

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.

ACAR — 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.

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 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.

AEIC — Association of Edison Illuminating Companies.

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

AF — Audio frequency.

AGC — Automatic gain control.

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

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

AIR CORE 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).

AMPACITY — 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.

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.

GLOSSARY

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.

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.

ASKAREL — 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.

BELDFOIL® — 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.

BIRDCAGE — The undesired 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.

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 multicontact 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 which 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 Guide.

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.

BUILDING WIRE — Commercial wires used in the building trades such as: Types RHH, RHW, THW, and THHN 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 floatation 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 at 600 volt.

BYTE — Generally, an 8-bit quantity of information, used mainly in referring to parallel data transfer, semiconductor capacity, and data storage; also generally referred to in data communications as an octet or character.

C

C — Symbol for capacitance and centigrade.

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, BORE-HOLE — The term given vertical riser cables in mines.

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

GLOSSARY

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, SPACER — An aerial distribution cable made of covered conductors held in place by insulated spacers; designed for wooded areas.

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

CABLE, TRAY — A multiconductor cable having a nonmetallic jacket, designed for use in cable trays per the National Electrical Code.

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 $1/(6.28 fC)$ 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. Also, 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.

CAVASITE CORD — 2 conductors, stranded copper, rubber insulation and braid twisted together and finished with weather proof braid.

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).

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.

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.

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% 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% 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% 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%).

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 preshaped (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.

GLOSSARY

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.

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.

COUNTER-POISE WIRE — Bare copper wire used to offset the impact of lightning surges along high-voltage overhead lines and around the base of towers. Buried counter-poise 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 — Dow Chemical trademark for chlorinated polyethylene. A jacketing compound.

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 "XLP" 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.

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

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

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

CT — Cable Tray, NEC Art. 318. 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.

DC RESISTANCE — See resistance.

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.

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.

GLOSSARY

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 undesired 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.

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.

DUOFOIL® — 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 chlorotrifluoroethylene. Halar is an Ausimont Co. 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 Association. 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.

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).

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

EMA — (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 thermoset 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, EPM, 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.

EPRDM — 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. Tefzel 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%.

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 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 — 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 (μf), 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.

FDDI (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.

FEP — Fluorinated ethylene propylene. Teflon is DuPont's trademark for this material.

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

FFH-2 — A UL type of fixture wire with a 600 V rating.

FIBER DISPERSION — Pulse spreading in an optical fiber caused by differing transit times of various modes.

FIBER OPTICS — Transmission of energy by light through glass fibers. A technology that uses light as an information carrier. Fiber optic cables (light guides) are a direct replacement for conventional cable and wire pairs. The glass-based transmission cable occupies far less physical volume for an equivalent transmission capacity; the fibers are immune to electrical interference.

FIBER TUBING — A loose, crush-resistant cylinder applied over individual fibers to provide mechanical protection. Also called a buffer tube.

FIELD COIL — A suitable insulated winding mounted on a field pole to magnetize it.

GLOSSARY

FIELD MOLDED SPLICE — A joint in which the solid dielectric joint insulation is fused and cured thermally at the job site.

FIELD TESTS — Tests which may be made on a cable system after installation as an acceptance or proof test.

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".

FILLED CABLE — A cable construction in which the cable core is filled with a material that will prevent moisture from entering or passing through the cable.

FILLER — Fillers are used in multiconductor cables which occupy the interstices formed by the assembled conductors. This is done so that the finished cable will be round.

FILLING COMPOUND — A dielectric material poured or injected into a splice housing or cable to prevent the entry of water. Filling compounds may require heating or mixing prior to filling. Some filling compounds may also serve as the insulation.

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 to not propagate flame once the heat source is removed.

FLAMMABILITY — The measure of a 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 the time of manufacture to a specified width.

FLAT CABLE — A cable with two essentially flat surfaces.

FLAT CONDUCTOR — A wire having a rectangular cross section as opposed to a round or square conductor.

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 an outside force, as opposed to limpness which is bending due to the cable's own weight.

FLOATING — Refers to a circuit which has no electrical connection to ground.

FLUOROPOLYMER — A class of polymers used as insulating and jacketing materials. Common ones include Teflon, Tefzel, Kynar, and Halar.

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.

FM — Frequency Modulation. A modulation technique in which the carrier frequency is shifted by an amount proportional to the value of the modulating signal. The deviation of the carrier frequency determines the signal content of the message.

FOAMED INSULATION — Insulations having a cellular structure.

FOIL — A thin, continuous sheet of metal.

FREQUENCY — The number of cycles per second at which an analog signal occurs, expressed in Hertz (Hz). One Hertz is one cycle per second.

FREQUENCY ANALYZER — An instrument to measure the intensity of various component frequencies from a transmitting source.

FREQUENCY COUNTER — An electronic measuring instrument that counts the number of cycles of a periodic electrical signal during a given time interval.

FREQUENCY MODULATION (FM) — Method of encoding a carrier wave by varying the frequency of the transmitted signal.

FREQUENCY PLAN — Specification of how the various frequencies of a broadband cable system are allocated for use.

"F" TYPE CONNECTOR — A low cost connector used by the TV industry to connect coaxial cable to equipment.

FULL DUPLEX — Two-way communications in which each modem simultaneously sends and receives data at the same rate.

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 heavily tinned copper wire stranded together and then bonded together by induction heating.

FUSED SPIRAL TAPE — A PTFE insulation often used on hookup wire. The spiral wrapped tape is passed through a sintering oven where the overlaps are fused together.

G

G — A UL cable type. Rubber insulated, neoprene, Hypalon or CPE jacketed portable power cable with two to five #8 AWG or larger conductors with ground wires.

GALVANIZED STEEL WIRE — Steel wire coated with zinc.

GANG STRIP — Stripping all or several conductors simultaneously.

GAS FILLED CABLE — A self-contained pressurized 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.

GAUSS — A unit of magnetic induction (flux density) equal to 1 maxwell per square centimeter.

GENERAL PURPOSE INSTRUMENTATION BUS — (GPIB) A protocol standard defined by the IEEE.

GFI — Ground Fault Interrupter. A protective device that detects abnormal current flowing to ground and then interrupts the circuit.

G-GC — A UL cable type. A portable power cable similar to Type G, but also having a ground check conductor to monitor the continuity of the grounding circuit.

GHZ — Gigahertz; 1,000,000,000 cycles per second.

GIGA — A numerical prefix denoting one billion (10^9).

GND — Ground.

GROUND — A voltage reference point that is the same as earth or chassis ground.

GROUND CONDUCTOR — A conductor in a transmission cable or line that is grounded.

GROUND FAULT — See Fault, Ground.

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.

GROUNDING NEUTRAL — The neutral wire that is metallically connected to ground.

GTO — Gas tube sign and oil-burner ignition cable, 5 kV–15 kV.

