

Glossary

- AAR:** Association of American Railroads.
- AC:** Alternating Current (a.c.). Current in which the charge-flow periodically reverses and is represented by: $I = I_0 \cos(2\pi f t + \phi)$ where, I is the current, I_0 is the amplitude, f the frequency, ϕ the phase angle.
- ALS:** A type of cable consisting of insulated conductors enclosed in a continuous, closely fitting aluminum tube.
- ANSI:** Abbreviation for American National Standards Institute.
- ASME:** Abbreviation for American Society of Mechanical Engineers.
- ASTA:** United Kingdom approval agency.
- ASTM:** Abbreviation for the American Society for Testing and Materials, a non-profit industry-wide organization which publishes standards, methods of test, recommended practices, definitions and other related material.
- AWM:** UL designation for appliance wiring material.
- Abrasion Resistance:** Ability of a wire, cable or material to resist surface wear.
- Accelerated Aging:** A test that attempts to duplicate long-time environmental aging in comparatively short time spans.
- Accelerator:** A chemical additive which hastens a chemical reaction under specific conditions.
- 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:** The measure of the ease with which an alternative current flows in a circuit. The reciprocal of impedance.
- Aerial Cable:** A cable suspended in the air on poles or other overhead structure.
- Aging:** The change in properties of a material with time under specific conditions.
- Air Core Cable:** A cable in which the interstices in the cable core are not filled with a moisture barrier.
- Alligator Clip:** A mechanical device shaped like alligator jaws used as a temporary connection on the end of interconnections wire.
- Alloy:** A metal formed by combining two or more different metals to obtain desirable properties.
- Aluminum-Steel Conductor:** A composite conductor made up of a combination of aluminum and steel wires.
- Ambient Temperature:** The temperature of a medium (gas or liquid) surrounding an object.
- American Wire Gauge (AWG):** The standard system used for designating wire diameter. The lower the AWG. number, the larger the diameter. Also called the Brown and Sharpe (B&S) Wire Gauge.
- Ampacity:** See Current Carrying Capacity.
- Ampere's Law:** The magnetic intensity at any point near a current carrying conductor can be computed on the assumption that each infinitesimal length of the conductor produces at the point of an infinitesimal magnetic density. The resulting magnetic intensity at the point is the vector sum of the contributions of all the elements of the conductor.
- Ampere:** The unit of current. One ampere is the current flowing through one ohm of resistance at one volt potential.
- Analog:** Transmission data densities by continuously variable quantities.
- Anneal:** Relief of mechanical stress through heat and gradual cooling. Annealing copper renders it less brittle.
- Annular Conductor:** A number of wires stranded in three reversed concentric layers around a core.
- Anti-Oxidant:** A substance which prevents or slows down oxidation of material exposed to air.
- Appliance Wire and Cable:** A classification covering insulated wire and cable for internal wiring of appliances and equipment.
- Arc Resistance:** The time required for an arc to establish a conductive path in a material.
- Armored Cable:** A cable provided with a wrap-up of metal for mechanical protection.
- Attenuation:** Power loss in an electrical system. In cables, generally expressed in db per unit length, usually 100 ft.
- Audio Frequency:** The range of frequencies audible to the human ear. Usually 20-20,000 Hz.
- B & S Gauge:** The same as American Wire Gauge (AWG).
- BCF:** Abbreviation for billion conductor feet. A quantity derived by multiplying the number of conductors in a cable by the amount of cable. Usually used to indicate plant capacity or an annual requirement.
- Band Marking:** A continuous circumferential band applied to a conductor at regular intervals for identification.
- Band Width:** The frequency range of electrical signals transmitted.
- Banded Cable:** Two or more cables banded together by stainless steel strapping.
- Barrel-Packed:** Method of coiling into a fiber drum for shipment.
- Belt:** Number of layers of insulation on a conductor, or number of layers of jacket on a cable.
- Belted-Type Cable:** Multiple conductor cable having a layer of insulation over the assembled insulated conductors.
- Bend Radius:** The radius of the bend (usually designated as a multiple of product diameter) at which a wire product can safely be bent without significantly affecting its ability to function.
- Bifilar:** A winding made non-inductive by winding together (as one wire) two wires carrying current in opposite directions.
- Bimetallic Wire:** A wire formed of two different metals joined together (not alloyed). It can include wire with a steel core clad wire, or plated or coated wire.
- Binder:** A spirally served tape or thread used for holding assembled cable components in place awaiting subsequent manufacturing operations.
- Binding Post:** A device for clamping or holding electrical conductors in a rigid position.
- Bond Strength:** Amount of adhesion between bonded surfaces, e.g. in cemented ribbon cable.

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- Bondable Wire:** An insulated wire treated to facilitate adherence to materials such as potting compounds. Also, magnet wires used in making coils when bonding the turns together is desired.
- Bonded Cable:** Cable consisting of pre-insulated conductors or multiconductor components laid-in parallel and bonded into a flat cable. See Adhesive-Bonded.
- Bonded Construction:** An insulation construction in which the glass braid and nylon jacket are bonded together.
- Booster:** A device inserted into a line (or cable) to increase the voltage.
- Boot:** (1) Protective covering over a cable wire, or connector in addition to the normal jacketing or insulation. (2) A form placed around wire termination of a multiple-contact connector to contain the liquid potting compound before it hardens.
- Braid:** A fibrous or metallic group of filaments interwoven in cylindrical form to form a covering over one or more wires.
- Braid Angle:** The smaller of the two angles formed by the shielding strand and in the axis of the cable being shielded.
- Braid Carrier:** A spool or bobbin on a braid 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.
- Breakdown (Puncture):** A disruptive discharge through the insulation.
- Breakdown Voltage:** The voltage at which the insulation between two conductors breaks down.
- 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.
- 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 Guide.
- Building Wire:** Wire used for light and power, 600 volts or less, usually not exposed to outdoor environment.
- Bunched Stranding:** A group of strands twisted together in a random manner and the same direction without regard to geometric arrangement of specific strands.
- Buncher:** A machine that twists wires together in random arrangement.
- Bundle:** (fiber optic) A number of fibers grouped together, usually carrying a common signal.
- Buried Cable:** A cable installed directly in the earth without use of underground conduit. Also called Direct Burial Cable.
- Bus:** Wire used to connect two terminals inside of an electrical unit.
- Bushing:** A mechanical device used as a lining for an opening to prevent abrasion to wire and cable.
- Butt:** Joining of two conductors end-to-end, with no overlap and with the axes in line.
- 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.
- Byte:** Typically a group of eight binary digits.
- C-SJ:** Same as SJ except extra-flexible conductor.
- C-SJO:** Same as SJO except extra-flexible conductor.
- CATV:** Acronym for Community Antenna Television.
- CCTV:** Acronym for Closed-Circuit Television.
- CEBEC:** Belgium Approval Agency; Comite Electrotechnique Belge Service de la Marque.
- CE Code, CEC:** Canadian Electrical Code.
- CEE:** Consortium for Energy Efficiency.
- CENELEC:** European Standards Agency; European Committee for Electrotechnical Norms.
- CSA:** Abbreviation for Canadian Standards Association, a non-profit independent organization which operates a listing service for electrical and electronic materials and equipment. The Canadian counterpart of the Underwriters Laboratories.
- CV:** Abbreviation for continuous vulcanization.
- Cable:** A stranded conductor with or without insulation and other coverings (single-conductor cable) or a combination of conductors (multiple-conductor cable). In fiber optics, a jacketed fiber or jacketed bundle in a form which can be terminated.
- Cable Assembly:** Typically, the cable and associated connectors; ready to install.
- 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 Sheath:** The protective covering applied to cables.
- Cable Vulcanizer:** Compression molding machine used to repair cable jacketing that has had a part removed for splicing, for adding connectors or other devices or for replacing damaged sections.
- Cabling:** Twisting together two or more insulated conductors by machine to form a cable. In fiber optics, a method by which a group or bundle of fibers is mechanically assembled.
- Cabling Factor:** Used in the formula for calculating the diameter of an unshielded, unjacketed cable. $D=Kd$, where D is the cable diameter, K is the factor and d is the diameter of one insulated conductor.
- Capacitance:** The ratio of the electrostatic charge on a conductor to the potential difference between the conductors required to maintain that charge.

