

GLOSSARY

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0–10 V — A common analog process control signal voltage range.

4–20 mA — A common analog process control signal current range.

A

A — Common abbreviation for Ampere (see ampere)

AAR — American Association of Railroads.

ABRASION RESISTANCE — Ability to resist surface wear.

AB SWITCH — A coaxial cable switch capable of switching one cable to one of two branch cables, A or B.

AC — (1) Alternating current, (2) A UL cable type with flexible metal tape armor.

ACR — Aluminum Conductor, Aluminum Reinforced cable.

ACCELERATED LIFE TEST — A test in which a cable is subjected to extreme conditions to determine the life of a cable.

ACCR — Aluminum Conductor, Composite Reinforced aerial cable. Contains a ceramic strength member to reduce sag at high temperatures (up to 210°C).

ACRF — Attenuation to Crosstalk Ratio Far-end. See ELFEXT.

ACSR — Aluminum Conductor, Steel Reinforced. A bare composite of aluminum and steel wires, usually aluminum around steel.

ACSR/AW — Aluminum Conductor, Steel Reinforced, using Aluminum clad steel wire.

ACSR/AZ — Aluminum Conductor, Steel Reinforced, using Aluminum coated steel wire.

ACSR/GA — Aluminum Conductor, Steel Reinforced, using Class A zinc-coated steel wire.

ACSR/GB — Aluminum Conductor, Steel Reinforced, using Class B zinc-coated steel wire.

ACSR/GC — Aluminum Conductor, Steel Reinforced, using Class C zinc-coated steel wire.

A/D — Analog/Digital. An integrated circuit device that converts analog signals to digital signals.

ADDRESS — The location of a terminal, a peripheral device, a node, or any other unit or component in a network, or process control system.

ADHESIVE-BONDED — Cables bonded by adding an adhesive coating to the surface of the cable components, then joining and curing the adhesive to form a cable. See Bonded Cables.

ADMITTANCE — A measure of how easily alternating current flows in a circuit. Admittance is the reciprocal of impedance. It is expressed in mhos.

AIEC — Association of Edison Illuminating Companies.

AERIAL CABLE — A cable suspended in the air on poles or other overhead structure.

AF — Audio Frequency.

AFCI — Arc Fault Circuit Interrupter. A protective device that detects arcing and then turns the circuit off.

AGC — Automatic Gain Control.

AGING — The irreversible change of material properties after exposure to an environment for an interval of time.

AlA — Aluminum Interlocked Armor. A type of cable sheath.

AIRCORE CABLE — A cable in which the interstices in the cable core are not filled with a moisture barrier.

AIRCRAFT WIRE — An electrical wire primarily designed for the extreme conditions (temperature, altitude, solvents, fuels, etc.) of airborne equipment.

AIR SPACED COAX — A coaxial cable in which air is basically the dielectric material. The conductor may be centered by means of a spirally wound synthetic filament, beads or braided filaments. This construction is also referred to as an air dielectric.

AL — Aluminum

ALLOY — A substance (usually metallic) composed of two or more individual substances.

ALS — A type of cable consisting of insulated conductors enclosed in a continuous, closely fitting aluminum tube.

ALTERNATING CURRENT — Electric current that periodically reverses direction. Alternating current is generally abbreviated AC.

AM — Amplitude Modulation. A method of adding information to an electronic signal where the height (amplitude) of the wave is changed to convey the added information.

AMBIENT — Conditions existing at a location prior to energizing of equipment (example: ambient temperature).

IMPACT — The rms current which a device can carry within specified temperature limitations in a specified environment: dependent upon a) temperature rating, b) power loss, c) heat dissipation.

AMPERE — A standard unit of current. Designated as the amount of current that flows when one volt of emf is applied across one ohm of resistance. An ampere of current is flowing when one coulomb of charge is passing a point every second.

AMPERE-TURN — The product of amperes times the number of turns in a coil.

AMPLIFIER — A device used to boost the strength of an electronic signal.

AMPLITUDE — The maximum value of a varying wave form.

AMPLITUDE MODULATION (AM) — Transmission method in which variations in the voltage or current waveform of a signal carry encoded information.

ANALOG — Not digital. A continuously varying waveform.

ANNEAL — To soften and relieve strains in any solid material, such as metal or glass, by heating to just below its melting point and then slowly cooling it. This also generally lowers the tensile strength of the material, while improving its flex life.

ANNEALED WIRE — See Soft Wire.

ANNULAR CONDUCTOR — A number of wires stranded in reversed concentric layers around a core.

ANNUNCIATOR WIRE — Usually single solid copper, sometimes twisted pair or triplexed for open wiring of bell circuits and other low-voltage systems.

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ANSI (American National Standards Institute) — An organization that publishes nationally recognized standards.

ANTENNA LEAD-IN WIRE — (Not coaxial) Parallel twin lead construction, plastic jacketed with fixed 300 ohm impedance for connecting a remote antenna to a receiver.

ANTENNA ROTOR CABLE — Multiconductor flat or round cable used to supply power to a motorized antenna and control wires for changing direction of rotation.

ANTIOXIDANT — Retards or prevents degradation of materials exposed to oxygen (air).

APPLIANCE WIRE AND CABLE — A classification covering insulated wire and cable for internal wiring of appliances and equipment. UL type AWM wire.

ARC RESISTANCE — The time required for an arc to establish a conductive path in a material.

ARMATURE — (1) Rotating machine: the member in which alternating voltage is generated; (2) electromagnet: the member which is moved by magnetic force.

ARMOR — Mechanical protector for cables; usually a helical winding of metal tape, formed so that each convolution locks mechanically upon the previous one (interlocked armor); may be a formed metal tube or a helical wrap of wires.

ARMOR-X — Southwire's trademark for CCW aluminum armor.

ARRHENIUS PLOT — A statistical method used to predict time-to-failure, based on a device's performance at different temperatures. One method is given in IEEE Standard 101.

ASCII — American National Standard Code for Information Interchange. A seven bit plus parity code established by the American National Standards Institute to achieve compatibility among data services and consisting of 96 displayed upper and lower case characters and 32 nondisplayed control codes.