GUY — A tension wire connected to a tall structure and another fixed object to add strength to the structure.

H

HALAR — Ausimont Co. trademark for ethylene chlorotrifluoroethylene (ECTFE).

HALF DUPLEX — Two-way communications in which data is sent in only one direction at a time.

HARD-DRAWN WIRE — As applied to aluminum and copper, wire that has been cold drawn to final size so as to approach the maximum strength attainable.

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 noncontinuous helical stripe applied to a conductor for identification.

HAZARDOUS LOCATION — Ignitable vapors, dust, or fibers that may cause fire or explosion as defined in Article 500 of the NEC.

HDPE — High density polyethylene.

HDTV — High definition television.

HDX — Half-Duplex Transmission. Transmission in either direction but not in both directions simultaneously. Compare with full-duplex transmission.

HEAD-END — A central point in broadband networks that receives signals on one set of frequency bands and retransmits them on another set of frequencies.

HEAT DISTORTION — Distortion or 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.

HEAT SHOCK — A test to determine stability of material by sudden exposure to a high temperature for a short period of time.

HEAT SINK — A device that absorbs heat.

HEATER CORD — A group of cable types defined in Article 400 of the NEC. Types HPD, HPN, HS, HSJ, HSJO and HSO.

HELICAL STRIPE — A continuous, colored, spiral stripe applied to a conductor for circuit identification.

HELIX — Spiral winding.

HENRY — A unit of inductance equal to the inductance of a current changing at the rate of 1 ampere per second inducing a counter electromotive force of 1 volt.

HERTZ (Hz) — Cycles per second. A cycle that occurs once every second has a frequency of 1 Hertz. The bandwidth of the average phone line is between 300 and 3,000 cycles per second.

HF — High Frequency.

HID — High Intensity Discharge as in mercury metal halide and sodium lamps.

HIGH BOND INSULATION — Insulation exhibiting great bond strength to the conductors.

HIGH-SPLIT — A broadband cable system in which the bandwidth utilized to send toward the head-end (reverse direction) is approximately 6 MHz to 180 MHz, and the bandwidth utilized to send from the head-end (forward direction) is approximately 220 MHz to 400 MHz. The guard band between the forward and reverse directions (180 MHz to 220 MHz) provides isolation from interference.

HIGH TEMPERATURE WIRE AND CABLE — Electrical wire and cables having thermal operating characteristics of 150°C and higher.

HIGH TENSION CABLES — Generally the high voltage ignition wires for combustion engines, gas and oil ignitors, or neon signs, etc. (Unshielded.) Usually Type GTO.

HIGH-VOLTAGE CABLE TERMINATION — A device used for terminating alternating current power cables having laminated or extruded insulation rated 2.5 kV and above.

HIGH-VOLTAGE POWER (system voltage ratings) — A class of system voltages equal to or greater than 69,000 volts or less than 230,000 volts.

HINGE CABLE — A cable connected between a hinged or swinging device and a stationary object.

HIPOT — A DC high potential test used on medium and high voltage cables. See Dielectric Strength Testing.

HMWPE — High molecular weight polyethylene.

HOLDING STRENGTH — Ability of a connector to remain assembled to a cable when under tension.

HOOKUP WIRE — Small wires used to hook up instruments or electrical parts, usually 12 AWG and smaller.

HOT MODULUS — Stress at 100% elongation after 5 minutes of conditioning at a given temperature (normally 130°C).

HOT STAMPING — Method of alphanumeric coding. Identification markings are made by pressing heated tape and marking foil into softened insulation surfaces.

HOT STICK — A long insulated stick having a hook at one end which is used to open energized switches, etc.

HOT TIN DIP — A process of passing bare wire through a bath of molten tin to provide a coating.

HOUSING — A metallic or other enclosure for an insulated splice.

HPD — A UL cable type. Two, three or four conductor heater cord with thermoset insulation and cotton or rayon outer covering. For use in dry locations.

HPN — A UL cable type. Two or three conductor, thermosetting-insulated heater cord. Parallel construction. For use in damp locations.

HSO — A UL cable type. Thermoset jacketed heater cord.

HV — High Voltage.

GLOSSARY

HYBRID CABLE — Multiconductor cable containing two or more types of components.

HYDROSCOPIC — Readily absorbing and retaining moisture.

HYGROSCOPIC — Readily absorbing and retaining moisture.

HYPALON — DuPont's trademark for chlorosulphonated polyethylene (CSP).

HYPOT[®] — (see hipot) Registered trade name of Associated Research, Inc. for their high-voltage tester.

HYSTERESIS — The time lag exhibited by a body in reacting to changes in forces affecting it; an internal friction.

Hz — Hertz. A measure of frequency or bandwidth equal to one cycle per second. Named after experimenter Heinrich Hertz.

I

I — Symbol used to designate current.

IACS — International Annealed Copper Standard for copper used in electrical conductors. 100% conductivity at 20°C is 0.017241 ohm-mm²/m.

ICEA — Insulated Cable Engineers Association. The association of cable manufacturing engineers who make nationally recognized specifications for cables. Formerly IPCEA.

IEC — International Electrotechnical Commission.

IEEE — Institute of Electrical and Electronic Engineers. An international professional society that issues its own standards and is a member of ANSI and ISO.

IEEE 10BASE2 Network — A network conforming to the IEEE 802.3 local area network standard. The network is capable of carrying information at rates up to 10 Mbps over distances up to 2,800 meters (9,184 feet).

IEEE 10BROAD36 — 10 million bits per second over broadband coaxial cable with node-to-node coverage of 3,600 meters. The IEEE 802.3 specification for running Ethernet on broadband.

IEEE-488 — An IEEE standard for a parallel interface bus consisting of eight bidirectional data lines, eight control lines, and eight signal grounds, which provides for connection to an IEEE-488 device.

IEEE-802 — Standards for the interconnection of local networking computer equipment. The IEEE-802 standard deals with the Physical Link Layers of the ISO Reference Model for OSL.

IEEE 802.3 — An IEEE standard describing the physical and data link layers of a local area network based on bus topology and CSMA/CD.

IEEE 802.4 — A physical layer standard specifying a LAN with a token-passing access method on a bus topology. Used with Manufacturing Automation Protocol LANs.

IEEE 802.5 — A physical layer standard specifying a LAN with a token-passing access method on a ring topology. Used by IBM's token ring hardware.

IEEE 802.7 — A proposed physical layer standard specifying a LAN using both 802.3 and 802.4 standards.

IF — Intermediate-frequency.

IMPACT TESTS — Tests designed to reveal the behavior of material of a finished part if it were subjected to impact or shock loading.

IMPEDANCE — The total opposition a circuit, cable, or component offers to alternating current. It includes both resistance and reactance and is generally expressed in ohms.

IMPEDANCE, HIGH — Generally, the area of 25,000 ohms or higher.