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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.

Carrier: The woven element of a braid consisting of one or more ends (strands) which creates the interlaced effect. Also, a spindle, spool, tube or bobbin (on a braiding machine) containing yarn or wire, employed as a braid.

CBO: Rubber-insulated Brewery Cord.

Certificate of Compliance (C of C): A written statement; normally generated by a Quality Control Department, which states that the product being shipped meets customer's specifications.

Certified Test Report (CTR): A report reflecting actual test data on the cable shipped. Tests are normally conducted by the Quality Control Department, and show that the product being shipped meets the required test specifications.

Characteristic Impedance: The impedance that when connected to the output terminals of a transmission line, of any length, makes the line appear indefinitely long.

Chlorinated Polyethylene (CPE): Rubbery polymer used for insulation and jacketing of wire and cable. Manufactured by Dow Chemical under the trade name Tyrin.

Chlorosulfonated Polyethylene (CSPE): 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: A complete path over which electrons can flow from the negative terminals of a voltage source through parts and wires to the positive terminals of the same voltage source.

Circuit Sizes: A popular term for building wire sizes 14 through 10 AWG.

Circular Mil: The area of a circle one mil (.001") in diameter; 7.854x10⁻⁷ sq. in. Used in expressing wire cross sectional area.

Cladding: Method of applying a layer of metal over another metal whereby the junction of the two metals is continuously welded. In fiber optics, a sheathing intimately in contact with the core of a higher refractive index material which serves to provide optical insulation and protection to the reflection interface.

Closed End Splice: An insulated splice in which two or more wires overlap and enter the splice from the same end of the barrel.

Coaxial Cable: A cable consisting of two cylindrical conductors with a common axis, separated by a dielectric.

Coaxial Connector: A connector that has a coaxial construction and is used with coaxial cable.

Coil Effect: The inductive effect exhibited by a spiral-wrapped shield, especially above audio frequencies.

Cold Flow: Permanent deformation of the insulation due to mechanical force of 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.

Common Axis Cabling: In multiple cable constructions, a twisting of all conductors about a "common axis" to result in smaller-diameter constructions. Tends to result in greater susceptance to electromagnetic and electrostatic interference.

Compact Conductor: Stranded conductor rolled to deform the round wires to fill the normal interstices between the wires in a strand.

Composite (Clad) Wire: A wire having a core of one metal with a fused outer shell of different metals.

Composite Conductor: Two or more strands of different metals assembled and operated in parallel.

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

Compression Cable: A pipe type cable in which the pressure medium is separated from the insulation by a membrane or sheath.

Concentric: A central core surrounded by one or more layers of helically wound strands in a fixed round geometric arrangement.

Concentric Strand: A strand that consists of a central wire or core surrounded by one or more layers of spirally laid wires.

Concentric-Lay Cable: A concentric-lay conductor, or a multiple-conductor cable composed of a central core surrounded by one or more layers of helically laid insulated conductors.

Concentricity: The measurement of the location of the center of the conductor with respect to the geometric center of the circular insulation.

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: The capacity of a material to carry electrical current—usually expressed as a percentage of copper conductivity (copper being one hundred percent).

Conductor: A wire (or combination of wires not insulated from one another) suitable for carrying electric current.

Conduit: A tube or trough in which insulated wires and cables are run.

Connector: A device used to provide rapid connect/disconnect service for electrical cable and wire terminations.

Contact: The part of a connector which actually carries the electrical current and is touched together or separated to control the flow.

Contact Inspection Hole: A hole in the cylindrical rear portion of contact used to check the depth to which a wire has been inserted.

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

Continuous Vulcanization: Simultaneous extrusion and vulcanization of rubber-like wire coating materials.

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Contra-helical: Cable spiraling in an opposite direction than the preceding layer within a wire or cable.

Control Cable: A multiconductor cable made for operation in control of signal circuits.

Controlled Impedance Cable: 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 with a coating of copper welded to it before drawing as opposed to copper-plated. Synonymous with Copperweld.

Copperweld: The trade name of Flexo Wire Division (Copperweld Steel Corp.) for their copper-clad steel conductors.

Cord: A small, flexible insulated cable.

Cord Set: Portable cords fitted with a wiring device at one or both ends.

Core: In cables, a component or assembly of components over which other materials are applied, such as additional components, shield, sheath or armor. 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 air around a conductor due to a potential gradient exceeding a certain critical value.

Corona Resistance: The time that the insulation will withstand a specified level of field-intensified ionization that does not result in the immediate complete breakdown of the insulation.

Corrosion: The destruction of the surface of a metal by chemical reaction.

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.

Covering: Textile braid or jacket of rubber, plastics or other materials applied over wire and cables to provide mechanical protection and identification.

Crazing: The minute cracks on the surface of plastic materials.

Creep: The dimensional change with time of a material under load.

Creepage: The conduction of electricity across the surface of a dielectric.

Creepage Path: The path across the surface of a dielectric between two conductors.

Creepage Surface: An insulating surface which provides physical separation as a form of insulation between two electrical conductors of different potential.

Crimp: Act of compressing a connector barrel around a cable in order to make an electrical connection.

Crimp Termination: Connection in which a metal sleeve is secured to a conductor by mechanically crimping the sleeve with pliers, presses, or automated crimping machines.

Cross-linked: Inter-molecular bonds between long-chain thermoplastic polymers by chemical or electron bombardment means. The properties of the resulting thermosetting material are usually improved.

Crosstalk: Undesired electrical currents in conductors caused by electromagnetic or electrostatic coupling from other conductors or from external sources. Also, leakage of optical power from one optical conductor to another.

Cure: To change the physical properties of a material by chemical reaction.

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. An indication of the ability of the wire to be wrapped around posts in long runs.

Current: The rate of transfer of electricity. Practical unit is the ampere which represents the transfer of one coulomb per second. In a simple circuit, current (I) produced by a cell or electromotive force (E) when there is an external resistance (R) and internal resistance (r) is:

$$I = \frac{E}{R + r}$$

Current-Carrying Capacity: The maximum current an insulated conductor can safely carry without exceeding its insulation and jacket temperature limitations.

Cut-Through Resistance: The ability of a material to withstand mechanical pressure usually a sharp edge or small radius, without separation.

Cycle: The complete sequence including reversal of the flow of an alternating electric current.

D.C.: Abbreviation for Direct Current.

DEMKO: Approval agency of Denmark.

DRT: Plastic range and dryer cord (CSA).

Decibel (db): A unit to express differences of power level. Used to express power gain in amplifiers or power loss in passive circuits or cables.

Delay Line: A cable made to provide very low velocity of propagation with long electrical delay for transmitted signals.

Depth of Crimp: Thickness of the crimped portion of a connector measured between two opposite points on the crimped surface.

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.

Dielectric: An insulating medium which intervenes between two conductors and permits electrostatic attraction and repulsion to take place across it.

Dielectric Breakdown: The voltage required to cause an electrical failure or breakthrough of the insulation.

Dielectric Constant (K): The ratio of the capacitance of a condenser with dielectric between the electrodes to the capacitance when air is between the electrodes. Also called Permittivity and Specific Inductive Capacity.

Dielectric Loss: Power dissipated in an insulating medium as the result of the friction caused by molecular motion when an AC electric field is applied.

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

Dielectric Test: A test in which a voltage higher than the rated voltage is applied for a specified time to determine the adequacy of the insulation under normal conditions.