ASKA REL — A synthetic insulating oil which is nonflammable but very toxic. It has been replaced by silicone oils.

ASTM — American Society for Testing Materials. An organization that sets standards on various material tests for industry.

ATTENUATION — The decrease in magnitude of a signal as it travels through any transmitting medium, such as a cable or circuitry. Attenuation is measured as a ratio or as the logarithm of a ratio (decibel).

ATTENUATION CONSTANT — A rating for a cable or other transmitting medium, which is the relative rate of amplitude decrease of voltage or current in the direction of travel. It is measured in decibels per unit length of cable.

AUDIO — A term used to describe sounds within the range of human hearing. Also used to describe devices which are designed to operate within this range.

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

AUI — Attachment Unit Interface. The interface between the Ethernet/IEEE 802.3 controller and the baseband transceiver or broadband modem.

AWG — American Wire Gauge. A wire diameter specification. The lower the AWG number the larger the wire diameter.

AWM — Appliance Wiring Material.

B

BACKFILL — The materials placed to fill an excavation, such as sand in a trench.

BALANCED CIRCUIT — A circuit so arranged that the impressed voltages on each conductor of the pair are equal in magnitude but opposite in polarity with respect to ground.

BALANCED LINE — A cable having two identical conductors with the same electromagnetic characteristics in relation to other conductors and to ground.

BALLAST — A device designed to stabilize current flow.

BAND MARKING — A continuous circumferential band applied to a conductor at regular intervals for identification.

BANDWIDTH — The width of a communication channel, measured as frequency (in cycles per second, or hertz). A channel's bandwidth is a major factor in determining how much information it can carry.

BARE CONDUCTOR — A conductor having no insulation or jacket.

BARREL-PACKED — Method of coiling wire into a drum for shipment.

BASEBAND — A signalling technique in which the signal is transmitted in its original form and not changed by modulation.

BASEBAND LAN — A local area network employing baseband signalling.

BELOFOL — Belden trademark for a highly effective electrostatic shield using reinforced metallic foil.

BELT — Layers of insulation on a conductor, or layers of jacket on a cable.

BELTED-TYPE CABLE — Multiple conductor cable having a layer of insulation over the assembled insulated conductors.

BER — Bit Error Rate. The ratio of received bits that are in error, relative to a specific number of bits received; usually expressed as a number referenced to a power of 10.

BIL — Basic Impulse Level. The crest value of a lightning impulse voltage of a specified wave shape which a high-voltage cable or termination is required to withstand under specified conditions.

BIMETALLIC WIRE — A wire formed of two different metals joined together (not alloyed). It can include wire with a steel core, plated or coated wire.

BINDER — A tape or thread used for holding assembled cable components in place.

BINDING POST — A device for clamping or holding electrical conductors in a rigid position.

BIRD CAGE — The undesirable unwinding of a stranded cable.

BIT — Abbreviation for binary digit. A unit of information equal to one binary decision or the designation of one of two possible and equally likely states (such as 1 and 0) of anything used to store or convey information.

BITS PER SECOND (bps) — The number of bits of data transmitted through a digital process control cable in one second.

BNC — Common connector for coax. BNC is said to be an abbreviation for Bayonet-Neill-Concelman.

BONDED CABLE — Cable consisting of preinsulated conductors or multiconductor components laid in parallel and bonded into a flat cable.

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BONDED CONSTRUCTION — An insulation construction in which the glass braid and nylon jacket are bonded together.

BONDING — The method used to produce good electrical contact between metallic parts of any device. Used extensively in automobiles and aircraft to prevent static buildup. Also refers to the connectors and straps used to ground equipment.

BOOSTER — A device inserted into a line (or cable) to increase the voltage. Boosting generators are also used to raise the level of a DC line. Transformers are usually employed to boost AC voltages. The term booster is also applied to antenna preamplifiers.

BOOT — (1) Protective coating over a cable, wire or connector in addition to the normal jacketing or insulation. (2) A form placed around the wire termination of a multiconductor connector to contain the liquid potting compound before it hardens.

BORDER LIGHT CABLE — Same as stage cable but more than 2 conductors. Type SO cable is often used.

BORE HOLE CABLE — Power and/or communication cable suspended down a vertically drilled hole to equipment underground.

BRAID — Textile or metallic filaments interwoven to form a tubular structure that may be applied over one or more wires or flattened to form a strap.

BRAID ANGLE — The smaller of the angles formed by the shielding strand and the axis of the cable being shielded.

BRAID CARRIER — A spool or bobbin on a braiding machine which holds one group of strands or filaments consisting of a specific number of ends. The carrier revolves during braiding operations.

BRAID ENDS — The number of strands used to make up one carrier. The strands are wound side by side on the carrier bobbin and lie parallel in the finished braid.

BRAIDING MACHINE — Machine used to apply braids to wire and cable and to produce braided sleeving and braids for tying or lacing purposes. Braiding machines are identified by the number of carriers.

BRANCH JOINT — A cable joint used for connecting one or more cables to a main cable.

BRAZING — The joining of ends of two wires, rods, or groups of wires with nonferrous filler metal at temperatures above 800°F (427°C).

BREAKDOWN (PUNCTURE) — A disruptive discharge through the insulation.

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

BREAKING STRENGTH — The maximum load that a conductor can withstand when tested in tension to rupture.

BREAKOUT — The point at which a conductor or group of conductors breaks out from a multiconductor cable to complete circuits at various points along the main cable.

BRIDGE — A circuit which measures by balancing four impedances through which the same current flows:

- Wheatstone measures resistance
- Kelvin measures low resistance
- Schering measures capacitance, dissipation factor, dielectric constant
- Wien measures capacitance, dissipation factor

BRIDGED TAP — The multiple appearances of the same cable pair at several distribution points.

BRITISH STANDARD WIRE GAUGE — A modification of the Birmingham Wire Gauge and the legal standard of Great Britain for all wires. Also known as Standard Wire Gauge (SWG), New British Standard (NBS), English Legal Standard and Imperial Wire Gauge.

