



Wire & Cable Glossary of Terms

AWG

Abbreviation for American Wire Gauge.

Alternating Current

Electric current that continually reverses its direction. Is expressed in cycles per second (hertz or Hz).

Ambient Temperature

The temperature of the medium (gas, liquid or earth) surrounding an object.

American Mustang

A premium grade thermoset cord, UL listed as SOOW or SJOOW, CSA SOOW and SJOOW.

American Wire Gauge (AWG)

A standard system for designating wire diameter. Also referred to as the Brown and Sharpe (B&S) wire gauge.

Ampacity

See Current Carrying Capacity.

Ampere

The unit of current. One ampere is the current flowing through one ohm of resistance at one volt potential.

Anneal

Relief of mechanical stress through application of heat and gradual cooling. Annealing copper renders it soft and less brittle.

Audio Frequency

The range of frequencies audible to the human ear. Usually 20–20,000Hz.

Braid

A fibrous or metallic group of filaments interwoven in cylindrical form to form a covering over one or more wires.

Breakdown Voltage

The voltage at which the insulation between two conductors breaks down.

Bunch Stranding

A group of wires of the same diameter twisted together without a predetermined pattern.

Cabling

The twisting together of two or more insulated conductors to form a cable.

Capacitance

The ability of a dielectric material between conductors to store electricity when a difference of potential exists between the conductors. The unit of measurement is the farad, which is the capacitance value that will store a charge of one coulomb when a one-volt potential difference exists between the conductors. In AC, one farad is the capacitance value that will permit one ampere of current when the voltage across the capacitor changes at a rate of one volt per second.

Circuit (Electric)

The complete path of an electrical current. When the continuity is broken, it is called an open circuit; when continuity is maintained, it is called a closed circuit.

Cold Flow

Permanent deformation of the insulation due to mechanical force or pressure (not due to heat softening).

Color Code

A system for circuit identification through use of solid colors and contrasting tracers.

Compound

An insulating or jacketing material made by mixing two or more ingredients.

Concentricity

In a wire or cable, the measurement of the location of the center of the conductor with respect to the geometric center of the surrounding insulation.

Conductor

An uninsulated wire suitable for carrying electrical current.

Contacts

The parts of the connector that actually carry the electrical current and that touch the equivalent parts in the mating connector.

Continuity Check

A test to determine whether electrical current flows continuously throughout the length of a single wire or individual wires in a cable.

Cord

A flexible insulated wire suitable for carrying electric current.

Corona

Ionization of air surrounding a conductor caused by the influence of high voltage. Causes deterioration of insulation materials.

Crazing

The minute cracks on the surface of plastic materials.

CSA

Abbreviation for Canadian Standards Association, a nonprofit, independent organization that operates a listing service for electrical and electronic materials and equipment. The Canadian counterpart of the Underwriters Laboratories

Current Carrying Capacity

The maximum current an insulated conductor can safely carry without exceeding its insulation and jacket temperature limitations. It is dependent on the installation conditions.

Decibel (db)

A unit that expresses differences of power or voltage level. It is used to express power loss in passive circuits or cables.

Dielectric Strength

The voltage that an insulation can withstand before breakdown occurs. Usually expressed as a voltage gradient (such as volts per mil).

Direct Capacitance

The capacitance measured directly from conductor to conductor through a single insulating layer.

Drain Wire

In a cable, the uninsulated wire laid over the shield component or components and used as a ground connection.

Drawing

In wire manufacture, pulling the metal through a die or series of dies to reduce diameter to a specified size.





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Eccentricity

Like concentricity, a measure of the center of a conductor's location with respect to the circular cross section of the insulation. Expressed as a percentage of displacement of one circle within the other.

Elongation

The fractional increase in length of a material stressed in tension.

EMI

Abbreviation for electromagnetic interference.

Farad

A unit of electrical capacitance.

Filler

1) A material used in multiconductor cables to occupy large interstices formed by the assembled conductors;
2) An inert substance added to a compound to improve properties or decrease cost.

Flame Resistance

The ability of a material to resist the propagation of flame once the heat source is removed.

Flex Life

The measurement of the ability of a conductor or cable to withstand repeated bending.

Frequency

The number of times an alternating current repeats its cycle in one second.

Gauge

A term used to denote the physical size of a wire.

Ground

An electrical term meaning to connect to the earth or other large conducting body to serve as an earth, thus making a complete electrical circuit.