Glossary

- Digital:** Transmission data representative by discrete characters.
- 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.
- Direct Current:** An electric current which flows in only one direction.
- Direct Current Resistance (DCR):** The resistance offered by any circuit to the flow of direct current.
- Direction of Lay:** The lateral direction in which the strands of a conductor run over the top of the cable conductor as they recede from an observer looking along the axis of the conductor or cable. Also applies to twisted cable.
- Discrete Wiring:** Wire or wires having distinct identity and purpose.
- Disruptive Discharge:** A sudden, large increase in current through an insulation medium due to the complete failure of the medium under the electrostatic stress.
- Disturbed Conductor:** A conductor that receives energy generated by the field of another conductor or an external source, such as a transformer.
- Drain Wire:** In a cable, the uninsulated wire laid over the component or components and used as a ground connection.
- Draw Feed Stock:** Rod or wire that is subsequently drawn to a smaller size.
- Drawing:** In wire manufacture, pulling the metal through a die or series of dies to reduce diameter to a specified size.
- Dual Coaxial Cable:** Two individually insulated conductors laid parallel or twisted and placed within an overall shield and sheath.
- Duct:** An underground or overhead tube for carrying electrical conductors.
- Duplex:** Two-way data transmission on a four-wire transmission line.
- Duplex Cable:** A cable composed of two insulated single-conductor cables twisted together.
- Duplex Parallel:** Typically used in the thermo-couple industry to denote two parallel conductors of dissimilar metals insulated in parallel without twist and jacketed. Commonly applied to thermo-couple grades and extension wires.
- Durometer:** A measure of hardness.
- E:** Symbol for voltage. Usually used to represent direct voltage or the effective (root-mean-square) value of an alternating voltage.
- EFTS:** Abbreviation for Electronic Funds Transfer System.
- EIA:** Abbreviation for Electronic Industries Association.
- EMI:** Abbreviation for electromagnetic interference.
- EPDM:** Ethylene-propylene-diene monomer rubber.
- EPR:** Ethylene-propylene rubber.
- ESTA:** Australian approval agency, Electricity Trust of South Australia.
- ETPC:** Abbreviation for electrolytic tough pitch copper. It has a minimum conductivity of 99.9%.
- 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.
- Eddy Current:** Circulating currents induced in conducting materials by varying magnetic fields.
- Elastomer:** A rubber or rubber-like material which will stretch repeatedly to 200 percent or more and return rapidly and with force to its approximate original shape.
- Electro-Tinned:** Electrolytic process of tinning wire using pure tin.
- Electrode:** A conductor through which a current enters or leaves a nonmetallic conductor.
- Electromagnetic Coupling:** Energy transfer by means of a varying magnetic field.
- Electromagnetic Field:** A rapidly moving electric field and its associated moving magnetic field.
- Electromagnetic Induction:** The production of a voltage in a coil due to a change in the number of magnetic lines of force (flux linkages) passing through the coil.
- Electromotive Force (e.m.f.):** Pressure or voltage. The force which causes current to flow in a circuit.
- Electronic Wire and Cable:** A length of conductive or semiconductive material used in an electronic application.
- Elongation:** The fractional increase in the length of a material stressed in tension.
- Embossing:** A marker identification by means of thermal indentation leaving raised lettering on the sheath material of cable.
- Emergency Overload:** Load which occurs when larger-than-normal currents are carried through a cable or wire over a certain period of time.
- Enameled Wire:** A conductor with a baked-on enamel film insulation. In addition to magnet wire, enameled insulation is used on thermocouple-type wires and other wires.
- Ends:** In braiding, the number of essentially parallel wires of threads on a carrier.
- Energize:** To apply rated voltage to a circuit or device in order to activate it.
- Equilay:** More than one layer of helically laid wires with the direction of lay reversed for successive layers, but with the length of lay the same for each layer.
- Etched Wire:** A process applied to fluoroplastic wire in which the wire is passed through a sodium bath to create a rough surface to allow epoxy resin to bond the fluoroplastic.
- External Interference:** The effects of electrical waves or fields which cause sounds other than the desired signal; static.
- External Wiring:** Electronic wiring which interconnects subsystems within the system.
- Extruded Cable:** Cable with conductors which are uniformly insulated and formed by applying a homogeneous insulation material in a continuous extrusion process.
- Extrusion:** Method of continuously forcing plastic, rubber or elastomer material through an orifice to apply insulation or jacketing over a conductor or cable core.
- FAA:** Federal Aeronautics Administration.

Glossary

- FEF:** Fluorinated ethylene propylene.
- FI:** Approval agency of Finland; Electrical Inspectorate.
- FR-1:** A flammability rating established by Underwriters Laboratories for wires and cables that pass a specially designed vertical flame test.
- Farad:** A unit of electrical capacity.
- Fatigue Resistance:** Resistance to metal crystallization which leads to conductors or wires breaking from flexing.
- Feed-Through Insulators:** Insulators that carry a metal conductor through the chassis while preventing the 'hot' lead from shorting to the ground chassis.
- Feedthrough:** (1) A conductor that connects patterns on opposite sides of a PCB. Also called Interfacial Connection. (2) A connector or terminal block, usually having double-ended terminals which permit simple distribution and bussing of electrical circuits.
- Ferrule:** A short tube used to make solderless connections to shielded or coaxial cable.
- Fiber:** A thread or threadlike structure. Also, a single discrete element used to transmit optical (light wave) information.
- Fiber Optics:** A lightwave or optical communications system in which electrical information is converted to light energy transmitted to another location through optical fibers and is there converted back into electrical information.
- Fiber Tubing:** A loose, crush-resistant cylinder applied over individual fibers to provide mechanical protection.
- Field:** An area of influence around a magnet or electric charge.
- Field Coil:** A suitable insulated winding to be mounted on a field pole to magnetize it.
- Figure 8 Cable:** An aerial cable configuration in which the conductors and the steel strand which supports the cable are integrally jacketed. A cross-section of the finished cable approximates the figure "eight."
- Filament:** Fiber characterized by extreme length.
- Filled Cable:** A telephone cable construction in which the cable core is filled with a material that will prevent moisture from entering or passing through the cable.
- 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.
- Film:** A thin, plastic sheet.
- Fine Stranded Wire:** Stranded wire with component strands of 36 AWG or smaller.
- Flame Resistance:** The ability of a material not to propagate flame once the heat source is removable.
- Flammability:** The measure of the material's ability to support combustion.
- Flashover:** A disruptive discharge around or over the surface of a solid or liquid insulator.
- Flat Braid:** A woven braid of tinned copper strands rolled flat at time of manufacture to a specified width.
- Flat Cable:** A cable with two smooth or corrugated, but essentially flat, surfaces.
- Flat Conductor:** A wire having a rectangular cross-section as opposed to a round or square conductor.
- Flat Conductor Cable:** A cable with a plurality of flat conductors.
- Flex Life:** The measurement of the ability of a conductor or cable to withstand repeated bending.
- Flexibility:** The ease with which a cable may be bent.
- Flexible:** That quality of a cable or cable component which allows for bending under the influence of outside force, as opposed to limpness which is bending due to the cable's own weight.
- Floating:** Referring to a circuit which has no connection to ground.
- Flux:** (1) The lines of force which make up an electrostatic field. (2) The rate of flow of energy across or through a surface. (3) A substance used to promote or facilitate fusion.
- Foamed Plastics:** Insulations having a cellular structure.
- Foil:** A thin, continuous sheet of metal.
- Free Connector:** A connector for attachment to the free end of a wire or cable.
- Funnel Entry:** Flared or widened entrance to a terminal or connector wire barrel.
- Fuse Wire:** Wire made from an alloy that melts at a relatively low temperature.
- Fused Coating:** A metallic coating which has been melted and solidified, forming a metallurgical bond to the base material.
- Fused Conductors:** Individual strands of heavy tinned copper wire stranded together and then bonded together by induction heating.
- Fused Spiral Tape:** A PTFE insulated hookup wire. The spiral-wrapped conductor is passed through a sintering oven where overlaps are fused together.
- GTO:** Gast tube sign and oil-burner ignition cable. 5,000V-15,000V.
- Galvanometer:** An instrument for detecting or measuring small electrical current.
- Gas-Filled Cable:** A self-contained pressure cable in which the pressure medium is an inert gas having access to the insulation.
- Gauge:** A term used to denote the physical size of a wire.
- Gimmick:** A short length of wire soldered onto a circuit component and used as a small adjustable capacitor.
- Ground:** A conductive connection between an electrical circuit and the earth or other large conducting body to serve as an earth, thus making a complete electrical circuit.
- Ground Conductor:** A conductor in a transmission cable or line that is grounded.
- Ground Insulation:** The insulation used between a winding and the magnetic core or other structural parts, usually at ground potential.
- Ground Loop:** The generation of undesirable current flow within a ground conductor, owing to the circulation currents which originate from a second source of voltage.
- Ground Plane:** Expanded copper mesh which is laminated into some flat cable constructions as a shield.
- Ground Potential:** Zero potential with respect to the ground or earth.
- HPN:** Two-conductor, neoprene-insulated heater cord. Parallel construction. For use in damp locations.