BROADBAND LAN — LAN which uses FDM (frequency division multiplexing) to divide a single physical channel into a number of smaller independent frequency channels. The different channels created by FDM can be used to transfer different forms of information — voice, data and video.

BROADCAST — The act of sending a signal from one station on a LAN to all other stations.

B and S — Brown and Sharpe wire gauge — same as AWG.

BSL (Basic Switching Impulse Insulation Level) — The crest value of a switching impulse voltage of a specified wave shape which a high-voltage cable termination is required to withstand under specified conditions.

BUFFER — A protective coating in intimate contact with an optical fiber.

BUFFER TUBE — A loose, crush-resistant polymer tube applied over optical fibers to provide mechanical protection.

BUILDING WIRE — Commercial wires used in the building trades such as: Types RHH, RHW, THW and THWN wire.

BUNA — A synthetic rubber insulation of styrenebutadiene; was known as GR-S, now as SBR.

BUNCH STRAND — A conductor in which all individual wires are twisted in the same direction without regard for geometrical arrangement.

BUNCHER — A machine that twists wires together in a random arrangement.

BUOYANT CABLE — Originally military type MIL-C-2401 with built-in flotation ability. Many applications have been developed using buoyancy to advantage — numerous types and sizes for power, communications, telecommunications have resulted.

BURIED CABLE — A cable installed directly in the earth without use of underground conduit. Also called "direct burial cable."

BUS — A network topology which functions like a signal line which is shared by a number of nodes.

BUS-BAR WIRE — Uninsulated tinned copper wire used as a common lead.

BUSHING — A mechanical device used as a lining for an opening to prevent abrasion to wire and cable.

BUTT SPLICE — A splice wherein two wires from opposite ends butt against each other, or against a stop, in the center of a splice.

BUTT WRAP — Tape wrapped around an object or conductor in an edge-to-edge condition.

BUTYL RUBBER — Synthetic rubber formerly used for electrical insulating purposes.

BX — A common type of armored building wire rated 600 volts.

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© — Symbol for capacitance and Celsius.

CABLE — A cable may be a small number of large conductors or a large number of small conductors, cabled together, usually color coded and with a protective jacket overall.

CABLE ASSEMBLY — A cable assembly is a cable with plugs or connectors on each end for a specific purpose. It may be formed in various configurations.

CABLE, BELTED — A multiconductor cable having a layer of insulation over the assembled insulated conductors.

CABLE CLAMP — A device used to give mechanical support to the wire bundle or cable at the rear of a plug or receptacle.

CABLE CLAMP ADAPTER — A mechanical adapter that attaches to the rear of a plug or receptacle to allow the attachment of a cable clamp.

CABLE CORE — The portion of an insulated cable lying under a protective covering.

CABLE CORE BINDER — A wrapping of tapes or cords around the conductors of a multiple-conductor cable used to hold them together.

CABLE FILLER — The material used in multiple-conductor cables to occupy the interspaces formed by the assembly of the insulated conductors, thus forming a cable core.

CABLE JOINT — A complete insulated splice, or group of insulated splices, contained within a single protective covering or housing. In some designs, the insulating material may also serve as the protective covering.

CABLE LOSS — The amount of RF (radio frequency) signal attenuated by coaxial cable transmission. The cable attenuation is a function of frequency, media type and cable length. For coaxial cable, higher frequencies have greater loss than lower frequencies and follow a logarithmic function. Cable losses are usually calculated for the highest frequency carried on the cable.

CABLE, PRESSURIZED — A cable having a pressurized fluid (gas or oil) as part of the insulation; nitrogen and oil are the most common fluids.

CABLE SHEATH — The protective covering applied to cables.

CABLE SUPPORT — A device to mount a cable on a supporting member.

CABLING — The method by which a group of insulated conductors is mechanically assembled (or twisted together).

CAD — Computer-Aided Design.

CAM — Computer-Aided Manufacture.

CAPACITANCE — Capacitance is that property of a system of conductors and dielectrics which permits the storage of electricity when potential differences exist between the conductors.

CAPACITANCE COUPLING — Electrical interaction between two conductors caused by the potential difference between them.

CAPACITANCE, DIRECT — The capacitance measured from one conductor to another conductor through a single insulating layer.

CAPACITANCE, MUTUAL — The capacitance between two conductors (typically of a pair) with all other conductors, including shield, short circuited to ground.

CAPACITANCE, UNBALANCE — An inequality of capacitance between the wires of two or more pairs which result in a transfer of unwanted signal from one pair to others.

CAPACITANCE, UNBALANCE-TO-GROUND — An inequality of capacitance between the ground capacitance of the conductors of a pair which results in a pickup of external noise energy, usually from power transmission lines.

CAPACITIVE REACTANCE — The opposition to alternating current due to the capacitance of a capacitor, cable or circuit. It is measured in ohms and is equal to $1/(6.28 \text{ fC})$ where f is the frequency in Hz and C is the capacitance in farads.

CAPACITOR — Two conducting surfaces separated by a dielectric material. The capacitance is determined by the area of the surface, type of dielectric and spacing between the conducting surfaces.

CAPILLARY ACTION — The travelling of liquid along a small interstice due to surface tension.

CARRIER — (1) An AC electrical signal that is used to carry information, (2) The woven element of a braid consisting of one or more ends (strands) which creates the interlaced effect, (3) A spindle, spool, tube, or bobbin (on a braiding machine) containing yarn or wire, employed as a braid.

CATHODE — (1) The negative electrode through which current leaves a nonmetallic conductor, such as an electrolytic cell, (2) the positive pole of a storage battery.

CATHODIC PROTECTION — Reduction or prevention of corrosion by making the metal to be protected the cathode in a direct current circuit.

CATV — Community Antenna Television. Refers to the use of a coaxial or fiber cable to transmit television or other signals to subscribers from a single head-end location.

CATV CABLE — General term for all cables used for community antenna TV service and feeders, distribution and house drops.

CB — Citizens Band. One type of two-way radio communication.

C CONDITIONING — A type of line conditioning that controls attenuation, distortion and delay distortion so they lie within specific limits.