IMPEDANCE, LOW — Generally, the area of 1 through 600 ohms.

IMPEDANCE MATCH — A condition whereby the impedance of a particular cable or component is the same as the impedance of the circuit, cable, or device to which it is connected.

IMPEDANCE MATCHING STUB — A section of transmission line or a pair of conductors cut to match the impedance of a load. Also called matching stub.

IMPEDANCE MATCHING TRANSFORMER — A transformer designed to match the impedance of one circuit to that of another.

IMSA — International Municipal Signal Association.

IN-BAND SIGNALING — The transmission of signalling information at some frequency or frequencies that lie within a carrier channel normally used for information transmission.

INCOHERENT SOURCE — A fiber optic light source which emits wide, diffuse beams of light of many wave lengths.

INDEX EDGE — Edge of flat (ribbon) cable from which measurements are made, normally indicated by the location of the printing which is near the index edge. Sometimes indicated by a thread or other identification stripe.

INDOOR TERMINATION — A cable termination intended for use where it is protected from direct exposure to both solar radiation and precipitation.

INDUCTANCE — A property of a conductor or circuit which resists a change in current. It causes current changes to lag behind voltage changes and is measured in henrys.

INDUCTION — The phenomenon of a voltage, magnetic field, or electrostatic charge being produced in an object by lines of force from the source of such fields.

INDUCTION HEATING — Heating a conducting material by placing it in a rapidly changing magnetic field. The changing field induces electric currents in the material and I²R losses account for the resultant heat.

INDUCTIVE COUPLING — Cross talk resulting from the action of the electromagnetic field of one conductor on the other.

INPUT — (1) A signal (or power) which is applied to a piece of electric apparatus, (2) The terminals on the apparatus to which a signal or power is applied.

INSERTION LOSS — A measure of the attenuation of a device by determining the output of a system before and after the device is inserted into the system.

INSERTION TOOL — A small, hand-held tool used to insert contacts into a connector.

INSULATED RADIANT HEATING WIRE — Similar to blanket wire but heavier construction for applications such as in ceiling panels, buried in ground or driveway and concrete walks.

INSULATED SPLICE — A splice with a dielectric medium applied over the connected conductors and adjacent cable insulation.

INSULATING (ISOLATING) JOINT — A cable joint which mechanically couples and electrically separates the sheath, shield, and armor on contiguous lengths of cable.

INSULATION — A material having good dielectric properties which is used to separate close electrical components, such as cable conductors and circuit components.

INSULATION LEVEL — A thickness rating for power cable insulation. Circuits having fault detectors which interrupt fault currents within 1 minute are rated 100% level, within 1 hour are rated 133% level, and over 1 hour are rated 173% level.

INSULATION TEMPERATURE RATING — A maximum temperature assigned to insulations based on laboratory tests.

INSULATION RESISTANCE — The electrical resistance of an insulating material at a specific time and condition as measured between two conductors.

INSULATION STRESS — The potential difference across an insulator. The stress on insulation is expressed in volts per mil (V/m) or kilovolts per meter (kV/m).

INSULATION THICKNESS — The wall thickness of the applied insulation.

INSULATION VOLTAGE RATING — The nominal phase-to-phase operating voltage of a three-phase cable system.

INTERAXIAL SPACING — Center-to-center conductor spacing in paired wire or center-to-center spacing between conductors in a flat cable.

INTERCALATED TAPES — Two or more tapes helically wound and overlapping on a cable.

INTERCONNECTING CABLE — The wiring between modules, between units, or the larger portions of a system.

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.

INTERFERENCE — Disturbances of an electrical or electromagnetic nature that introduce undesirable responses into other electronic equipment.

INTERMEDIATE FREQUENCY — A frequency to which a signal is converted for ease of handling. Receives its name from the fact that it is an intermediate step between the initial and final conversion or detection stages.

INTERMEDIATE TEMPER — As applied to aluminum, any temper between soft and hard drawn.

INTERNAL WIRING — Electronic wiring which interconnects components, usually within a sealed subsystem.

INTERSTICE — The space or void between assembled conductors and within the overall circumference of the assembly.

INTRINSICALLY SAFE — Incapable of releasing sufficient electrical or thermal energy under normal or abnormal conditions to cause ignition of a specific hazardous atmospheric mixture in its most ignitable concentration. See Article 504 of the NEC.

I/O — Input/Output. The process of transmitting data to and from the processor and its peripherals.

IONIZATION — (1) The creation of ions when polar compounds are dissolved in a solvent, (2) when a liquid, gas or solid is caused to lose or gain electrons due to the passage of an electric current.

IONIZATION FACTOR — This is the difference between percent dissipation factors at two specified values of electrical stress; the lower of the two stresses is usually so selected that the effect of the ionization on dissipation factor at this stress is negligible.

IONIZATION VOLTAGE — The potential at which a material ionizes. The potential at which an atom gives up an electron.

IR DROP — A method of designating a voltage drop in terms of both current and resistance.

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

ISDN — Integrated Services Digital Network. A standard which covers a wide range of data communication issues but primarily the total integration of voice and data.

ISO — International Standards Organization.

ISO 9000 — A set of quality standards widely used around the world.

ISOLATION — The ability of a circuit or component to reject interference, usually expressed in dB.

I²R — Formula for power in watts, where I = current in amperes, R = resistance in ohms. See Watt.

J

JACK — A plug-in type terminal widely used in electronic apparatus for temporary connections.

JACKET — Pertaining to wire and cable, the outer sheath which protects against the environment and may also provide additional insulation.

JAN SPECIFICATION — Joint Army-Navy specification (replaced by current Military Specifications).

JET STARTER CABLE — Single conductor 600 V cable used for external aircraft power.

JITTER — The slight movement of a transmission signal in time or phase that can introduce errors and loss of synchronization in high-speed synchronous communications.

JOINT — That portion of the conductor where the ends of two wires, rods, or groups of wires are joined by brazing, soldering, welding or by mechanical means.

JOULE'S LAW — When electricity flows through a material the rate of heating in watts will equal the resistance of the material in ohms times the square of the current in amperes. $W = I^2R$.

JUMPER CABLE — Extra flexible cables with high-voltage insulation for use as temporary connections. Usually has red jacket.

K

KAPTON — DuPont's trademark for polyimide.

kB — K-byte. 1,024 bytes. Usually describes bits or bytes, as in transmission speeds measured in kB/sec or kilobits per second.

kbps — Thousands of bits per second (bps).

kcmil — One thousand circular mils, replaced "MCM" in the 1990 NEC.

KEVLAR — A high strength DuPont polymer used as a cable messenger or strength member.

GLOSSARY

K-FIBER — Asbestos free substitute for heat resistant high temperature applications. K-Fiber jacketed high temperature cable equals or exceeds the abrasion resistance of a comparable asbestos jacketed cable.

