

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 20–20,000 Hz.

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 (UL).

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

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



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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

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

Rural Utilities Service (RUS)

RUS administers programs that provide infrastructure or infrastructure improvements in rural communities. It includes the Electric Program which helps maintain, expand, upgrade and modernize the rural electric infrastructure. It also supports demand-side management, energy efficiency and conservation programs, and on- and off-grid renewable energy systems.

S

Heavy duty, rubber insulated portable cord. Standard copper conductors with separator and individual rubber insulation. Two or more color-coded conductors cabled with filler, wrapped with separator and rubber jacketed overall 600V.

SEO

Same construction as STO, except insulation and jacket are made of Thermoplastic Elastomer Rubber (TPE) 600V



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SE00W	Same construction as SEOW, except with oil resistant insulation	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
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.	Spiral Wrap	The helical wrap of a tape or other material over a core or component
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	Strand	A single uninsulated wire
SJ	Junior hard service rubber insulated pendant or portable cord. Same construction as SJT, except insulation and jacket is thermoset (rubber) 300V.	Stranded Conductor	A conductor composed of wires or groups of wires twisted together
SJE	Same construction as SJT, except insulation and jacket made of Thermoplastic Elastomer Rubber (TPE)300V	Surge	A temporary and relatively large increase in the voltage or current in an electric circuit or cable. Also called a transient.
SJEO	Same construction as SJO, except insulation and jacket made of Thermoplastic Elastomer Rubber (TPE)	Tray Cable (TC)	Multi-conductor cable specifically approved for use installed in cable trays
SJEOW	Same construction as SEOW except 300 volt rated	Tensile Strength	The pull stress required to break a given specimen
SJE	Same construction as SJT, except insulation and jacket made of Thermoplastic Elastomer Rubber (TPE)300V	Thermoplastic	A material that softens and melts when heated and becomes firm on cooling
SJO	Same as SJ, but oil resistant outer jacket. Can also be made "water resistant." 300V, 60 °C, 75 °C, 900 °C or 105 °C.	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.
SJ00W	Same as S00W except 300 volt rated	TPE	Abbreviation for Thermoplastic Elastomer
SJT	Junior hard service thermoplastic conductors with overall thermoplastic jacket, 300V, 60 °C, 75 °C, 900C or 105 °C	UL	Abbreviation for Underwriters Laboratories, a nonprofit independent organization that operates a listing service for electrical and electronic materials and equipment
SJTO	Same as SJT, but oil resistant thermoplastic outer jacket	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
SLC	Stage Lighting Cable. A 600-volt single conductor cable for use with indoor and outdoor stages, fairs and carnivals	VW-1	A flammability rating established by Underwriters Laboratories for wires and cables that pass a specific vertical flame test, formerly designated FR-1
SO	Hard service cord. Same construction as type S, except oil resistant thermoset jacket. 600V, 600 °C to 105 °C	W (Type)	An industry designation for a 2kV portable power cable consisting of 1-6 insulated conductors. For use in mines and similar severe duty applications.
S00W	Same as SOW except oil resistant insulation	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)
SOW	Same as SO except suitable for outdoor use		
Spacing	Distance between the closest edges of two adjacent conductors		