C CONNECTOR — A bayonet-locking connector for coax; C is named after Carl Concelman.

CCTV — Closed-Circuit Television. One of the many services often found on broadband networks.

CCW — Continuously Corrugated and Welded. A type of cable sheath.

CD — Carrier Detect. An RS-232 control signal (on Pin 8) which indicates that the local modem is receiving a signal from the remote modem. Also called Received Line Signal Detector (RLSD) and Data Carrier Detect (DCD).

CENELEC — Comité Européen de Normalisation Electrotechnique. One of the European Union's key electrical standards-writing bodies.

CELLULAR POLYETHYLENE — Expanded or "foam" polyethylene, consisting of individual closed cells of inert gas suspended in a polyethylene medium, resulting in a desirable reduction of dielectric constant.

CERTIFICATE OF COMPLIANCE — A written statement, normally generated by a Quality Control Department, which states that the product being shipped meets customer's specifications.

C

C – Symbol for capacitance and Celsius.

CABLE – A cable may be a small number of large conductors or a large number of small conductors, cabled together, usually color coded and with a protective jacket overall.

CABLE ASSEMBLY – A cable assembly is a cable with plugs or connectors on each end for a specific purpose. It may be formed in various configurations.

CABLE, BELTED – A multiconductor cable having a layer of insulation over the assembled insulated conductors.

CABLE CLAMP – A device used to give mechanical support to the wire bundle or cable at the rear of a plug or receptacle.

CABLE CLAMP ADAPTER – A mechanical adapter that attaches to the rear of a plug or receptacle to allow the attachment of a cable clamp.

CABLE CORE – The portion of an insulated cable lying under a protective covering.

CABLE CORE BINDER – A wrapping of tapes or cords around the conductors of a multiple-conductor cable used to hold them together.

CABLE FILLER – The material used in multiple-conductor cables to occupy the interstices formed by the assembly of the insulated conductors, thus forming a cable core.

CABLE JOINT – A complete insulated splice, or group of insulated splices, contained within a single protective covering or housing. In some designs, the insulating material may also serve as the protective covering.

CABLE LOSS – The amount of RF (radio frequency) signal attenuated by coaxial cable transmission. The cable attenuation is a function of frequency, media type and cable length. For coaxial cable, higher frequencies have greater loss than lower frequencies and follow a logarithmic function. Cable losses are usually calculated for the highest frequency carried on the cable.

CABLE, PRESSURIZED – A cable having a pressurized fluid (gas or oil) as part of the insulation; nitrogen and oil are the most common fluids.

CABLE SHEATH – The protective covering applied to cables.

CABLE SUPPORT – A device to mount a cable on a supporting member.

CABLING – The method by which a group of insulated conductors is mechanically assembled (or twisted together).

CAD – Computer-Aided Design.

CAM – Computer-Aided Manufacture.

CAPACITANCE – Capacitance is that property of a system of conductors and dielectrics which permits the storage of electricity when potential differences exist between the conductors.

CAPACITANCE COUPLING – Electrical interaction between two conductors caused by the potential difference between them.

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CERTIFIED TEST REPORT (CTR) — A report reflecting actual test data on the cable shipped. Tests are normally conducted by the Quality Control Department and shows that the product being shipped meets the required test specifications.

CHANNEL — (1) A path for electrical transmission. Also called a circuit facility, line, link, or path. (2) A specific and discrete bandwidth allocation in the radio frequency spectrum (for example, in a broadband LAN) utilized to transmit one information signal at a time.

CHANNEL TRANSLATOR — Device used in broadband LANs to increase carrier frequency, converting upstream (toward the head-end) signals into downstream signals (away from the head-end).

CHARACTERISTIC IMPEDANCE — An electrical characteristic of transmission lines. When terminated in its characteristic impedance, reflections from the end of a line are minimized.

CHEMICAL STRIPPING — Removal of insulation by chemical means.

CHLOROSULFONATED POLYETHYLENE (CSP) — A rubbery polymer used for insulations and jackets. Manufactured by E.I. DuPont under the trade name of Hypalon.

CIGARETTE WRAP — Tape insulation wrapped longitudinally instead of spirally over a conductor.

CIRCUIT SWITCHING — A switching technique in which an information path (i.e., circuit) between calling and called stations is established on demand for exclusive use by the connected parties until the connection is released.

CIRCUIT TRACING — Locating or identifying a specific conductive path.

CIRCULAR MIL (CM) — A term universally used to define cross-sectional areas of conductors. It is an area equal to the area of a circle 1/1000 of an inch in diameter. As the number of circular mils increase, the size of a wire increases.

CLAD WIRE — Different from coated wire, is any metal covered with a relatively heavy coating of different metal, such as copperweld (copper over steel) or alum-o-weld (aluminum over steel). See Coated Wire.

COATED WIRE — Any metal covered by a relatively thin coating of a different metal such as tin, zinc or other alloy by a dip bath and wipe process, often at high speeds in line with insulating equipment. See Tinned Wire.

COAXIAL CABLE — A cylindrical transmission line comprised of a conductor centered inside a metallic tube or shield, separated by a dielectric material and usually covered by an insulating jacket.

COHERENT SOURCE — A fiber optic light source which emits a very narrow, unidirectional beam of light of one wavelength (monochromatic).

COIL EFFECT — The inductive effect exhibited by a spiral wrapped shield, especially above audio frequencies.

COLD BEND — Generally refers to a test to determine cable or wire characteristics at low temperatures. The test specimen is cooled in a low temperature box to a specified temperature. The wire specimen is then wound around a mandrel after which it is examined for cracks or other defects caused by bending at low temperatures.

COLD-DRAWING — Reducing the cross section by pulling through a die or dies, at a temperature lower than the recrystallization temperature.

COLD FLOW — Permanent deformation of the insulation due to mechanical pressure (not due to heat softening).

COLOR CODE — A color system for wire or circuit identification by use of solid colors, tracers, braids, surface printing, etc.

COMBINATION STRANDED CONDUCTOR — A conventional concentric conductor in which the wires in the outer layer are larger in diameter than the wires in the inner layer or layers and the diameters of all wires are within plus and minus 5 percent of the nominal wire diameter for the same size noncombination stranded conductor.