KILO — Prefix meaning thousand.

kV — Kilovolt (1,000 volts).

kVA — Kilovolt ampere.

kW — Kilowatt. 1,000 watts of power.

KYNAR — Atochem trademark for polyvinylidene fluoride (PVDF).

L

L — Symbol for inductance.

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.

LAN — Local Area Network. A user-owned, user-operated, high-volume data transmission facility connecting a number of communicating devices within a single building or campus of buildings.

LASER DIODE — A semiconductor diode that, when pulsed, emits coherent light.

LAUNCH ANGLE — The angle between the radiation vector and the axis of an optical fiber.

LAY — Pertaining to wire and cable, the axial distance required for one cabled conductor or conductor strand to complete one revolution about the axis around which it is cabled.

LAY DIRECTION — The twist in the cable as indicated by the top strands while looking along the axis of the cable away from the observer. Described as "right hand" or "left hand."

LAYER — Consecutive turns of a coil lying in a single plane.

L Band — The band of frequencies between 390 and 1,550 megahertz.

LEACHING AND NONLEACHING — In a leaching wire the plasticizer will migrate when exposed to heat. A nonleaching 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-IN — The conductor or conductors that connect the antenna proper to electronic equipment.

LEAKAGE CURRENT — An undesirable flow of current through or over the surface of an insulating material.

LEAKAGE DISTANCE — The shortest distance along an insulation surface between conductors.

LED — Light-Emitting Diode; device that accepts electrical signals and converts the energy to a light signal; with lasers, the main light source for optical-fiber transmission, used mainly with multimode fiber.

LENGTH OF LAY — The axial length of one turn of the helix of a wire or member. See Lay.

LEVEL — A measure of the difference between a quantity or value and an established reference.

LF — Low frequency. A band of frequencies extending from 30 to 300 kHz in the radio spectrum, designated by the Federal Communications Commission.

LIFE CYCLE TESTING — A test to determine the length of time before failure in a controlled, usually accelerated environment.

LIGHTNING GROUND CABLE — A specially stranded single conductor cable used to connect lightning rods (air terminals) to grounding rods.

LIGHT SOURCE — An object capable of emitting light. In fiber optics, the light source is normally a LED or a laser.

LIMITS OF ERROR — The maximum deviation (in degrees or percent) of the indicated temperature of a thermocouple from the actual temperature.

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 power transmission line. Such loss, or drop, is due to the resistance, or leakage of the line.

LINE EQUALIZER — A reactance (inductance and/or capacitance) connected in series with a transmission line to alter the frequency-response characteristics of the line.

LINE FAULT — A fault such as an open circuit, short circuit or ground in an electrical line or circuit.

LINE LEVEL — The level of a signal at a certain point on a transmission line. Usually expressed in decibels.

LINE LOSS — A total of the various energy losses occurring in a transmission line.

LINE VOLTAGE — The value of the potential existing on a supply or power line.

LITZ WIRE — Very fine, usually #44 bare copper, each strand is enamel insulated and nylon wrapped (formerly silk). Used for low inductance coil windings.

LOAD — A device that consumes or converts the power delivered by another device.

LOAD CELL CABLE — Small multiconductor shielded cables for connecting load cells with instruments in electronic strain gauges. Also used for weighing and force measurement applications.

LOADED LINE — A transmission line that has lumped elements (inductance or capacitance) added at uniformly spaced intervals. Loading is used to provide a given set of characteristics to a transmission line.

LOC TRAC — Alpha's registered trademark for a zipper tubing closure track which does not require any sealants to keep it closed, even during extreme flexing.

LOCAL AREA NETWORK (LAN) — A network that is located in a localized geographical area (e.g., an office, building, complex of buildings, or campus), and whose communications technology provides a high-bandwidth, low-cost medium to which many nodes can be connected.

LOGGING CABLE — Usually FEP/Tefzel self-supporting instrumentation cable. Generally dropped through borings in subsurface mining or well applications.

LONGITUDINAL SHIELD — A tape shield, flat or corrugated, applied longitudinally with the axis of the cable.

LONGITUDINAL SHRINKAGE — A term generally applied to shrink products denoting the axial length lost through heating in order to obtain the recovered diameter.

LONGITUDINAL WRAP — Tape applied longitudinally with the axis of the core being covered.

LONGWALL MACHINE — A mining machine used to undercut coal.

LOOP RESISTANCE — The total resistance of two conductors measured round trip from one end. Commonly used term in the thermocouple industry.

LOOP TEST — A long line test where a good line is connected to a faulty line to form a loop in which measurements will locate the fault.

LOSS — The portion of energy applied to a system that is dissipated and performs no useful work.

LOSS FACTOR — The power factor times the dielectric constant.

LOW BOND INSULATION — An insulation that exhibits a small bond strength to the conductors.

LOW FREQUENCY — A band of frequencies extending from 30 to 300 kHz in the radio spectrum, designated by the Federal Communications Commission.

LOW LOSS DIELECTRIC — An insulating material that has a relatively low dielectric loss, such as polyethylene or Teflon.

LOW NOISE CABLE — A cable specially constructed to eliminate spurious electrical disturbances caused by capacitance changes or self-generated noise induced by either physical movement or adjacent circuitry.

LOW TENSION — Low voltage, as applied to ignition cable.

LOW VOLTAGE — (1) As defined in the National Electrical Code, a system rated nominal 24 volts or less, supplied from a transformer, converter, or battery, (2) A power system voltage rating of 1,000 Volts or less.

LPF — Low Pass Filter. A filter which greatly attenuates signals of higher than a specified frequency, but passes with minimal attenuation all signals lower in frequency.

LUMEN — A unit of measurement for light output.

LV — Low Voltage.

M

mA — Milliampere (one-thousandth of an ampere).

MAGNET WIRE — Insulated wire used in the windings of motors, transformers, and other electromagnetic devices.

MAGNETIC FIELD — The field created when current flows through a conductor, especially a coiled conductor.

MAP — Manufacturing Automation Protocol. The OSI profile championed by General Motors Corporation to provide interconnectivity between plant hosts, area managers and cell controllers over a broadband token-passing bus network.

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.

MARKER THREAD — A colored thread laid parallel and adjacent to the strand in an insulated conductor which identifies the manufacturer and sometimes the specification to which the wire is made.

MASTIC — A meltable coating used on the inside of some shrink products which when heated flows to help create a waterproof seal.

MATV — Master Antenna Television System. A combination of components providing multiple television receiver operations from one antenna or group of antennas.

MAXIMUM CABLE DIAMETER — The largest cable diameter that a high-voltage cable termination is designed to accommodate.

MINIMUM CABLE DIAMETER — The smallest cable diameter that a high-voltage cable termination is designed to accommodate.

MAXIMUM DESIGN VOLTAGE — The maximum voltage at which a high-voltage cable termination is designed to operate continuously under normal conditions.