Glossary

- HSJ:** Same as type HS but with #18, #16 and #14 conductors and differing thickness of jacket.
- Hard-Drawn Copper Wire:** Copper wire that has not been annealed after drawing.
- 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.
- Hash Mark Stripe:** A non-continuous helical stripe applied to a conductor for identification.
- Heat Distortion:** Distortion of flow of a material or configuration due to the application of heat.
- Heat Seal:** Method of sealing a tape-wrap jacket by means of thermal fusion.
- Heater Cord:** Flexible stranded copper conductor, cotton-wrapped with rubber insulation and asbestos roving.
- Helical Stripe:** A continuous, colored, spiral stripe applied to a conductor for circuit identification.
- Helix:** Spiral winding.
- Henry:** The unit of inductance.
- Hertz (Hz):** A term replacing cycles-per-second as an indication of frequency.
- Heterogeneous Insulation:** A cable insulating system composed of two or more layers of different insulating materials.
- Hi-Pot:** A test designed to determine the highest voltage that can be applied to a conductor without breaking through the insulation.
- High-Temperature Wire and Cable:** Electrical wire and cables having thermal operating characteristics of 150°C and higher.
- High Voltage:** Generally, a wire or cable with an operating voltage of over 600 volts.
- Holding Strength:** Ability of a connector to remain assembled to a cable when under tension.
- Homogeneous Insulation:** A complete cable insulation structure whose components cannot be identified as layers of different materials.
- Hook-Up Wire:** A wire used for low-current, low-voltage (under 1000 volts) applications within enclosed electronic equipment.
- Hot Stamping:** Method of alpha numerical coding. Identification markings are made by pressing heated type and marking foil into softened insulation surfaces.
- Hot Tin Dip:** A process of passing bare wire through a bath of molten tin to provide a coating.
- HS:** 600V-rated rubber-insulated heater cord.
- HSJ:** 300V-rated rubber-insulated heater cord.
- Hybrid Cable:** Multi-conductor cable containing two or more types of components.
- Hygroscopic:** Capable of absorbing moisture from the air.
- Hypalon:** DuPont's trade name for their chloro-sulfonated polyethylene, an ozone-resistant synthetic rubber.
- ICEA:** Abbreviation for Insulated Cable Engineers Association.
- IEC:** European Standardization agency, International Electrotechnical Commission.
- IEEE:** Abbreviation for Institute of Electrical and Electronics Engineers.
- Ignition Cable:** Cable designed for Automotive Ignition Systems.
- ISA:** Instrument Society of America.
- 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.
- Impedance Matching:** Connecting cables and devices together which have the same impedance value in ohms.
- Impulse:** A surge of unidirectional polarity.
- Impulse Strength:** The voltage breakdown of insulation under voltage surges on the order of microseconds in duration.
- Impulse Test:** An insulation test in which the voltage applied is an impulse voltage of specified wave shape.
- 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.
- Inductive Coupling:** Crosstalk resulting from the action of the electromagnetic field of one conductor on the other.
- Insertion Tool:** A small, hand-held tool used to insert contacts into a connector.
- Insulated Wire:** A conductor of electricity covered with a non-conducting material.
- Insulating Joint:** A device which mechanically couples and electrically insulates the sheath and armor of contiguous lengths of cable.
- Insulation:** A material having high resistance to the flow of electric current. Often called a dielectric in radio frequency cable.
- Insulation Adhesion:** The degree of tightness of the insulation over the base conductor measured in terms of force required to remove a specified length of insulation from the wire.
- Insulation Crimp:** The area of a terminal, splice or contact that has been formed around the insulation of the wire.
- Insulation Grip:** Extended cylinders at the rear of crimp-type contacts designed to accept the bared wire and a small length of its insulation.
- Insulation Piercing:** A method of crimping whereby lances cut the insulation of the wires and enter into the strands to make electrical contact.
- Insulation Resistance:** The ratio of the applied voltage to the total current between two electrodes in contact with a specific insulation, usually expressed in megohms-M feet.
- Insulation System:** All of the insulation materials used to insulate a particular electrical or electronic product.
- Integral Belt:** A layer of insulation or semi-conductive material applied by extrusion over two or more insulated, twisted or parallel conductors to form a round, smooth diameter.

Glossary

Interconnecting Cable: The wiring between modules, between units or the larger portions of a system.

Interconnecting Wire: The physical wiring between components (outside a module), between modules, between units or between larger portions of a system or systems.

Interconnection: Mechanically joining devices together to complete an electrical circuit.

Interface: The two surfaces on the contact side of both halves of a multiple-contact connector which face each other when the connector is assembled.

Internal Wiring: Electronic wiring which interconnects components, usually within a sealed subsystem.

Interstices: Voids or valleys between individual strands in a conductor or between insulated conductors in a multiconductor cable.

Ionization Voltage (Corona Level): The minimum value of falling rms voltage which sustains electrical discharge within the vacuous or gas-filled spaces in the cable construction or insulation.

Irradiation: In insulations, the exposure of the material to high-energy emissions for the purpose of favorably altering the molecular structure.

JAN Specification: Joint Army-Navy specification (replaced by current Military Specifications).

Jack: A plug-in type terminal widely used in electronic apparatus for temporary connections.

Jacket: A rubber or synthetic covering applied over primary insulation, braids, shields, cable components or over the cable itself. In fiber optics, a covering, frequently plastic, over a fiber bundle of fibers, or cable which protects against the environment.

Jumper: A short length of conductor used to make a temporary connection between terminals, around a break in a circuit or around an instrument.

Junction: A point in a circuit where two or more wires are connected.

kcmil: One thousand circular mils (MCM)

KEMA KEUR: Approval agency of the Netherlands.

KV: Kilovolt (1000 volts).

KVA: Kilovolt ampere.

KW: Kilowatt.

Kilo: A numerical prefix denoting 1000 (10^3).

Kynar: Pennwalt trade name for polyvinylidene fluoride. Typically used as insulation for wire wrap wire.

Lacing and Harnessing: A method of grouping wires by securing them in bundles of designated patterns.

Lacquer: A liquid resin or compound applied to textile braid to prevent fraying, moisture absorption, etc.

Laminated Tape: A tape consisting of two or more layers of different materials bonded together.

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.

Layer: Consecutive turns of a coil lying in a single plane.

Leaching and Non-Leaching: In a leaching wire, the plasticizer will migrate when exposed to heat. A non-leaching wire will retain its plasticizer under extreme temperature conditions and remain flexible after baking.

Lead: A wire, with or without terminals, that connects two points in a circuit.

Lead-Cured: A cable that is cured or vulcanized in a metallic lead mold.

Lead Dress: The placement or routing of wire and component leads in an electrical circuit.

Lead-in: The conductor or conductors that connect the antenna proper to electronic equipment.

Leakage Current: The undesirable flow of current through or over the surface of an insulation.

Life Cycle: A test to determine the length of time before failure in a controlled, usually accelerated, environment.

Limits of Error: The maximum deviation (in degrees of percent) of a thermocouple or thermocouple extension wire from standard emf-temperature to be measured.

Limpness: The ability of a cable to lay flat or conform to a surface.

Line Balance: The degree to which the conductors of a cable are alike in their electrical characteristics with respect to each other, to other conductors and to ground.

Line Drop: A voltage loss occurring between any two points in a transmission line due to the resonance reactance or leakage of the line.

Line Loss: The total of the various energy losses occurring in a transmission line.

Line Voltage: Voltage existing in a cable or circuit.

Local Area Network (LAN): A baseband or broadband interactive bi-directional communication systems for information exchange on a common transmission line.

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

Longitudinal Wrap: Tape applied longitudinally with the axis of the core being covered.

Loop Resistance: The total resistance of two conductors measured round trip from one end. Commonly used term in the thermocouple industry.

Looping-in: Wiring method which avoids tee joints by carrying the conductor or cable to and from the point to be supplied.