COMMON AXIS CABLING — In multiconductor constructions, a twisting of all conductors about a "common axis" to result in smaller diameter constructions. Tends to result in greater susceptibility to electromagnetic and electrostatic interference.

COMMON MODE NOISE — Noise caused by a difference in "ground potential." By grounding at either end rather than both ends (usually grounded at source) one can reduce this interference.

COMPACT STRANDED CONDUCTOR — A unidirectional or conventional concentric conductor manufactured to a specified diameter, approximately 8 to 10 percent below the nominal diameter of a noncompact conductor of the same cross-sectional area.

COMPOSITE CABLE — A cable containing more than one gauge size or a variety of circuit types, e.g., pairs, triples, quads, coaxials, etc.

COMPOSITE (CLAD) WIRE — A wire having a core of one metal with a fused outer shell of a different metal.

COMPOSITE CONDUCTOR — A conductor consisting of two or more types of wire, each type of wire being plain, clad, or coated-stranded together to operate mechanically and electrically as a single conductor.

COMPRESSED STRANDED CONDUCTOR — A conventional concentric conductor manufactured to a diameter not more than 3 percent below the nominal diameter of a noncompressed conductor of the same cross-sectional area.

COMPRESSION LUG OR SPLICE — A connection installed by compressing the connector onto the strand, hopefully into a cold weld.

CONCENTRICITY — The measurement of the location of the center of the conductor with respect to the geometric center of the circular insulation.

CONCENTRIC-LAY CONDUCTOR — A layer of uninsulated wires twisted around a central wire with subsequent layers spirally wrapped around the inner layers to form a single conductor.

CONDUCTANCE — The ability of a conductor to carry an electric charge. The ratio of the current flow to the potential difference causing the flow. The reciprocal of resistance.

CONDUCTIVITY — Capacity of a material to carry electrical current — usually expressed as a percentage of copper conductivity (copper being 100 percent).

CONDUCTOR — A material suitable for carrying an electric current. Several types are as follows:

COMPACT ROUND CONDUCTOR — A conductor constructed with a central wire surrounded by one or more prestressed (nonround) helically laid wires and formed into final shape by rolling, drawing, or other means.

CONCENTRIC-LAY CONDUCTOR — A conductor constructed with a central wire surrounded by one or more layers of helically laid wires.

CONVENTIONAL CONCENTRIC CONDUCTOR — A conductor constructed with a central wire surrounded by one or more layers of helically laid wires. The direction of lay is reversed in successive layers and generally with an increase in length of lay for successive layers.

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EQUILAY CONDUCTOR — A conductor constructed with a central wire surrounded by more than one layer of helically laid wires, all layers having a common length of lay, direction of lay being reversed in successive layers.

PARALLEL CORE CONDUCTOR — A conductor constructed with a central core of parallel-laid wires surrounded by one layer of helically laid wires.

ROPE-LAY CONDUCTOR — A conductor constructed of a bunch-stranded or a concentric-stranded member or members, as a central wire, around which are laid one or more helical layers of such members.

UNIDIRECTIONAL CONDUCTOR — A conductor constructed with a central wire surrounded by more than one layer of helically laid wires, all layers having a common direction of lay, with increase in length of lay for each successive layer.

UNILAY CONDUCTOR — A conductor constructed with a central wire surrounded by more than one layer of helically laid wires, all layers having a common length and direction of lay.

CONDUCTOR CORE — The center strand or member about which one or more layers of wires or members are laid helically to form a concentric-lay or rope-lay conductor.

CONDUCTOR SHIELD — A conducting layer applied to make the conductor a smooth surface in intimate contact with the insulation; sometimes called Extruded Strand Shield (ESS).

CONDUIT — A tube or trough for protecting electrical wires or cables.

CONNECTION, DELTA — Interconnection of 3 electrical equipment windings in a delta (triangular) configuration.

CONNECTION, WYE — Interconnection of 3 electrical equipment windings in wye (star) configuration.

CONNECTOR — A metallic device of suitable electric conductance and mechanical strength, used to splice the ends of two or more cable conductors, or as a terminal connector on a single conductor. Connectors usually fall into one of the following types:

- solder
- welded
- mechanical
- compression or indent

Conductors are sometimes spliced without connectors, by soldering, brazing, or welding.

CONTACT — The part of a connector which carries the electrical current.

CONTACT SIZE — The largest size wire which can be used with the specific contact. Also, the diameter of the engagement end of the pin.

CONTINUITY CHECK — A test performed on a length of finished wire or cable to determine if the electrical current flows continuously throughout the length.

CONTINUOUS VULCANIZATION — Simultaneous extrusion and vulcanization (cross-linking) of wire insulating and jacketing materials.

CONTRAHELICAL — Cable spiralling in an opposite direction than the preceding layer within a wire or cable.

CONTROL CABLE — A cable used for remote control operation of any type of electrical power equipment.

CONTROLLED IMPEDANCE CABLE — A package of two or more insulated conductors where impedance measurements between respective conductors are kept essentially constant throughout the entire length.

COPOLYMER — A compound resulting from the polymerization of two different monomers.

COPPER-CLAD STEEL — Steel with a coating of copper welded to it before drawing as opposed to copper-plated. Synonymous with Copperweld.

COPPERWELD — Trademark of Copperweld Steel Co. for copper-clad steel conductor.

CORD — A flexible insulated cable.

CORD SET — Portable cords fitted with a connector at one or both ends.

CORE — (1) In cables, a component or assembly of components over which other materials are applied, such as additional components, shield, sheath, or armor. (2) In fiber optics, the transparent glass or plastic section with a high refractive index through which the light travels by internal reflections.

CORONA — A discharge due to ionization of the air around a conductor due to a potential gradient exceeding a certain critical value. See Partial Discharge.

CORONA RESISTANCE — The time that the insulation will withstand a specified level of ionization that does not result in the complete breakdown of the insulation.

CORROSION — The destruction of the surface of a metal by chemical reaction.

