up to one Gigabit per second network speeds. (Its predecessor, Category 5, provided up to 100 megabit per second speeds.) It is currently considered a minimum grade of cable to use for new network installations. Network installers often debate the relative merits of using Category 5e cable as opposed to newer technologies, such as [Cat6](#) or [Cat6A](#) (see below). Generally speaking, the decision comes down to cost vs usage requirements; for example, Category 5e provides more than enough bandwidth and speed for a home user / residential network, as residential internet connection speeds typically max out at 100 mbps, roughly one-tenth of the capabilities of Category 5e cabling. However, a corporate campus with dozens, or hundreds, of users may find themselves limited by Category 5e wiring and need something with higher performance metrics.



**Cat6:** Short for "[Category 6](#)", this type of Ethernet cable is the next-generation standard following Cat5e. Like Cat5e, it supports Gigabit network speeds. However, it is built to more stringent technical requirements, allowing for better performance. While Cat5e cable supports gigabit speeds, problems can occur in practice, especially for longer runs of cable, cable that is installed in areas that experience electrical interference, or other issues. When errors occur in the transmission of data across a network cable, that data needs to be resent, which causes the network to not perform as efficiently. Cat6 cable is designed to mitigate those issues by requiring the cable to perform to higher standards on several key benchmarks, including minimizing "crosstalk" (interference between two pairs of wires inside the cable).

**Cat6A:** As of 2015, "[Category 6A](#)" is the newest standard of Ethernet cable recognized in North America (although standards bodies in Europe have ratified other standards). It is designed to support 10 gigabits per second, and is a good choice for new commercial network installations. While currently being the most "future proof" copper cable technology, it is also considerably more expensive to purchase as well as more difficult (thus, more expensive) to properly install. In fact, there is debate among network installers as to whether it should be used at all, or whether another cable technology (such as [fiber optic cable](#)) should be deployed instead.

**CL2:** This is a cable jacket fire resistance rating defined in Article 725 of the National Electric Code. It stands for "Class 2 Remote-Control, Signaling, and Power-Limited Circuits" cable, which indicates that the cable is suitable for in-wall installation and use for certain low-voltage applications. Examples of Class 2 circuits include burglar [alarm cabling](#), intercom wiring, and [speaker wire](#). The jacket is designed to protect against voltage surges of up to 150 volts. CL2 cables may be further classified as "CL2R" (Riser Rated) and CL2P (Plenum Rated). For a more detailed explanation of Riser and Plenum ratings, see "[CMR](#)" and "[CMP](#)" below.

**CL3:** CL3 stands for "Class 3" wire and is also defined in Article 725 of the National Electric Code. Broadly speaking, it mirrors the definitions of Class 2 wire, but the jacket is designed to protect against voltage spikes of up to 300 volts.

**CM:** This is a cable jacket fire resistance rating defined in Article 800 of the National Electric Code. It stands for "Communications Multipurpose" cable, which indicates that the cable is a communications cable suitable for in-wall installation. In practice, "communications cable" generally means, "network cable." Type CM cables are generally the minimum jacket ratings suitable for in-wall installation of network cables, and are appropriate for installation inside a residence or a single-story commercial building. As with any in-wall rated cable, the goal is to prevent fire from traveling along a cable from one part of a building to another. Cables that are labeled "Type CM" must pass a standardized flammability test and be certified by an accredited laboratory, such as Underwriters Laboratories ([UL](#)).

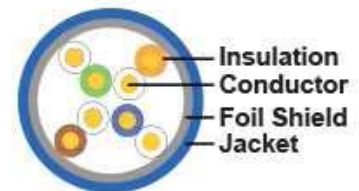
**CMP:** This is a cable jacket fire resistance rating defined in Article 800 of the National Electric Code. It stands for "Communications Multipurpose Cable, Plenum", which indicates that the cable is suitable for installation in a plenum space. Because air travels throughout a building via plenum spaces, it is critical that cables that are installed in such spaces not give off toxic smoke when they burn. Thus, plenum-rated cables are designed using materials that burn more cleanly and self-extinguish more easily. As the flammability requirements for Type CMP cables are stricter than Type CM and CMR cables, Type CMP cables can be used as a substitute in any area where CM and CMR would be required. Cables that are labeled "Type CMP" must pass a standardized flammability test and be certified by an accredited laboratory, such as Underwriters Laboratories ([UL](#)).

**CMR:** This is a cable jacket fire resistance rating defined in Article 800 of the National Electric Code. It stands for "Communications Multipurpose Cable, Riser", which indicates that the cable is suitable for use in a "riser" installation, meaning, it can be installed vertically between stories of a commercial building. The goal of a riser-rated cable is to be flame-retardant enough to prevent the spread of fire from one floor to another. In that respect, it is more flame-retardant (and consequently, more expensive) than type CM cable, although not as much as type CMP cable (see [CM](#), [CMP](#)). As the flammability requirements for Type CMR cables are stricter than Type CM cables, Type CMR cables can be used as a substitute in any area where Type CM would be required. Cables that are labeled "Type CMR" must pass a standardized flammability test and be certified by an accredited laboratory, such as Underwriters Laboratories ([UL](#)).