MC — (1) Main cross-connect, (2) A UL cable type (metal clad).

MECHANICAL WATER ABSORPTION — A check of how much water will be absorbed by material in warm water for seven days (mg/sq. in. surface).

MEDIUM FREQUENCY — The band of frequencies between 300 and 3,000 kilohertz.

MEDIUM-HARD DRAWN WIRE — As applied to copper wire, having tensile strength less than the minimum for hard-drawn wire, but greater than the maximum for soft wire.

MEDIUM VOLTAGE — A class of nominal power system voltage ratings from 2 kV up to 69 kV.

MEGA — Prefix meaning million.

MEGAHERTZ (MHz) — One million cycles per second.

MEGGER — A special ohmmeter for measuring very high resistance. Primarily used for checking the insulation resistance of cables, however, it is also useful for equipment leakage tests.

MELT INDEX — The extrusion rate of a material through a specified orifice under specified conditions.

MEMBER — A group of wires stranded together which is in turn stranded into a multiple-membered conductor.

MESSANGER WIRE — A metallic supporting member either solid or stranded which may also perform the function of a conductor.

MFD — Microfarad (one-millionth of a farad). Obsolete abbreviation.

MFT — Abbreviation for 1,000 feet.

MG — Glass reinforced mica tape insulated cable with an overall sheath of woven glass yarn impregnated with a flame, heat and moisture resistant finish. 450°C, 600 V appliance wire.

MHO — The unit of conductivity. The reciprocal of an ohm.

MHz — Megahertz (one million cycles per second).

MI — A UL cable type. One or more conductors insulated with highly compressed refractory minerals and enclosed in a liquid-tight and gas-tight metallic tube sheathing.

MICA — A transparent silicate which separates into layers and has high insulation resistance, high dielectric strength, and high heat resistance.

GLOSSARY

MICRO — Prefix meaning one-millionth.

MICROBENDING LOSS — A signal loss due to small geometrical irregularities along the core-cladding interface of optical fibers.

MICROFARAD — One-millionth of a farad (abbreviated μf).

MICROMICROFARAD — One-millionth of a microfarad (abbreviated $\mu\mu\text{f}$). Also, a picofarad (pf).

MICROPHONE CABLE — A very flexible, usually shielded cable used for audio signals.

MICROPHONICS — Noise caused by mechanical movement of a system component. In a single conductor microphone cable, for example, microphonics can be caused by the shield rubbing against the dielectric as the cable is flexed.

MICROWAVE — A short (usually less than 30 cm.) electrical wave.

MID-SPLIT — A broadband cable system in which the cable bandwidth is divided between transmit and receive frequencies. The bandwidth utilized to send toward the head-end (reverse direction) is approximately 5 MHz to 100 MHz, and the bandwidth utilized to send away from the head-end (forward direction) is approximately 160 MHz to 300 MHz. The guard band between the forward and reverse directions (100 MHz to 160 MHz) provides isolation from interference.

mil — A unit of length equal to one-thousandth of an inch.

MIL — Military specification.

MIL-C-17 — A military specification covering many coaxial cables.

MIL-W-16878 — A military specification covering various wires intended for internal wiring of electric and electronic equipment.

MIL-W-22759 — A military specification for fluorocarbon insulated copper and copper alloy wire.

milli — Prefix meaning one-thousandth.

MIPS — Millions of Instructions Per Second. One measure of processing power.

MODULATION — Systematic changing of properties, e.g., amplification, frequency, phase of an analog signal to encode and convey (typically digital) information.

MODULUS OF ELASTICITY — The ratio of stress (force) to strain (deformation) in a material that is elastically deformed.

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.

MONO FILAMENT — A single strand filament as opposed to a braided or twisted filament.

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.

MPF — Mine power feeder cables. Usually rated 5, 8, or 15 kV.

MSHA — Mine Safety and Health Administration. The Federal enforcement agency for employee safety in mines and mills. Formerly known as MESA, Bureau of mines. MSHA regulations appear in CFR Title 30, Chapter 1.

MTW — Machine tool wire. Thermoplastic insulated, 90°C to 105°C, 600 V. A UL cable type.

MULTICAST — The ability to broadcast messages to one node or a select group of nodes.

MULTIDROP — See Multipoint Circuit.

MULTIMODE — Optical fiber which allows more than one mode of light to propagate.

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.

MULTIPLEX — The use of a common physical channel in order to make two or more logical channels, either by splitting of the frequency band (frequency-division multiplex), or by utilizing this common channel at different points in time (time-division multiplex).

MULTIPLEXER — Equipment that permits simultaneous transmission of multiple signals over one physical circuit.

MULTIPOINT CIRCUIT — A single line connecting three or more stations.

MURRAY LOOP TEST — A method used to localize cable faults.

MUTUAL CAPACITANCE — Capacitance between two conductors in a cable.

MUX — Multiplex. To transmit two or more signals over a single channel.

mV — Millivolt (one-thousandth of a volt).

MV — Medium voltage cables. Usually rated 5–35 kV.

mW — Milliwatt (one-thousandth of a watt).

MYLAR — DuPont's trademark for polyethylene terephthalate (polyester) film.

N

NBR — Butadiene-acrylonitrile copolymer rubber, a material with good oil and chemical resistance.

NBR/PVC — A blend of acrylonitrile-butadiene rubber and polyvinyl chloride (PVC). Used for jacketing.

NBS — National Bureau of Standards. Now called NIST (National Institute of Standards and Technology).

N CONNECTOR — A threaded connector for coax; N is named after Paul Neill.

NEC — National Electrical Code.

NEMA — National Electrical Manufacturers Association.

NEOPRENE — A synthetic rubber with good resistance to oil, chemicals, and flame. Also called polychloroprene.

NETWORK — A series of nodes connected by communications channels.

NEWTON — The derived SI unit for force; the force which will give one kilogram mass an acceleration of one meter per second. Equals 0.2248 pounds force.

NFPA — National Fire Protection Association.

NICKEL CLAD COPPER WIRE — A wire with a layer of nickel on a copper core where the area of the nickel is approximately 30% of the conductor area.

NM — A UL cable type. Nonmetallic sheathed cable, braid or plastic covered. For dry use, 90°C conductor rating.

NM-B — A UL cable type.

NMC — Nonmetallic sheathed cable, plastic or neoprene covered. Wet or dry use, 90°C conductor rating.

NODE — A station.

NOISE — In a cable or circuit any extraneous sounds or signal which tends to interfere with the sound or signal normally present in or passing through the system.

NOMEX — DuPont's trademark for a heat resistant, flame retardant nylon.

NOMINAL — Name or identifying value of a measurable property by which a conductor or component or property of a conductor is identified, and to which tolerances are applied.