COULOMB — The derived SI unit for quantity of electricity or electrical charge. One coulomb equals one ampere-second.

COUNTER EMF — The voltage opposing the applied voltage and the current in a coil; caused by a flow of current in the coil; also known as back emf.

COUNTERPOISE WIRE — Bare copper wire used to offset the impact of lightning surges along high-voltage overhead lines and around the base of towers. Buried counterpoise wire is connected to overhead ground wires and towers. Numerous methods of application are used, dependent upon resistance of the soil at the tower base.

COUPLING — The transfer of energy between two or more cables or components of a circuit.

COUPLING LOSS — Signal losses in an optical fiber due to small differences in numerical aperture, core diameter, core concentricity and tolerances in connectors when two fibers are spliced together. Also known as Splicing loss and Transfer loss.

COVERAGE — The calculated percentage which defines the completeness with which a metal braid covers the underlying surface. The higher percentage of coverage, the greater the protection against external interference.

CPE — Chlorinated PolyEthylene. A jacketing compound sold by Dow Chemical under the trademark Tyrim.

CROSS-LINKED — Inter-molecular bonds created between long chain thermoplastic polymers by chemical or electron bombardment means. The properties of the resulting thermosetting material are usually improved.

CROSS-LINKED POLYETHYLENE — A dielectric material used for insulating and jacketing. Also referred to as "XLPE" or "XLPE."

CROSS TALK — A type of interference caused by audio frequencies from one circuit being coupled into an adjacent circuit. The term is loosely used to also include coupling at higher frequencies.

CRT — Cathode-Ray Tube. A television-like picture tube used in terminals; CRT is commonly used as a synonym for the CRT terminal.

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CRT WIRE — High-voltage lead wire for energizing cathode ray tubes.

CSA (Canadian Standards Association) — Similar to UL in the United States.

CSA Certified — A product that has been tested and found to comply with applicable Canadian standards.

CSPE — A jacketing compound based on DuPont's chlorosulfonated polyethylene (Hypalon). Sometimes abbreviated CSP.

CT — Cable Tray, NEC Article 392. A cable marking which indicates a cable is suitable for use in a cable tray.

CURE — To change the properties of a polymeric material into a more stable, usable condition by the use of heat, radiation, or reaction with chemical additives. To cross-link.

CURING CYCLE — The time, temperature and pressure required for curing.

CURL — The degree to which a wire tends to form a circle after removal from a spool.

CURRENT — The rate of transfer of electricity. The unit of current is the ampere, a rate of one coulomb/second.

CURRENT, ALTERNATING (AC) — An electric current that periodically reverses direction of electron flow. The number of cycles in a given unit of time (generally a second) is called the frequency of the current.

CURRENT CARRYING CAPACITY — The maximum current an insulated conductor can safely carry without exceeding its insulation and jacket temperature limitations. Same as Ampacity.

CURRENT, CHARGING — The current needed to bring the cable up to voltage; determined by the capacitance of the cable. The charging current will be 90° out of phase with the voltage.

CURRENT DENSITY — The current per cross sectional area. Usually in units of amperes/square meter.

CURRENT, DIRECT (DC) — Electrical current whose electrons flow in one direction only. It may be constant or pulsating as long as their movement is in the same direction.

CUT-THROUGH RESISTANCE — The ability of a material to withstand mechanical pressure without damage.

CV — Continuous Vulcanization. An insulation and jacketing curing process.

CYCLE — The complete sequence including reversal of the flow of an alternating electric current.

D

D/A — Digital to Analog.

DAC — Digital to Analog Converter. A device that converts a digital input signal to an analog output signal carrying equivalent information.

DATA — Digitally represented information, which includes voice, text, facsimile and video.

dB — Decibel. The standard unit used to express the relative strength of two signals. When referring to a single signal measured at two places in a transmission system, it expresses either a gain or loss in power between the input and output devices.

dBmV — (Decibel Millivolt) The level at any point in a system expressed in dBs above or below a 1 millivolt/75 ohm standard is said to be the level in decibel-millivolts or dBmV. Zero dBmV is equal to 1 millivolt across an impedance of 75 ohms.

DC — Direct Current. (see Current, Direct.)

DCE — Data Communications Equipment. In common usage, synonymous with modem; the equipment that provides the functions required to establish, maintain and terminate a connection as well as the signal conversion required for communications between the DTE and the telephone line or data circuit.

DCL — Data Carrier Level.

DCS — Distributed Control System. A type of industrial automation system.

DC RESISTANCE — See Resistance.

DecaBDE — DecaBromoDiphenyl Ether. A type of brominated flame retardant sometimes used in wire and cable and other products. A type of PolyBrominated Diphenyl Ether (PBDE).

DELAY SKEW — The difference between the propagation delay of any two pairs within the same cable sheath. Delay skew is caused primarily because twisted pairs are designed to have different twists per foot (lay lengths). Delay skew could cause data transmitted over one channel to arrive out of sync with data over another channel.

DEMAND — (1) The measure of the maximum load of a utility's customer over a short period of time, (2) The load integrated over a specified time interval.

DERATING FACTOR — A factor used to reduce the current carrying capacity of a wire when used in environments other than that for which the value was established.

DETECTOR — A fiber optic device that picks up light from the fiber and converts the information into an electrical signal.

DIELECTRIC — An insulating (nonconducting) medium.

DIELECTRIC BREAKDOWN — Any change in the properties of a dielectric that causes it to become conductive. Normally the failure of an insulation because of excessive voltage.

DIELECTRIC CONSTANT — The property of an insulation which determines the electrostatic energy stored per unit volume for unit potential gradient. It is expressed as a ratio. "K" for air is 1.0, while that for polyethylene is 2.3. Therefore, the capacitance of polyethylene is 2.3 times that of air. It is also referred to as Specific Inductive Capacity or Permittivity.

DIELECTRIC DISPERSION — The change in relative capacitance due to a change in frequency.

DIELECTRIC HEATING — The heating of an insulating material when placed in a radio-frequency field, caused by internal losses during the rapid polarization reversal of molecules in the material.

DIELECTRIC LOSS — The power dissipated in a dielectric as the result of the friction produced by molecular motion when an alternating electric field is applied.