Loss: Energy dissipated without accomplishing useful work.

Loss Factor: The product of the dissipation and dielectric constant of an insulating material.

Lossy Line: A cable having large attenuation per unit of length.

Low-Loss Dielectric: An insulating material that has a relatively low dielectric loss, such as polyethylene or Teflon.

Low-Noise Cable: Cable configuration specially constructed to eliminate spurious electrical disturbances caused by capacitance changes or self-generated noise induced by either physical abuse or adjacent circuitry.

Low Tension: Low voltage, as applied to ignition cable.

Lug: Termination, usually crimped or soldered to the conductor, with provision for screwing on to the terminal.

Glossary

MATV: Acronym for Master Antenna Television System—a combination of components providing multiple television receiver operations from one antenna or group of antennas normally on a single building.

MCM: One thousand circular mils.

MHz: Megahertz.

MTW: Thermoplastic insulated machine tool wire.

Magnet Wire: Insulated wire intended for use in windings on motor, transformer and other coils for electromagnetic devices.

Magnetic Field: The region within which a body or current experiences magnetic force.

Magnetic Flux: The rate of flow of magnetic energy across or through a surface (real or imaginary).

Magnetic Noise: Caused by change in current level, e.g. ac powerline (creates magnetic field around the cable) this magnetic field causes the magnetic noise.

Marker Tape: A tape laid parallel to the conductors under the sheath in a cable, imprinted with the manufacturer's name and the specification to which the cable is made.

Meg or Mega: A numerical prefix denoting 1,000,000 (10^6).

Megarad: A unit for measuring radiation dosage.

Messenger: Supporting member, usually a high-strength steel wire, used to suspend aerial cable. The messenger may be an integral part of the cable, or exterior to it (lashed messenger).

Mft: A popular abbreviation for 1000 ft.

Mho: The unit of conductivity. The reciprocal of an ohm.

Micro: A numerical prefix denoting one-millionth (10^{-6}).

Microfarad: One-millionth of a farad, commonly abbreviated μF .

Micromicrofarad: One-millionth of a microfarad (uuf, uufd, mmf, mmfd, $\mu\mu F$ are common abbreviations.)

Microwave: A short (usually less than 30 cm.) electrical wave.

Mil: A unit used in measuring diameter of a wire or thickness of insulation over a conductor. One-one thousandth of an inch (.001").

Mineral Insulated: Cable and thermocouple wire consisting of one or more conductors surrounded by magnesium oxide insulation and enclosed in a liquid- and gas-tight metallic sheathing.

Miniature Wire: Insulated conductors of approximately 20-34 AWG.

Mining Cable: A Flame-retardant cable specially constructed to withstand severe physical abuse for underground use in mines or tunnels.

Mis-Match: A termination having a different impedance than that for which a circuit or cable is designed.

Mode: One of the components of a general configuration of a propagating wave front.

Modem: Device which places and receives data signals over a common carrier's communication facility.

Modulus of Elasticity: The ratio of stress to strain in an elastic material.

Moisture Absorption: The amount of moisture, in percentage, that a material will absorb under specified conditions.

Moisture Resistance: The ability of a material to resist absorbing moisture from the air or when immersed in water.

Molded Plug: A connector molded on either end of a cord or cable.

Monomer: The basic chemical unit used in building a polymer.

Motor Lead Wire: Wire which connects to the fragile magnet wire found in coils, transformers and stator or field windings.

Multiconductor: More than one conductor within a single cable complex.

Multiple-Conductor Cable: A combination of two or more conductors cabled together and insulated from one another and from sheath or armor where used.

Multiple-Conductor Concentric Cable: An insulated central conductor with one or more tubular stranded conductors laid over it concentrically and insulated from one another.

Multiplexing: Simultaneous transmission of two or more messages over the same cable pair.

Mutual Capacitance: Capacitance between two conductors when all other conductors, including ground, are connected together and then regarded as an ignored ground.

Mylar®: DuPont trademark for polyester film.

NEMA: National Electrical Manufacturers Association.

NEMKO: Approval agency of Norway.

NFPA: Abbreviation for National Fire Protection Association. Administrative Sponsor of the National Electrical Code® (ANSI Standards Committee C).

National Electrical Code®: A set of regulations governing construction and installation of electrical wiring and apparatus in the United States, established by the American National Board of Fire Underwriters.

National Electrical Code® Article 725: The NEC Article which covers remote control signal and communication power limited circuits that are not an integral part of the device or appliance.

National Electrical Code® Article 760: The NEC Article which covers the fire and burglar alarms installation of wire and equipment operating at 600 Volts or less.

National Electrical Code® Article 800: The NEC Article which covers telephone, telegraph as well as outside wiring for fire and burglar alarms.

NEC Type CL2: A Class 2 power-limited type cable for general use applications within a building under NEC Article 725, this type design is "Listed" by UL. These cables meet a 70,000 BTU flame test.

NEC Type CL2P: A Class 2 power-limited cable which is suitable for use in plenums in accordance with NEC Article 725. The cable meets the requirements of UL 910 the Steiner Tunnel test which classifies fire and smoke characteristics. The cable is "Listed" by UL.

NEC Type CL2R: A Class 2 power-limited cable which is suitable for use in riser shafts in accordance with NEC Article 725. These cables meet the UL 1666 flame test and are "Listed" by UL.

Glossary

- NEC Type CL2X:** A Class 2 power-limited cable which is suitable for restricted applications (sic . . . less than 0.25" in diameter in residences, exposed lengths less than 10-ft.) or else in raceways under NEC Article 725. These cables meet a VW-1 flame test and are "Listed" by UL.
- NEC Type CM:** A general application communications cable, Listed by UL, for use within buildings under NEC Article 800. It meets the requirements of the 70,000 BTU flame test.
- NEC Type FPL:** A general application fire-protection cable for use within buildings in accordance with NEC Article 760. These cables are Listed by UL and meet the 70,000 BTU flame test.
- Neoprene:** A synthetic rubber with good resistance to oil, chemical and flame. Also called polychloroprene.
- Non-Contaminating:** Type of PVC jacket material whose plasticizer will not migrate into the dielectric of a coaxial cable and thus avoids contaminating and destroying the dielectric.
- Nylon:** Thermoplastic with good chemical and abrasion 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.
- OVE:** Approval agency in Austria; Oesterreichischer Verband für Elektrotechnik (Austrian Electrotechnical Association).
- Off Center:** Conductor displaced within the cross-section of its insulation.
- Offgassing:** Percentage of a specified gas released during the combustion of insulation or jacketing material.
- Ohm:** A unit of electrical resistance.
- Oil Aging:** Cable aged in an accelerated manner by placement in an oil bath and heated to a pre-set temperature for a stated time.
- Oil-Filled Cable:** A self-contained pressure cable in which the pressure medium is low viscosity oil having access to the insulation.
- Open Cell:** Foamed or cellular material with cells which are generally interconnected.
- Oscillatory Surge:** A surge which includes both positive and negative polarity values.
- Outgassing:** The dissipation of gas from a dielectric evidencing decomposition.
- Overall Diameter:** Finished diameter over wire or cable.
- Overcoat Conductor:** A stranded conductor made from individual strands of tin-coated wire stranded together, and then given an overall tin coat.
- Overlap:** The amount the trailing edge laps over the leading edge of a spiral tape wrap.
- Oxygen Index:** Percentage of oxygen necessary to support combustion in a gas mixture.
- Ozone:** Reactive form of oxygen, typically found around electrical discharges and present in the atmosphere in small quantities.
- PCB:** Printed Circuit Board.
- PIC:** A general term for any type of plastic-insulated telephone cable.
- PLSJ:** All-rubber, parallel-jacketed, two-conductor, light-duty cord for pendent or portable use in damp locations. 300V.
- PLT:** Same as PLSJ, except thermoplastic insulation.
- POSJ:** All-rubber, parallel light-duty rip-cord for use on lamps and small appliances. 300V, 60°C.
- POT:** Thermoplastic, parallel, light-duty rip-cord. 300V, 60°C to 105°C.
- PTFE:** Abbreviation for Polytetrafluoroethylene.
- Packing Fraction:** (fiber optic) The ratio of active cross-sectional area of fiber core, or cores, to the total end surface of the fiber, or fiber bundle.
- Pair:** Two insulated wires of a single circuit associated together; also known as a "balance" transmission line.
- Parallel Pair:** A duplex construction of two insulated conductors laid parallel and then covered overall with a braid or jacket.
- Parallel Stripe:** A stripe applied longitudinally on a wire or cable parallel to the axis of the conductor.
- Patch Cable:** A cable with plugs or terminals on each end of the conductors to temporarily connect circuits of equipment together.
- Patch Cord:** Braid covered with plugs or terminals on each end to connect jacks or blocks in switchboards or programming systems.
- Pay-Off:** The process of feeding a cable or wire from a bobbin, reel or other package.
- Percentage Conductivity:** Conductivity of a material expressed as a percentage of that of copper.
- Periodicity:** The uniformly spaced variations in the insulation diameter of a transmission cable that result in reflections of a signal, when its wavelength or a multiple thereof is equal to the distance between two diameter variations.
- Permittivity:** See Dielectric Constant.
- Pick:** Distance between two adjacent crossover points of braid filaments. The measurement in picks per inch indicates the degree of coverage.
- Pico:** A numerical prefix denoting one-millionth of one-millionth (10^{-12}).
- Picofarad:** One-millionth of one-millionth of a farad. A micromicrofarad or picofarad (abbreviation pf). (See $\mu\mu F$).
- Pigtail Wire:** Fine-stranded, extra-flexible, rope-lay lead wire attached to a shield for terminating purposes.
- Pitch Diameter:** Diameter of a circle passing through the center of the conductors in any layer of a multiconductor cable.
- Pitch:** In flat cable, the nominal distance between the index edges of two adjacent conductors.
- Plain Conductor:** A conductor consisting of only one metal.
- Plain Weave:** A weave used on woven cables. Threads between the wires act as binders and give the cable lateral stiffness and linear flexibility. Also called Standard and Square Weave.
- Planetary Cabler:** A cabler capable of laying down any number of shielded overbraided or jacketed singles, pairs, called groups, or any combination of them in sequence.
- Planetary Twister:** A twisting machine whose payoff spools are mounted in rotating cradles that hold the axis of the spool in a fixed direction as the spools are revolved so the wire will not kink as it is twisted.
- Plastic Deformation:** Change in dimensions under load that is not recovered when the load is removed.
- Plasticizer:** A chemical agent added to plastics to make them softer and more pliable.