Harness

An arrangement of wires and cables, usually with many breakouts, which have been tied together or pulled into a rubber or plastic sheath, used to interconnect an electric circuit.

Hertz (Hz)

A term replacing cycles per second as an indication of frequency.

Hi-Pot

A test designed to determine the highest voltage that can be applied to a conductor without breaking through the insulation.

Impedance

The total opposition that a circuit offers to the flow of alternating current or any other varying current at a particular frequency. It is a combination of resistance R and reactance X, measured in ohms.

Inductance

The property of a circuit or circuit element that opposes a change in current flow, thus causing current changes to lag behind voltage changes. It is measured in henrys.

Insulation

A material having high resistance to the flow of electric current. Often called a dielectric in radio frequency cable.

Jacket

An outer non-metallic protective covering applied over an insulated wire or cable.

Jumper Cable

A short flat cable interconnecting two wiring boards or devices.

Lay

The length measured along the axis of a wire or cable required for a single strand (in stranded wire) or conductor (in cable) to make one complete turn about the axis of the conductor or cable.

Longitudinal Shield

A tape shield, flat or corrugated, applied longitudinally with the axis of the core being shielded.

Multiconductor

More than one conductor within a single cable complex.

Mylar

A synthetic compound with high dielectric qualities made by DuPont and used extensively in the wire and cable industry in tape form.

NEMA

Abbreviation for National Electrical Manufacturers Association.

Ohm

A unit of electrical resistance.

OSHA

Abbreviation for Occupational Safety and Health Act, specifically the Williams Steiger Law passed in 1970 covering all factors relating to safety in places of employment.

Plasticizer

A chemical agent added to plastics to make them softer and more pliable.

Potting

The sealing of a cable termination or other component with a liquid that cures into an elastomer.

Primary Insulation

The first layer of nonconductive material applied over a conductor, whose prime function is to act as electrical insulation.

Put-Up

Packaging of finished wire or cable by size and length.

PVC

Abbreviation for polyvinyl chloride.

Rated Voltage

The maximum voltage at which an electrical component can operate for extended periods without undue degradation or safety hazard.

REA

Abbreviation for Rural Electrification Administration, which is part of the US Dept. of Agriculture. REA establishes specifications and provides approval for telephone station wire and power cables.





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Resistance

A measure of the difficulty in moving electrical current through a medium when voltage is applied. It is measured in ohms.

RFI

Abbreviation for radio frequency interference.

Separator

Pertaining to wire and cable, a layer of insulating material such as textile paper, Mylar, etc., which is placed between a conductor and its dielectric, between a cable jacket and the components it covers, or between various components of multiple conductor cable. It can be utilized to improve stripping qualities and/or flexibility, or can offer additional mechanical or electrical protection to the components it separates.

Shield

A tape shield, or braid of metal, usually copper, aluminum or other conducting material, placed around or between electric circuits or cables or their components to contain any unwanted radiation, or to keep out an unwanted interference.

Spacing

Distance between the closest edges of two adjacent conductors.

Spark Test

A test designed to locate pinholes in the insulation of a wire or cable by application of a voltage for a very short period of time while the wire is being drawn through a field of electrodes.

Spiral Wrap

The helical wrap of a tape or other material over a core or component.

Strand

A single uninsulated wire.

Stranded Conductor

A conductor composed of wires or groups of wires twisted together.

Surge

A temporary and relatively large increase in the voltage or current in an electric circuit or cable. Also called a transient.

Tensile Strength

The pull stress required to break a given specimen.

Thermoplastic

A material that softens and melts when heated and becomes firm on cooling.

Thermoset

A material that hardens or sets when heat is applied and that, once set, cannot be resoftened by heating. This material is cured with heat or radiation.

TPE

Abbreviation for Thermoplastic Elastomer.

UL

Abbreviation for Underwriters Laboratories, a nonprofit independent organization that operates a listing service for electrical and electronic materials and equipment.

Voltage

The term most often used in place of electromotive force, potential, potential difference or voltage drop to designate the electrical pressure that exists between two points and is capable of producing a current when a closed circuit is connected between two points.

VW-1

A flammability rating established by Underwriters Laboratories for wires and cables that pass a specific vertical flame test, formerly designated FR-1.

Water Resistant

UL designation for cords that have an insulation on the individual conductors that passes UL requirements (e.g., 5T Water Resistant or 5T Dry 105 °C, Water Resistant 60 °C).