NOMINAL VOLTAGE (NATIONAL ELECTRICAL CODE) — A nominal value assigned to a circuit or system for the purpose of conveniently designating its voltage class (as 120/240, 480Y/277, 600 etc.). The actual voltage at which a circuit operates can vary from the nominal within a range that permits satisfactory operation of equipment.

NOMOGRAPH — A chart or diagram with which equations can be solved graphically by placing a straight edge on two known values and reading the answer where the straight edge crosses the scale of the unknown value.

NONCONTAMINATING — A type of PVC jacket material whose plasticizer will not migrate into the dielectric of a coaxial cable and thus avoid contaminating and destroying the dielectric.

NONCONTAMINATING PVC — A polyvinyl chloride formulation, which does not produce electrical contamination through plasticizer migration.

NONFLAMMABLE — The property of a material that is not capable of being easily ignited.

NONMIGRATING PVC — Polyvinyl chloride compound formulated to inhibit plasticizer migration.

NRZI — Non-Return to Zero Inverted. A binary encoding technique in which a change in state represents a binary 0 and no change in state represents a binary 1.

N-SERIES CONNECTOR — A coaxial connector (RG-8/U) used in standard Ethernet networks.

NTSC — National Television Standard Committee. The U.S. color TV standard.

NUMERICAL APERTURE — The acceptance angle of an optical fiber which determines the angle at which light can enter the fiber; expressed as a number which is equivalent to the sine of the angle.

NYLON — An abrasion-resistant thermoplastic with good chemical resistance. Polyamide.

O

OD — Outside diameter.

OEM — Original equipment manufacturer.

OFHC — Oxygen-free high-conductivity copper.

OHM — The electrical unit of resistance. The value of resistance through which a potential difference of one volt will maintain a current of one ampere.

OHM'S LAW — Stated $V = IR$, $I = V/R$, or $R = V/I$ where V is voltage, I is current and R is resistance.

OIL AGING — Cable aged in an accelerated manner by placement in an oil bath and heated to a preset temperature for a stated time.

OPEN CELL — Foamed or cellular material with cells which are generally interconnected.

OPEN CIRCUIT — A break in an electrical circuit so that there can be no current flow.

OPTICAL CONDUCTOR — Materials which offer a low optical attenuation to transmission of light energy.

OPTICAL CROSS-CONNECT — A cross-connect unit used for circuit administration. It provides for the connection of individual optical fibers with optical fiber patch cords.

OPTICAL ENCODER — A device whose position is determined by a photoelectric device and converted to an electrical data output.

OPTICAL FIBER — Any filament or fiber, made of dielectric materials, that is used to transmit light signals; optical fiber usually consists of a core, which carries the signal, and cladding, a substance with a slightly higher refractive index than the core, which surrounds the core and serves to reflect the light signal. See also Fiber Optics.

OPTICAL WAVEGUIDE — A fiber used for optical communications. Analogous to a waveguide used for microwave communications.

OSCILLATORY SURGE — A surge which includes both positive and negative polarity values.

OSCILLOSCOPE — Test instrument for showing visually the changes in a varying voltage by means of the wavy line made on a fluorescent screen by the deflection of a beam of cathode rays.

OSHA — Abbreviation for Occupational Safety and Health Act. Specifically the Williams-Steiger laws passed in 1970 covering all factors relating to safety in places of employment.

OSMOSIS — The diffusion of fluids through membranes.

OUTDOOR TERMINATION — A cable termination intended for use where it is not protected from direct exposure to either solar radiation or precipitation.

OUTGASSING — Dissipation of gas from a material.

OUTPUT — The useful power or signal delivered by a circuit or device.

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.

GLOSSARY

OXYGEN INDEX — A test to rate flammability of materials in a mixture of oxygen and nitrogen. More formally referred to as Limiting Oxygen Index (LOI).

OZONE — An extremely reactive form of oxygen, normally occurring around electrical discharges and present in the atmosphere in small but active quantities. In sufficient concentrations it can break down certain insulations.

P

PAIR — Two insulated wires of a single circuit associated together; also known as a “balanced” transmission line.

PARALLEL CIRCUIT — A circuit in which identical voltage is presented to all components, and the current divides among the components according to the resistances or the impedances of the components.

PARALLEL STRIPE — A stripe applied longitudinally on a wire or cable parallel to the axis of the conductor.

PARALLEL TRANSMISSION — A type of data transfer in which all bits of a character, or multiple-bit data blocks, are sent simultaneously, either over separate communications lines or circuits, over a single channel using multiple frequencies, or over a multiple-conductor cable.

PARTIAL DISCHARGE (CORONA) EXTINCTION VOLTAGE — The voltage at which partial discharge (corona) is no longer detectable on instrumentation adjusted to a specific sensitivity, following the application of a specified higher voltage.

PATCH CABLE — A cable with plugs or terminals on each end of the conductors to temporarily connect circuits of equipment together.

PAYOFF — The process of feeding a cable or wire from a bobbin, reel, or other package.

PCB — Printed Circuit Board.

PCP — Polychloroprene (Neoprene).

PDN — Public Data Network. A packet switched or circuit switched network available for use by many customers. PDNs may offer value-added services at a reduced cost because of communications resource sharing, and usually provide increased reliability due to built-in redundancy.

PE — Polyethylene. A widely used thermoplastic insulation and jacket compound.

PEAK — The maximum instantaneous value of a varying current or voltage. Also called crest.

PEEK — Poly ether ether ketone.

PEEL STRENGTH — The force necessary to peel a flexible member from another member which may be either flexible or rigid.

PERCENT CONDUCTIVITY — The ratio of the resistivity of the International Annealed Copper Standard (IACS) at 20°C to the resistivity of a material at 20°C, expressed in percent. Results are calculated on a weight basis or volume basis and so specified.

PERCENT PLATING — Quantity of plating on a conductor expressed as a percentage by weight.

PERCENTAGE CONDUCTIVITY — Conductivity of a material expressed as a percentage of that of copper.

PFA — Perfluoroalkoxy. Teflon is DuPont’s trademark for this material.

PHASE — The location of a position on a waveform of an alternating current, in relation to the start of a cycle. Measured in degrees, with 360 corresponding to one complete cycle.

PHASE SEQUENCE — The order in which successive members of a periodic wave set reach their positive maximum values: a) zero phase sequence — no phase shift, b) plus/minus phase sequence — normal phase shift.

PHASE SHIFT — A change in the phase relationship between two alternating quantities. The phase angle between the input and output signals of a system.

PICK — Distance between two adjacent crossover points of braid filaments. The measurement in picks per inch indicates the degree of coverage.

PICO — Prefix meaning one-millionth of one-millionth (10^{-12}).

PICOFARAD — One-millionth of one-millionth of a farad. A micromicrofarad, or picofarad (abbreviation pf).

PIGTAIL WIRE — Fine stranded, extra flexible, rope lay lead wire attached to a shield for terminating purposes.