DIELECTRIC STRENGTH — The maximum voltage which an insulation can withstand without breaking down; usually expressed as a gradient in V/mil (volts per mil). Polyethylene for example has a dielectric strength of about 800 V/mil.

DIELECTRIC STRENGTH TESTING — A common test performed on electrical products which is often called hi-pot testing. A voltage higher than normal operating voltage is applied across the insulation. This test can increase product reliability by detecting faulty workmanship.

CRT WIRE – High-voltage lead wire for energizing cathode ray tubes.

CSA (Canadian Standards Association) – Similar to UL in the United States.

CSA Certified – A product that has been tested and found to comply with applicable Canadian standards.

CSPE – A jacketing compound based on DuPont's chlorosulfonated polyethylene (Hypalon). Sometimes abbreviated CSP.

CT – Cable Tray, NEC Article 392. A cable marking which indicates a cable is suitable for use in a cable tray.

CURE – To change the properties of a polymeric material into a more stable, usable condition by the use of heat, radiation, or reaction with chemical additives. To cross-link.

CURING CYCLE – The time, temperature and pressure required for curing.

CURL – The degree to which a wire tends to form a circle after removal from a spool.

CURRENT – The rate of transfer of electricity. The unit of current is the ampere, a rate of one coulomb/second.

CURRENT, ALTERNATING (AC) – An electric current that periodically reverses direction of electron flow. The number of cycles in a given unit of time (generally a second) is called the frequency of the current.

CURRENT CARRYING CAPACITY – The maximum current an insulated conductor can safely carry without exceeding its insulation and jacket temperature limitations. Same as Ampacity.

CURRENT, CHARGING – The current needed to bring the cable up to voltage; determined by the capacitance of the cable. The charging current will be 90° out of phase with the voltage.

CURRENT DENSITY – The current per cross sectional area. Usually in units of amperes/square meter.

CURRENT, DIRECT (DC) – Electrical current whose electrons flow in one direction only. It may be constant or pulsating as long as their movement is in the same direction.

CUT-THROUGH RESISTANCE – The ability of a material to withstand mechanical pressure without damage.

CV – Continuous Vulcanization. An insulation and jacketing curing process.

CYCLE – The complete sequence including reversal of the flow of an alternating electric current.

D

D/A – Digital to Analog.

DAC – Digital to Analog Converter. A device that converts a digital input signal to an analog output signal carrying equivalent information.

DATA – Digitally represented information, which includes voice, text, facsimile and video.

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DIGITAL — Refers to communications procedures, techniques and equipment by which information is encoded as either a binary "1" or "0"; the representation of information in discrete binary form, discontinuous in time, as opposed to the analog representation of information in variable, but continuous, waveforms.

DIN — Deutsches Institut für Normung (DIN). The German Standard for many products.

DIP COATING — An insulating coating applied to the conductor by passing the conductor through an applicator containing liquid insulating medium.

DIRECT BURIAL CABLE — A cable installed directly in the earth.

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

DIRECTIONAL COUPLER — A passive device used in a cable system to divide or combine unidirectional RF power sources.

DIRECTION OF LAY — The lateral direction, designated as left-hand or right-hand, in which the wires of a conductor run over the top of the conductor as they recede from an observer looking along the axis of the conductor.

DISPERSION — The variation of the refractive index of an optical fiber with wavelength, causing light of different wavelengths to travel at different velocities in the fiber.

DISSIPATION FACTOR — Energy lost when voltage is applied across an insulation. The cotangent of the phase angle between voltage and current in a reactive component. Dissipation factor is quite sensitive to contamination and deterioration of insulation. Also known as Power Factor.

DISTORTION FACTOR — An undesirable change in waveform as the signal passes through a device.

DISTRIBUTION CABLE — (1) In a CATV system, the transmission cable from the distribution amplifier to the drop cable. (2) In an electric power system, provides low voltage service to the customer.

DISTURBED CONDUCTOR — A conductor that receives energy generated by the field of another conductor or an external source such as a transformer.

DISTURBING CONDUCTOR — A conductor carrying energy whose field(s) create spurious energy in another conductor.

DOWNLOAD — The process of loading software into the nodes of a network from one node or device over the network media.

DRAIN WIRE — An uninsulated wire in contact with a shield throughout its length, used for terminating the shield.

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

DROP CABLE — In a CATV system, the transmission cable from the distribution cable to a dwelling.

DSR — Data Set Ready. One of the control signals on a standard RS-232-C connector. It indicates whether the data communications equipment is connected and ready to start handshaking control signals so that transmission can start.

DTE — Data Terminal Equipment.

DTR — Data Terminal Ready. An RS-232 modem interface control signal (sent from the DTE to the modem on pin 20) which indicates that the DTE is ready for data transmission and which requests that the modem be connected to the telephone circuit.

DUAL CABLE — A two-cable system in broadband LANs in which coaxial cables provides two physical paths for transmission, one for transmit and one for receive, instead of dividing the capacity of a single cable.

DUCT — An underground or overhead tube for carrying electrical conductors.

DUOFOL — Belden trademark for a shield in which metallic foil is applied to both sides of a supporting plastic film.

DUPLEX — Two way data transmission on a four-wire transmission cable.

DUPLEX CABLE — A cable composed of two insulated single conductor cables twisted together.

E

E — (1) Symbol for voltage. Usually used to represent direct voltage or the effective (root-mean-square) value of an alternating voltage. (2) A UL cable type. Elevator lighting and control cable.

EARTH — British terminology for zero-reference ground.

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.

ECTFE — Ethylene ChloroFluoroEthylene. Halar is a Solvay Solcois trademark for this material. Used as an insulation or jacketing material.

EDDY CURRENT — Circulating currents induced in conducting materials by varying magnetic fields.

EIA — Electronic Industries Alliance. The U.S. national organization of electronic manufacturers. It is responsible for the development and maintenance of industry standards for the interface between data processing machines and data communications equipment.

ELASTOMER — Any material that will return to its original dimensions after being stretched or distorted.