**CSA:** This stands for the Canadian Standards Association. This is the Canadian counterpart of Underwriters Laboratories, and is often responsible for certifying cables and other products for safety in Canada. It is not uncommon to see a cable jacket stamped with the letters "CSA" followed by a "file number", indicating that the cable has been approved by the CSA for its intended use.

**FTP:** This is an abbreviation for a "foiled twisted pair" Ethernet cable. An FTP cable is constructed with a single aluminum shield that surrounds all four pairs of wire inside the cable, creating a cover for all the wires inside the cable as a whole. The purpose of the shield is to prevent RF interference from entering the cable. This is the most common type of shielded Ethernet cable in the United States, many times (incorrectly) referred to as STP (see also [STP](#) below).

**IEC:** Stands for "International Electrotechnical Commission" which is an International non-Governmental organization that is based out of Switzerland. Most developed Nations around the world are currently members (Called National Committees) with developing Nations being encouraged to join an affiliate program. Electrotechnology encompasses electrical and electronic technologies. The IEC develops International standards for technologies that range from power generation to home appliances to marine



**FTP Shielded Ethernet Cable**

energy. In regards to cabling, these standards make it easier to match power plugs to devices.

**In-Wall:** Usually in reference to an "in-wall rated" cable which is designed to be installed inside a wall safely. Cables that are in-wall rated need to have a designation printed on the cable jacket showing exactly what its rating is. These ratings are generally flammability related. CL2 and CL3 are commonly seen on standard in wall rated cables such as [HDMI cables](#) or [Audio Video cables](#). There are also higher rated designations such as CM, CMR and CMP. If a CL2 rated cable is required for an installation, a higher rated cable can always be used in its place.

**Insulated Wire:** A metal conductor of electricity covered with a non-conducting material such as plastic. The plastic insulation protects the conductor and keeps it a certain distance from any shielding that would go on the outside of the insulation. Any cable for audio video use would have insulated wire.

**Jacket:** This is an external layer of insulation that covers and protects everything that make-up any particular cable assembly. If a cable is in-wall rated, it is actually only the jacket that has the rating. Different ratings require different materials with varying burn and smoke requirements. Typical low voltage cables will have a polyethylene or [PVC](#) jacket.

**LSZH:** Stands for "Low Smoke Zero Halogen" rated cable. Used in areas that are not able to be ventilated sufficiently such as aircraft, the railroad industry or any other enclosed space. Polyethylene or PVC are typical in low voltage cabling. During combustion, these materials emit a dangerous gas. In the event of a fire, a cable with a LSZH rated jacket will not release as much toxic smoke as regular cables.

**NEMA:** Stands for "National Electrical Manufacturers Association". In the cabling world, a NEMA connector is part of a group of standards referring to power plugs and receptacles used in North America. The power outlet used the most in the United States is the NEMA 5-15R. NEMA 5-15P is the male version that would be found on [power cords](#).



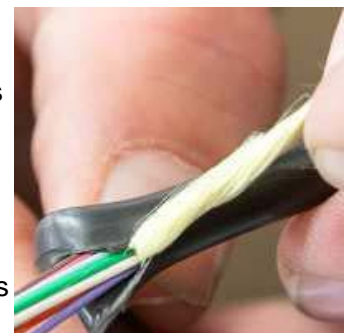
**OD:** The abbreviation for the "outside diameter" dimension that is used to measure the diameter of a cable. In general, as the wire gauge increases, so does the cable OD. The thickness and the material that makes up the cable jacket can also affect the overall cable OD. All cable and wire specs will include the OD as part of the detail on cable drawings. When planning an installation with conduit, it is especially important to know the OD of a cable, in the case that the conduit is running narrow and the cable may not fit properly.

**Plenum:** These cables are to be used in the "plenum" area of a building, which is within a raised flooring area (such as air ducts) or wherever air circulates through the building. In order for a cable to obtain a "plenum" rating, the cable must have a fire-retardant jacket made out of a non-flammable material. Plenum cables will not emit toxic smoke if exposed to fire, and will not reignite themselves after self-extinguishing. You will typically find plenum ratings used in [network](#), [security](#), fire alarm and [coax video cables](#). Also see: "[CMP](#)"

**PVC:** This is the abbreviation for "Polyvinyl Chloride," and is the most common jacket material used in cabling. PVC is a synthetic plastic polymer designed for indoor use. PVC breaks down easily if used outdoors, as it is not designed to withstand the outside elements. Standard PVC is not designed for use in the plenum areas of a building, as this material does emit toxic smoke when exposed to fire. This type of material is listed as the jacket material on the spec sheet for most PC cables and wires.

**Rip Cord:** This is a cord of strong yarn that is used to split the outer jacket of a cable, allowing access to the insulated conductors inside. Bulk [fiber network cable](#) will typically include a rip cord, but jacket rip cords can also be found in other types of wire as well. Rip cord is also used to describe split cables that can be pulled apart to strip back individual ends in cables such as [speaker wire](#) and lamp cords.