Glossary

- Plenum:** The air return path of a central air handling system, either ductwork or open space over a suspended ceiling.
- Plenum Cable:** Cable approved by a recognized agency such as UL for installation in plenums without the need for conduit.
- Plug:** The part of the two mating halves of a connector which is movable when not fastened to the other mating half.
- Ply:** The number of individual strands or filaments twisted together to form a single thread.
- Point-to-Point Wiring:** An interconnecting technique wherein the connections between components are made by wires routed between connecting points.
- Polarization:** The orientation of a flat cable or a rectangular connector.
- Polychloroprene:** Chemical name for neoprene.
- Polyester:** Polyethylene terephthalate extensively as a moisture resistant cable core wrap.
- Polyethylene:** A thermoplastic material having excellent electrical properties.
- Polyhalocarbon:** A general name for polymers containing halogen atoms. The halogens are fluorine, chlorine, bromine and iodine.
- Polymer:** A material of high molecular weight formed by the chemical union of monomers.
- Polyolefin:** Any of the polymers and copolymers of the ethylene family of hydrocarbons.
- Polypropylene:** A thermoplastic similar to polyethylene but stiffer and having higher softening point (temperature); excellent electrical properties.
- Polyurethane:** Class of polymers known for good abrasion and solvent resistance (may be applied in solid or cellular form).
- Polyvinyl Chloride:** A general-purpose thermoplastic widely used for wire and cable insulations and jackets.
- Porosity:** Multiple voids in an insulation cross-section.
- Potting:** The sealing of a cable termination or other component with a liquid which thermosets into an elastomer.
- Power Cables:** Cables of various sizes construction and insulation, single- or multi-conductor, designed to distribute primary power to various types of equipment.
- Power Factor:** The ratio of resistance to impedance. The ratio of the actual power of an alternating current to apparent power. Mathematically the cosine of the angle between the voltage applied and the current resulting.
- Pre-Bond:** Stranded wire which has been fused, topcoat-tinned, or overcoat-tinned.
- Primary Insulation:** The first layer of non-conductive material applied over a conductor whose prime function is to act as electrical insulation.
- Primary:** The transformer winding which receives the energy from a supply circuit.
- Printed Wiring:** A printed circuit intended to provide point-to-point electrical connections.
- Programming:** Ability to select various circuit patterns by interconnecting appropriate contacts on one side of a connector plug or panel.
- Propagation Delay:** Time delay between input and output of signal.
- Propagation Time:** Time required for a wave to travel between two points on a transmission line.
- Proximity Effect:** Nonuniform current distribution over the cross-section of a conductor caused by the variation of the current in a neighboring conductor.
- Pulling Eye:** A device used to pull cable into or from a duct.
- Pulse:** Energy which changes abruptly from an intensity to another. May be light energy or electrical energy.
- Pulse Cable:** A type of coaxial cable constructed to transmit repeated high-voltage pulses without degradation.
- Quad:** A series of four separately insulated conductors, generally twisted together in pairs. Also, a series-parallel combination of transistors with increased reliability because failure of one transistor will not disable the entire circuit.
- Quadders:** Three-bay machines which can twist four wires together and cable braided and shielded wires with varying lay lengths.
- Rated Voltage:** The maximum voltage at which an electrical component can be operated for extended periods without undue degradation or safety hazard.
- R-F:** Radio-frequency.
- REA:** Abbreviation for Rural Electrification Administration.
- RG/U:** General utility-grade military coaxial cable.
- Random Winding:** A winding in rotating equipment wherein the wires do not lie in an even pattern.
- Reactance:** The opposition offered to the flow of alternating current by inductance or capacitance of a compound or circuit.
- Red Plaque:** A powdery, brown-red growth found on silvercoated copper conductors and shield braids.
- Redraw:** The consecutive drawing of wire through a series of dies to reach a desired wire size.
- Reducing Joint:** A joint between two lengths of cable where the conductors are not the same size.
- Reel:** A revolvable flanged device made of wood metal, used for winding flexible metal wire or cable.
- Reflection Loss:** The part of a signal which is lost due to reflection of power at a line discontinuity.
- Reinforced Sheath:** The outermost covering of a cable that has cable sheath constructed in layers with the addition of a reinforcing material, usually a braided fiber, molded in place between layers.
- Remanence:** The magnetic induction that remains in a magnetic circuit after the removal of an applied magnetomotive force.
- Resistance:** A measure of the difficulty in moving electrical current through a medium when voltage is applied. It is measured in ohms.
- Resistive Conductor:** A conductor with high electric resistance.
- Restriction on Hazardous Substances (RoHS):** The European Commission's Directive 2002/95/EC, adopted January 27, 2003, also known as "RoHS," which restricts the use of certain hazardous substances in electrical and electronic equipment.
- Retractable Cord:** A cord having specially treated insulation or jacket so that it will retract.
- Return Wire:** A ground wire or the negative wire in a direct-current circuit.

Glossary

Ribbon Cable: A flat cable of individually insulated conductors lying parallel and held together by means of adhesive or woven textile yarn.

Ridge Marker: One or more ridges running laterally along the outer surface of a plastic-insulated wire for purposes of identification.

Rigid Bay: Cabling equipment that maintains component sequence, and can produce cables with distinct layers.

Rigid Coaxial Cable: Nonflexible coaxial cable, usually a metal tube-armored coaxial cable.

Ring Tongue: A solderless terminal that connects wire to a stud.

Ringing Out: Locating or identifying specific conductive paths by passing current through selected conductors.

Rip-Cord: Two or more insulated conductors in a parallel configuration which may be separated to leave the insulation of each conductor intact.

Rope Concentric: A group of standard conductors assembled in a concentric manner.

Rope Lay Conductor: A conductor composed of a central core surrounded by one or more layers of helically laid groups of wires.