PILC CABLE — Paper insulated, lead covered.

PIN ASSIGNMENT — A predetermined relationship between the terminals in a connector and the conductors in a cable that specifies the terminals to which each conductor is to be terminated.

PITCH — In flat cable, the nominal distance between the index edges of two adjacent conductors.

PITCH DIAMETER — Diameter of a circle passing through the center of the conductors in any layer of a multiconductor cable.

PLANETARY TWISTER — A cabling 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.

PLASTICIZER — A chemical added to plastics to make them softer and more flexible.

PLATED HOLE — A hole with walls that have been plated with conductive material to provide an electrical connection between the conductive patterns on both sides of a printed circuit or an anchor for soldering an inserted wire.

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.

PLTC — Power Limited Tray Cable, rated 300 volts.

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.

POLISHING — Act of smoothing ends of optical fibers to an “optically smooth” finish, generally using abrasives.

POLYAMIDE — The chemical name for Nylon.

POLYBUTADIENE — A type of synthetic rubber often blended with other synthetic rubbers to improve their properties.

POLYESTER — Polyethylene terephthalate, used extensively as a moisture resistant cable core wrap. Mylar is DuPont's trademark for polyester.

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.

POLYIMIDE — A relatively high temperature plastic developed for use as a dielectric or jacketing material. Kapton is DuPont's trademark for polyimide.

POLYMER — A substance made of many repeating chemical units or molecules. The term polymer is often used in place of plastic, rubber, or elastomer.

POLYMER OPTICAL FIBER — One of the media projected to become the heart of an automotive LAN. The POF media would become the communications backbone of the vehicle.

POLYOLEFINS — A family of plastics including cross-linked polyethylene and various ethylene copolymers.

POLYPROPYLENE — A thermoplastic similar to polyethylene but stiffer and having a higher temperature softening point.

POLYURETHANE — Broad class of polymers noted for good abrasion and solvent resistance. Can be in solid or cellular form.

POLYVINYL CHLORIDE (PVC) — A general purpose thermoplastic used for wire and cable insulations and jackets.

POROSITY — Multiple voids in an insulation crosssection.

PORT — A point of access into a computer, a network, or other electronic device; the physical or electrical interface through which one gains access; the interface between a process and a communications or transmission facility.

P.O.S. — Abbreviation for point-of-sale.

POSITION CODING — Identification of conductors by their location, possible only when conductors are located in assigned positions with relation to each other throughout the entire length of a cable.

POSJ — All rubber, parallel, light duty ripcord for use on lamps and small appliances, 300 V, 60°C.

POTTING — Sealing by filling with a substance to exclude moisture.

POWER — The amount of work per unit of time. Usually expressed in watts, and equal to I^2R .

POWER CABLES — Cables of various sizes, constructions, and insulations, single or multiconductor, designed to distribute primary power to various types of equipment.

POWER FACTOR — The cosine of the phase difference between current and applied voltage.

POWER LOSS — The difference between the total power delivered to a circuit, cable, or device, and power delivered by that device to a load.

POWER RATIO — The ratio of the power appearing at the load to the input power. Expressed in db, it is equal to $10 \log_{10} (P_2/P_1)$ where P_1 is input power and P_2 is the power at the load.

PPE — Polypropylene ethylene.

PREBOND — Stranded wire which has been fused, topcoat tinned, or overcoat tinned.

PREMOLDED SPLICE — A joint made of premolded components assembled in the field.

PRIMARY — The transformer winding which receives the energy from a supply current.

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

PRINTING WIRING — A printed circuit intended to provide point-to-point electrical connections.

PRODUCTION TESTS — Tests made on components or subassemblies during production for the purpose of quality control.

PROPAGATION DELAY — The time it takes a signal, composed of electromagnetic energy to travel from one point to another over a transmission channel; usually most noticeable in communicating with satellites; normally, the speed-of-light delay.

PROPAGATION TIME — Time required for a wave to travel between two points on a transmission line.

PROPAGATION VELOCITY — The velocity of the propagation of a wave along a transmission path.

PROTECTIVE COVERING — A field-applied material to provide environmental protection over a splice or housing, or both.

PROXIMITY EFFECT — Nonuniform current distribution over the crosssection of a conductor caused by the variation of the current in a neighboring conductor.

PT — Thermostat cable with solid conductor, individual insulation, twisted together.

PTFE — Polytetrafluoroethylene. One type of Teflon. Sometimes abbreviated TFE.

PTT — Post Telephone and Telegraph Authority. The government agency that functions as the communications common carrier and administrator in many areas of the world.

PULLING EYE — A device used to pull cable into or from a duct.

PULSE — A current or voltage which changes abruptly from one value to another and back to the original value in a finite length of time.

PULSE CABLE — A type of coaxial cable constructed to transmit repeated high-voltage pulses without degradation.

PVC — Polyvinyl chloride. A common insulating and jacketing material used on cables.

PVC-I — A MIL-C-17 coax jacket type. A black polyvinyl chloride with excellent weathering and abrasion properties, but is a contaminating type and will cause cable attenuation to increase with age. Can be used for direct burial.

PVC-II — A MIL-C-17 coax jacket type. A grey polyvinyl chloride material which is semi-noncontaminating.

PVC-IIA — A MIL-C-17 coax jacket type. A black or grey polyvinyl chloride material which is noncontaminating. It has good weathering and abrasion-resistant properties and can be used for direct burial.

PVDF — Polyvinylidene fluoride. Atochem's trademark for this material is Kynar.

PYROMETER — See Thermocouple.

GLOSSARY

Q

Q BAND — The band of frequencies between 36 and 46 gigahertz.

QPL — A Qualified Products List issued by the U.S. Government.

QUAD — A series of four separately insulated conductors, generally twisted together in pairs.

R

R — Symbol for electrical resistance.

RADIO FREQUENCY — The frequencies in the electromagnetic spectrum that are used for radio communications. A band of frequencies between 10 kilohertz and 100 gigahertz.

RANDOM WINDING — A winding in rotating equipment wherein wires do not lie in an even pattern.

REA (RURAL ELECTRIFICATION ADMINISTRATION) — A federally supported program to provide electrical service to rural areas.

REACTANCE — The opposition offered an alternating electron flow by a capacitance or inductance. The amount of such opposition varies with the frequency of the current. The reactance of a capacitor decreases with an increase in frequency; the opposite occurs with an inductance.

RECOVERED DIAMETER — Diameter of shrinkable products after heating has caused it to return to its extruded diameter.

RED PLAGUE — A powdery, brown-red growth sometimes found on silver-coated copper conductors and shield braids.

REDRAW — The consecutive drawing of wire through a series of dies to reach a desired wire size.

REEL — A revolving flanged device made of wood or metal, used for winding flexible cable.

REFERENCE EDGE — See preferred term Index Edge.