**Riser:** A "riser rated" cable is designed for cable runs in non-plenum areas of a building, such as through cable risers between floors. An elevator shaft is also considered a "riser" area. These spaces cannot be used for environmental air or as part of the heating or cooling system of the building. A cable will get a "riser" rating



if it self-extinguishes during a vertical burn test, which will prevent the flame from traveling up the cable. Also see: "[CMP](#)"

**STP:** This stands for "shielded twisted pair", and refers to a type of network cable shielding where each individual pair of wires in a four-pair network cable has its own aluminum shield. This is different than the more-common FTP, which provides for a single aluminum shield to cover all the wires. Note that much of the cable in sold as "STP cable" in the United States is mislabeled, and is actually [FTP](#) cable (a single overall shield).

**Temperature Rating:** The temperature rating of a cable, usually written as a minimum and maximum in degrees Celsius. This rating tells the user where the wire can and cannot be used in regards to the environment. If the wire is used in an environment outside the listed temperature rating, the wire may not perform as intended, or may fail altogether. Temperature ratings can usually be found written on a cables outer jacket.

**Tensile Strength:** This is a test of the maximum stress that a material can withstand while being stretched before ultimately failing under pressure. This becomes an important factor when pulling wire through walls or stringing wire through the air. If you pull a wire past its limit, the wire can either break or become deformed, possibly hurting the wire's performance.

**Tinned Copper:** Copper wire that has a thin layer of tin, electroplated onto the outside. Tinning copper is usually done for cost-cutting reasons, as less copper is used in place of tin. Tin is also easier to solder than copper. While use of tinned copper does have its place in some wire configurations, most of the time using tinned copper in place of pure copper is seen as cutting corners to save money. With many types of wire, using tinned copper can cause unsafe conditions such as fire risks or may cause the wire to under perform.

**Tolerance:** Refers to a manufacturer's rule for allowable size or length of deviation from the specifications set forth for a particular cable. Listing a tolerance is important as there are always slight variations that occur during the manufacturing process, so cables will vary in length by a small amount. Tolerance is usually listed as plus/minus numbers, indicating that the measurement may be a little bit more or a little bit less than the stated measurement. For example, a 7 foot [Ethernet cable](#) might have tolerance listed as "-15/+50" This would indicate the cable is 7 feet long but could be shorter by up to 15mm, or could be longer by as much as 50mm.

**UL:** This stands for Underwriters Laboratories. This independent organization sets the standard for both electronic and electrical materials in the United States. UL creates safety standards for products that manufacturers must follow in order to display the UL logo on their product. Products that do not follow the UL standards could pose a fire risk or other safety concerns. UL creates standards for everything from wire and cables to smoke detectors and batteries. Wire gauge and materials used in construction of a product is a couple of the aspects of manufacturing for which UL lists safety standards.

**UTP:** This is the abbreviation for "Unshielded Twisted Pair" Ethernet cables, which means the cable has no shield surrounding the twisted pair wires inside of the cable. UTP is commonly found in the description of the cable, and can sometimes be found on the Ethernet jacket itself. These are the most commonly used cables for Ethernet connections in areas where there is little interference from other devices.

**Voltage Rating:** A voltage rating is a numerical number that a wire assembly can safely operate within. The conductor itself and the outer jacket are given a voltage rating number. This number is not the maximum voltage of safe operation, but a smaller percentage of the maximum. You can expect to operate a continuous load at the voltage rating number. The voltage rating that is stamped on the cable jacket itself refers to the amount of voltage the jacket can absorb, not the wires inside of the cable. Voltage ratings are commonly found on [power cables](#) such as extension cords or TV power cables.

**VW-1:** The VW-1 rating written on a cable specifies the flammability of the outer jacket. It is a standardized test to measure how the outer jacket responds when exposed to a flame in a vertical orientation hence the abbreviation VW (vertical wire). VW-1 will be found on the jacket of the cable if it has a VW-1 rating. The term VW-1 applies to any cable going in a wall vertically.

**W:** A jacket labeled "W" e.g. "SJTW" designates it as suitable for outdoor and recreational use. It is designed

to resist UV radiation from the sun and a wet environment. A greater temperature rating is present but does not denote a specified temperature. You will see this designation commonly found on outdoor extension cables or power cables that are suitable for outdoor use.

**Wire Gauge:** This measures the diameter of a wire. There is a standard wire gauge system in place that is used for measuring the diameter of a solid, round electrically conducting wire.

This list will keep changing as new technologies emerge, and as old technologies eventually die out. Hopefully for now this list helped to shed some light on some of the more perplexing industry terms used in the wide and wonderful world of cables!



**Locations in: Stone Mountain, GA. & Livermore, CA.**

**Phone: 888-212-8295 \* Fax: 925-455-0808**

© Copyright 1996-2015 CableWholesale.com, Inc. / National Technology