Rope Unilay: A group of stranded conductors assembled in a unilay manner.

Round Wire Shields: Shields constructed from bare, tinned or silver-plated copper wire that include braided, spiral and reverse spiral.

Rubber (Wire Insulation): Term used to describe wire insulations made of thermosetting elastomers, occur naturally or may be made synthetically.

Rulan: DuPont's trade name for their flame-retardant polyethylene insulating material.

S: Heavy-duty, rubber-insulated portable cord. Stranded 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.

SAE: Society of Automotive Engineers.

SANZ: Standards Association of New Zealand.

SBR: Copolymer of styrene and butadiene. Most commonly used type of synthetic rubber.

Secondary Insulation: A nonconductive material that protects the conductor against abrasion and provides a second electrical barrier.

Segmental Conductor: A stranded conductor consisting of three or more stranded conducting elements, each element having approximately the shape of the sector of a circle, assembled to give a substantially circular cross-section.

Selenium Cure: Process used to cure neoprene and rubber-jacketed wires and cables.

Self-Extinguishing: Characteristic of a material whose flame is extinguished after the igniting flame source is removed.

Semi-Conducting Jacket: A jacket having a sufficiently low resistance so that its outer surface can be kept at substantially ground potential.

Semi-Rigid: A cable containing a flexible inner core and a relatively inflexible sheathing.

Semi-Solid: An insulation cross-section having a partially open space between the conductor and the insulation perimeter.

SEMKO: Approval agency for Sweden.

Separator: A layer of insulating material which is placed between a conductor and its dielectric, between a cable jacket and the components it covers or between various components of a multiple-conductor cable.

Serve: A filament or group of filaments such as fibers or wires, wound around a central core.

Serving: A wrapping applied over the core of a cable or over a wire.

Sheath: The outer covering or jacket of a multi-conductor cable.

Shield Coverage: Amount of outer cable covered by the shielding material.

Shield Effectiveness: The ability of a shield to screen out undesirable signals.

Shield: In cables, a metallic layer placed around a conductor or group of conductors to prevent electrostatic or electromagnetic interference between the enclosed wires or external fields.

Shielded Line: A transmission line whose elements confine propagated radio waves to an essentially finite space inside a tabular conducting surface called the sheath, thus preventing the line from radiating radio waves.

Shielded-Type Cable: A cable in which the surface of the insulation is at ground potential.

Shunt Wire: A conductor joining two parts of an electric circuit to divert part of the current.

Signal: A current used to convey information, either digital, analog, audio or video.

Silicone: A material made from silicon and oxygen. Can be in thermosetting elastomer or liquid form. The thermosetting elastomer form is noted for high heat resistance.

Silicone Treating: A silicone liquid treatment applied to insulated conductors to allow for easy jacket stripping.

Single-Faced Tape: Fabric tape finished on one side with a rubber or synthetic compound.

Sizing: Applying a material to a surface to fill pores.

SJ: Junior hard-service, rubber-insulated pendant or portable cord. Same construction as type S, but 300V. Jacket thickness different.

SJO: Same as SJ, but carolprene, oil-resistant compound outer jacket. Can also be made "water-resistant." 300V, 60°C.

SJT: Junior hard-service thermoplastic or rubber-insulated conductors with overall thermoplastic jacket. 300V, 60°C to 105°C.

SJTO: Same as SJT but oil-resistant thermoplastic outer jacket. 60°C.

SJOO: Same as SJO with oil-resistant insulation.

SJOOW: Same as SJOO with the added UL + CSA Approval for outdoor use and water resistance.

Skeleton Braid: Widely separated braid of fiber copper, or steel, used to hold core together, for reinforcing jacket or for shielding.

Skin Tape: Filled tape coated on one or both sides with a thin film of uncured rubber or synthetic compound to produce a coating suitable for vulcanization.

Skin Effect: The tendency of alternating current as its frequency increases, to travel only on the surface of a conductor.

Glossary

- Sleeve:** A braided, knifed or woven tube used over wires or components as insulation tubing. Also called sleeving.
- Solid Conductor:** A conductor consisting of a single wire.
- SO:** Hard-service cord, same construction as type S except oil-resistant Carolprene® jacket. 600V, 60° to 90°C
- SOO:** Same as SO with oil-resistant insulation.
- SOOW:** Same as SOO with the added UL + CSA Approval for outdoor use and water resistance.
- SOW:** Same as SO with the added UL and CSA approval for outdoor use and water resistance.
- SP-1:** All-rubber, parallel-jacketed two-conductor light-duty cord for pendant or portable use in damp locations. 300V.
- SP-2:** Same as SP-1, but heavier construction, with or without third conductor for grounding purposes. 300V.
- SP-3:** Same as SP-2 but heavier construction for refrigerators or room air conditioners. 300V.
- SPT-1:** Same as SP-1, except all-thermoplastic. 300V. With or without third conductor for grounding.
- SPT-2:** Same as SP-2 except all-thermoplastic. 300V. With or without third conductor for grounding.
- SPT-3:** Same as SP-3, except all-thermoplastic. 300V. With or without third conductor for grounding.
- Span:** In flat conductors, distance between the reference edge of the first and the last conductor. In round conductors, distance between centers of the first and last conductors.
- Spark Test:** A test designed to locate pin-holes 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 the electrode field.
- Specific Gravity:** The ratio of the density (mass per unit volume) of a material to that of water.
- Spiral Shield:** A metallic shield of fine-stranded wires applied spirally rather than braided.
- Spiral Stripe:** A color-coding stripe applied helically to the surface of an insulated wire or cable.
- Spiral Wrap:** The helical wrap of a tape or thread over a core.
- Splice:** A connection of two or more conductors or cables to provide good mechanical strength as well as good conductivity.
- SRD:** Portable range or dryer cable. Three or four rubber-insulated conductors with rubber or neoprene jacket, flat or round construction. 300V, 60°C.
- SRDT:** Same as SRD, except all-thermoplastic with a maximum temperature of 90°C.
- ST:** Hard-service cord, jacketed, same as type S except all-plastic construction. 600V, 60°C to 105°C.
- Standing Wave Ratio:** In a transmission line, waveguide or analogous system, a figure of merit used to express the efficiency of the system in transmitting power.
- Stay Cord:** A component of a cable used to anchor the cable ends at their points of termination and to keep any pull of the cable from being transferred to the electrical connections.
- STO:** Same as ST but with oil-resistant thermoplastic outer jacket. 600V, 60°C.
- Strand:** One of the wires of any stranded conductor.
- Strand Lay:** The distance of advance of one strand of a spirally stranded conductor, in one turn, measured axially.
- Stranded Conductor:** A conductor composed of groups of wires twisted together.
- Strap:** Square- or rectangular-section bare conductor manufactured and used in coil form.
- Strip:** To remove insulation from a cable.
- Structural Return Loss:** Backward-reflected energies from uneven parts of the cable structure are termed structural return loss.
- Surface Resistivity:** The resistance of a material between two opposite sides of a unit square of its surface. It is usually expressed in ohms.
- SV:** Vacuum cleaner cord two- or three-conductor rubber-insulated. Overall rubber jacket. For light duty in damp locations. 300V, 60°C.
- SVO:** Same as SV except carolprene jacket, 300V, 60°C.
- SVT:** Same as SV except all-plastic construction. With or without third conductor for grounding purposes only. 300V, 60°C to 90°C.
- Sweep Test:** A test given to check attenuation by oscilloscope, as in coaxial cable.
- TEW:** Canadian Standard Association type appliance wires. Solid or stranded single-conductor, plastic-insulated. 600V, 105°C.
- TF:** Fixture wire, thermoplastic-covered solid or 7-strands. 60°C.
- TFE:** Teflon® (tetrafluoroethylene).
- TFF:** Same as TF but flexible stranding. 60°C.
- THHN:** 90°C, 600V nylon jacketed building wire.
- THW:** Thermoplastic vinyl-insulated building wire. Flame-retardant, moisture- and heat-resistant. 75°C. Dry and wet locations.
- THWN:** Same as THW but with nylon jacket overall. 75°C.
- TW:** Thermoplastic vinyl-jacketed building wire, moisture-resistant 60°C.
- Take-Up:** The process of accumulating wire or cable onto a reel, bobbin or some other type of pack. Also, the device for pulling wire or cable through a piece of equipment or machine.
- Tank Test:** A voltage dielectric test in which the test sample is submerged in water and voltage is applied between the conductor and water as ground.
- Tape:** A relatively narrow woven or cut strip of fabric, paper or film material.
- Tape Cable:** A form of multiple-conductor consisting of parallel metal strips imbedded in insulating material.
- Tape Wrap:** A spirally applied tape over an insulated or uninsulated wire.
- Taped Insulation:** Insulation of helically wound tapes applied over a conductor or over an assembled group of insulated conductors.
- Taping:** Process of insulating continuous-length, large-diameter wires with tape of nonextrudable materials.
- Tear Strength:** The force required to initiate or continue a tear in a material under specified conditions.