ELECTROMAGNET — A device consisting of a ferromagnetic core and a coil that produces appreciable magnetic effects only when an electric current exists in the coil.

ELECTROMAGNETIC — Referring to the combined electric and magnetic fields caused by electron motion through conductors.

ELECTROMAGNETIC COUPLING — The transfer of energy by means of a varying magnetic field. Inductive coupling.

ELECTRO-MECHANICAL CABLES — Dual purpose composite cables made up of support strands capable of supporting predetermined loads together with communication, coaxial, or power as integral members of a finished cable.

ELECTROMOTIVE FORCE (E.M.F.) — Pressure or voltage. The force which causes current to flow in a circuit.

ELECTRON — An elementary particle containing the smallest negative electric charge; Charge = 0.16 attocoulomb. Diameter = 1 femtometer.

ELECTRON VOLT — A measure of the energy gained by an electron passing through an electric field produced by one volt.

ELECTRONIC WIRE AND CABLE — Wire or cable used in electronic applications.

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ELECTRO-OSMOSIS — The movement of fluids through dielectrics because of electric current.

ELECTROSTATIC — Pertaining to static electricity, or electricity at rest. An electric charge, for example.

ELECTROSTATIC COUPLING — The transfer of energy by means of a varying electrostatic field. Capacitive coupling.

ELECTROSTATIC DISCHARGE (ESD) — An instantaneous flow of an electrical charge on a nonconductor through a conductor to ground.

ELECTRO-TINNED — Electrolytic process of tinning wire using pure tin.

ELEXAR — Shell trademark for a thermoplastic elastomer (TPE).

ELFEXT — Equal-level Far-end Crosstalk. A measure of the unwanted signal coupling from a transmitter at the near-end into a neighboring pair measured at the far-end, relative to the received signal level measured on that same pair. Referred to as ACR-F (insertion loss to crosstalk ratio far-end) in the TIA/EIA-568-B.2-Addendum 10 draft. (ELFEXT is FEXT adjusted to discount insertion loss.)

ELONGATION — The fractional increase in the length of a material stressed in tension.

ENA — (Electrical Moisture Absorption) A water tank test during which sample cables are subjected to voltage and water maintained at rated temperature; the immersion time is long, with the object being to accelerate failure due to moisture in the insulation; simulates buried cable.

EMBOSsing — Identification by means of thermal indentation which leaves raised lettering on the sheath material of cable.

EMERGENCY OVERLOAD — A situation in which larger than normal currents are carried through a cable or wire for a limited period of time.

EMI — Electromagnetic Interference. External signals that disrupt the data being transmitted on the local area network or electronic device being operated. Typically, these external signals emanate from universal motors with brushes, fluorescent lights, personal computers, printers or other devices including copy machines, etc. The Federal Communications Commission (FCC) regulates this emission area.

ENDOSMOSIS — The penetration of water into a cable by osmosis; aggravated and accelerated by DC voltage on the cable.

ENDS — In braiding, the number of essentially parallel wires or threads on a carrier.

ENERGIZE — To apply rated voltage to a circuit or device in order to activate it.

EO — A UL cable type. Elevator lighting and control cable with thermostat insulation.

EOT — End of Transmission Character. A transmission control character used to indicate the end of transmission, which may include one or more texts and any associated message headings.

EP, EPR, EPN, EPDM — Designations for a synthetic rubber based upon the hydrocarbon ethylene propylene.

EPA — Environmental Protection Agency. The federal regulatory agency responsible for keeping and improving the quality of our living environment — mainly air and water.

EPDM — Ethylene Propylene Diene Monomer.

EPROM — Erasable Programmable Read Only Memory.

EPR — Ethylene Propylene Rubber.

EQUILAY CONDUCTOR — See Concentric-lay Conductor.

ET — A UL cable type. Elevator lighting and control cable with thermoplastic insulation, three braids, flame-retardant and moisture-retardant finish. May have steel supporting strand in the center, 300 V.

ETCHED WIRE — A process applied to Teflon wire in which the wire is passed through a sodium bath to create a rough surface to allow epoxy resin to bond to the Teflon.

ETFE — Ethylene TetraFluoroEthylene. Tefcel™ is DuPont's trademark for this material.

ETHERNET — A baseband local area network specification developed jointly by Xerox Corporation, Intel Corporation and Digital Equipment Corporation to interconnect computer equipment using coaxial cable and "Transceivers."

ETL — Electrical Testing Laboratories, Inc.

ETPC — Abbreviation for electrolytic tough pitch copper. It has a minimum conductivity of 99.9 percent.

EVA — Ethylene Vinyl Acetate. A polymer often used in low-smoke, non-halogenated cables.

EXIT ANGLE — The angle between the output radiation vectors and the axis of the fiber or fiber bundle.

EXPANDED DIAMETER — Diameter of shrink tubing as supplied. When heated the tubing will shrink to its extruded diameter.

EXTERNAL WIRING — Electronic wiring that interconnects subsystems within the system.

EXTRUDED CABLE — Cable that is insulated by applying insulation material in a continuous extrusion process.

EXTRUSION — A method of applying insulation to a conductor or jacketing to a cable. The process is continuous and utilizes rubber, neoprene or a variety of plastic compounds.

F

FACSIMILE — The remote reproduction of graphic material; an exact copy.

FARAD — A unit of capacitance when a difference of potential of 1 volt produces a displacement of one coulomb in a capacitor. The farad is a very large unit and a much smaller unit, the microfarad (μ F), is more commonly used.

FATIGUE RESISTANCE — Resistance to metal crystallization which leads to conductors or wires breaking from flexing.

FAULT, GROUND — A fault to ground.

FCC — Federal Communications Commission.

FDI (Fiber Distributed Data Interface) — An ANSI defined token-passing ring using fiber optic media to attain a 100 Mbps transmission rate.

FDX — Full Duplex. Transmission in two directions simultaneously, or, more technically, bidirectional simultaneous two-way communications.

FEF — Fluorinated Ethylene Propylene. Teflon is DuPont's trademark for this material.

FEPR — A UL cable type. Fluorinated ethylene propylene insulated wire with glass braid.

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