Glossary

Teflon®: DuPont's trade name for fluorocarbon resins. FEP, PFA and TFE are typical materials.

Tefzel: DuPont's trade name for a fluorocarbon material typically used as a wire wrap insulation.

Telemetry Cable: Cable used for transmission of information from instruments to the peripheral recording equipment.

Temperature Rating: The maximum temperature at which an insulating material may be used in continuous operation without loss of its basic properties.

Tensile Strength: The pull stress required to break a given specimen.

Tension Member: A member included in a fiber cable to add tensile strength.

Terminals: Metal wire termination devices designed to handle one or more conductors, and to be attached to a board bus or block with mechanical fasteners or clipped on.

Test Lead: A flexible, insulated lead wire used for making tests, connecting instruments to a circuit temporarily or for making temporary electrical connections.

Textile Braid: Any braid made from threads of cotton, silk or synthetic fibers.

Thermal Aging: Exposure to a thermal condition or programmed series of conditions for predetermined periods of time.

Thermocouple Lead Wire: An insulated pair of wires used from the couple to a junction box.

Thermoplastic: A material which softens when heated and becomes firm on cooling.

Thermoset: A material which hardens or sets when heat is applied, and which, once set cannot be resoftened by heating. The application of heat is called "curing."

Three-Phase Current: Current delivered through three wires, with each wire serving as a return for the other two.

Three-Phase Three-Wire System: An alternating current supply system comprising three conductors over which three-phase power is sent.

Three-Wire System: A d-c or single-phase a-c system comprising three conductors, one of which is maintained at a potential midway between the potential of the other two.

Tin Overcoat (TOC): Tinned copper wire stranded, then coated with pure tin.

Tinsel Wire: A low-voltage stranded wire with each strand a very thin conductor ribbon spirally wrapped around a textile yarn.

Topcoat: Bare (untinned) copper wire, stranded then coated with pure tin.

Tracer: A means of identifying polarity.

Transmission: Transfer of electric energy from one location to another through conductors or by radiation or induction fields.

Transmission Cable: Two or more transmission lines. See Transmission Line.

Transmission Line: A signal-carrying circuit with controlled electrical characteristics used to transmit high-frequency or narrow-pulse signals.

Transmission Loss: The decrease or loss in power during transmission of energy from one point to another. Usually expressed in decibels.

Transposition: Interchanging the relative positions of wires to neutralize the effects of induction to or from other circuits or, to minimize interference pickup by the lead-in during reception.

Tray: A cable tray system is an assembly of units or sections, and ancillary filings, made of noncombustible materials used to support cables. Cable tray systems include ladders troughs channels, solid bosom trays and similar structures.

Tray Cable: A factory-assembled multi-conductor or multipair control cable approved under the National Electrical Code for installation in trays.

Triaxial: A three-conductor cable with one conductor in the center, a second circular conductor shield concentric with the first, and third circular conductor shield insulated from and concentric with the first and second, usually with insulation, and over a braid or impervious sheath overall.

Triboelectric Noise: Noise generated in a shielded cable due to variations in capacitance between shielding and conductor as the cable is flexed.

Triple Cable: A cable composed of three insulated single conductors and one bare conductor all twisted together. It may or may not have a common covering of binding.

True Concentric: A cable in which each successive layer has a reversed direction of lay from the preceding layer.

Tubing: A tube of extruded nonsupported plastic material.

Twin Cable: A pair of insulated conductors twisted, sheathed or held together mechanically and not identifiable from each other in a common covering.

Twin Coaxial: A configuration containing two separate complete coaxial cables laid parallel or twisted around each other in one complex.

Twin Line: A transmission line which has a solid insulating material, in which the two conductors are placed in parallel to each other.

Twiner: A device for twisting together two conductors.

Twisted Pairs: A cable composed of two small insulated conductors twisted together without a common covering.

UF: Thermoplastic underground feeder and branch circuit cable.

UHF: Abbreviation for ultra high frequency, 300 to 3,000 MHz.

UL: Underwriters Laboratories, Inc.

UTE: Approval agency for France; Union Technique de l'Electricite.

Unbalanced Line: A transmission line in which voltages on the two conductors are unequal with respect to ground.

Unidirectional Concentric Stranding: A stranding where each successive layer has a different lay length, thereby retaining a circular form without migration of strands from one layer to another.

Unidirectional Stranding: A term denoting that in a stranded conductor, all layers have the same direction of lay.

Unilay Strand: A conductor constructed with a central core surrounded by more than one layer of helically-laid wires, with all layers having a common length and direction of lay.

VDE: German approval agency.

VHF: Abbreviation for very high frequency, 30 to 300 MHz.

VSWR: Abbreviation for volume standing wave ratio.

Glossary

VW-1: A flammability rating established by Underwriters Laboratories for wires and cables that pass a specially designed vertical flame test (formerly designated FR-1-).

Velocity of Propagation: The speed of an electrical signal down a length of cable compared to speed in free space expressed as a percent. It is the reciprocal of the square root of the dielectric constant of the cable insulation.

Volt: A unit of electromotive force.

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

Voltage Drop: A term used to express the amount of voltage loss in a conductor of given size and length drawing a given current.

Voltage Rating: The highest voltage that may be continuously applied to a wire in conformance with standards or specifications.

Voltage Standing Wave Ratio (VSWR): The ratio of the maximum effective voltage to the minimum effective voltage measured along the length of a mis-matched radio frequency transmission line.

Volume Resistivity (Specific Insulation Resistance): The electrical resistance between opposite faces of a 1 cm. cube of insulating material commonly expressed in ohms/centimeter.

Vulcanization: A chemical reaction in which the physical properties of an elastomer are changed by reacting it with sulfur or other cross-linking agents.

Wall Thickness: The thickness of the applied insulation or jacket.

Water Absorption: A test to determine the water absorbed by a material after a given immersion period.

Waterblocked Cable: A cable constructed with no internal voids in order to allow no longitudinal water passage under a given pressure.

Watt: A unit of electric power.

Wave Length: The distance, measured in the direction of propagation, of a repetitive electrical pulse or waveform between two successive points that are characterized by the same phase of vibration.

Wicking: The longitudinal flow of a liquid in a wire or cable due to capillary action.

Wire: A conductor, either bare or insulated.

Wire Gauge: A system of numerical designation of wire sizes.

Wire Nut: A closed-end splice that is screwed on instead of crimped.

Wire Wrapped Connection: A solderless connection made by wrapping bare wire around a square or rectangular terminal with a power or hand tool.

Wire Wrapping Tools: Portable electric tools and automatic stationary machines used to make solderless wrapped connections of wires to terminals.

Wire and Cable Marker: Device for identification marking of wire and cable.

Wire and Cable Tying, Clamping and Harnessing Devices: Tying faces lacing cords and flexible sleeveings which are used for wire and cable bundling, harnessing and holding. Other devices include plastic ties or clamps, spiral-cut plastic tubing and plastic U-shaped trays or ducts.

Wire and Lead Cutters: Tools for cutting range from plier-type cutters to semiautomatic or fully automatic machines integrated with other wire processing operations such as stripping, forming and terminating.

Wrapper: An insulating barrier applied as a sheet or tape wrapped around a co-1 periphery.

XLPE: Crosslinked polyethylene.

Yield Strength: The minimum stress at which a material will start to physically deform without increase in load.

Zytel: DuPont's trade name for nylon resins.

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