REFERENCE JUNCTION — The junction of a thermocouple which is at a known reference temperature. Also known as the "cold" junction, it is usually located at the emf measuring device.

REFLECTION — (1) The change in direction (or return) of waves striking a surface. For example, electromagnetic energy reflections can occur at an impedance mismatch in a transmission line, causing standing waves, (2) Change in direction of a light wave or ray in an optical fiber.

REFLECTION LOSS — The part of a signal which is lost to reflection of power at a line discontinuity.

REFLOW SOLDERING — The process of connecting two solder-coated conductive surfaces by remelting of the solder to cause fusion.

REFRACTION — The bending of lightwaves or rays as they go from one material to another due to the difference in velocities in the materials.

REINFORCED SHEATH — The outer covering of a cable which has a reinforcing material, usually a braided fiber, molded in place between layers.

RELIABILITY — The probability that a device will function without failure over a specified time period or amount of usage.

RESIN — A solid or semisolid organic substance, originally of plant origin but largely synthesized now. Resins are broadly classified as thermoplastic or thermosetting according to whether they soften or harden with the application of heat.

RESISTANCE — In DC circuits, the opposition a material offers to current, measured in ohms. In AC circuits, resistance is the real component of impedance, and may be higher than the value measured at DC.

RESISTIVE CONDUCTOR — A conductor with high electrical resistance.

RESISTIVITY — A material characteristic which opposes the flow of electrical energy through the material. It is affected by temper, temperature, contamination, alloying, etc. The unit of volume resistivity is the ohm-cm. The unit of surface resistivity is ohms/m².

RESISTOR — An electronic component designed to have a specific value of resistance.

RESISTOR COLOR CODE — A method of indicating resistance value and tolerance. The first color represents the first significant figure of the value. A second color represents the second significant figure, and the third is the multiplier or the number of zeros that follow two significant figures. When there is a fourth color band, it indicates the tolerance.

RESONANCE — An AC circuit condition in which inductive and capacitive reactances interact to cause a minimum or maximum circuit impedance.

RETRACTILE CORD — A cord having specially treated insulation or jacket so that it will retract like a spring. Retractability may be added to all or part of a cord's length.

RETURN WIRE — A ground wire or the negative wire in a direct-current circuit.

RFI — Radio Frequency Interference. The disruption of radio signal reception caused by any source which generates radio waves at the same frequency and along the same path as the desired wave.

RF MODEM — Radio frequency modem. A device used to convert digital data signals to analog signals (and from analog to digital), then modulate/demodulate them to/from their assigned frequencies.

RG/U — "RG" is the military designation for coaxial cable, and "U" stands for "general utility."

RHH — Rubber-insulated, heat-resistant building wire, 90°C. A UL cable type.

RHW — Rubber-insulated building wire, heat and moisture-resistant, 75°C dry or wet. A UL cable type.

RHW-2 — Rubber-insulated building wire, heat and moisture-resistant, 90°C dry or wet. A UL cable type.

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 COAXIAL CABLE — Nonflexible coaxial cable, usually a metal tube armored coaxial cable. Sometimes called "hardline."

RINGING OUT — Locating or identifying specific conductive paths by passing current through selected conductors.

RING TONGUE — A solderless terminal that connects wire to a stud.

RIP CORD — Two or more insulated conductors in a parallel configuration which may be separated to leave the insulation of each conductor intact.

RISE TIME — The time it takes the voltage to rise from 0.1 to 0.9 of its final value.

RIV — Radio influence voltage. The radio noise appearing on conductors of electric equipment or circuits.

RMS — See Root-Mean-Square.

ROCKWELL HARDNESS — A measure of hardness determined by resistance to indentation by a small diamond or steel ball under pressure.

ROMEX — A type of nonmetallic sheathed cable.

ROOT MEAN SQUARE (RMS) — The effective value of an alternating current or voltages.

ROPE CONCENTRIC — A group of stranded conductors assembled in a concentric manner.

ROPE-LAY CONDUCTOR — See Concentric-lay Conductor.

ROPE STRAND — A conductor composed of a center group of twisted strands surrounded by layers of twisted strands.

ROPE UNILAY — A group of stranded conductors assembled in a unilay manner.

ROTATING CABLE — A coil of cable whose inner end is attached to a member that rotates in relation to a member to which the outer end of the cable is fastened.

ROUND CONDUCTOR FLAT CABLE — A cable made with parallel round conductors in the same plane.

ROUND WIRE SHIELDS — Shields constructed from bare, tinned, or silver-plated copper wire that include braided, spiral, and reverse spiral.

ROUTINE TESTS — Tests made on each high-voltage cable or upon a representative number of devices, or parts, during production for the purposes of quality control.

RS-232 — An EIA recommended standard (RS); a common standard for connecting data processing devices. RS-232 defines the electrical characteristics of the signals in the cable that connect DTE with DCE; it specifies a 25-pin connector (the DB-25 connector is almost universally used in RS-232 applications); and it is functionally identical to CCITT V.24/V.28.

RS-232-C — A technical specification published by the EIA that specifies the mechanical and electrical characteristics of the interface for connecting DTE and DCE. It defines interface circuit functions and their corresponding connector pin assignments. The standard applies to both asynchronous and synchronous serial, binary data transmission at speeds up to 20 Kbps in full- or half-duplex mode. RS-232-C defines 20 specific functions. The physical connection between DTE and DCE is made through plug-in, 25-pin connectors. RS-232-C is functionally compatible with the CCITT Recommendation V.24.

RS-232-C SERIAL I/O PORT — A standard connection interface for computer peripheral equipment.

RS-422 — A standard operating in conjunction with RS-449 that specifies electrical characteristics for balanced circuits.

An EIA recommended standard for cable lengths that exceed the RS-232 50-foot limit. Although introduced as a companion standard with RS-449, RS-422 is most frequently implemented on unused pins of DB-25 (RS-232) connectors. Electrically compatible with CCITT recommendation V.11.

RS-423 — A standard operating in conjunction with RS-449 that specifies electrical characteristics for unbalanced circuits.

An EIA recommended standard for cable lengths that exceed the RS-232 50-foot limit. Although introduced as a companion standard with RS-422, RS-423 is not widely used. Electrically compatible with CCITT recommendation V.10.

RS-432-A — Electrical characteristics of unbalanced-voltage digital interface circuits (EIA).

RS-449 — Another EIA standard for DTE/DCE connection which specifies interface requirements for expanded transmission speeds (up to 2 Mbps), longer cable lengths, and 10 additional functions. RS-449 applies to binary, serial, synchronous or asynchronous communications. Half- and full-duplex modes are accommodated and transmission can be over 2- or 4-wire facilities such as point-to-point multipoint lines. The physical connection between DTE and DCE is made through a 37-contact connector; a separate 9-connector is specified to service secondary channel interchange circuits, when used.

RTS — Request-To-Send. An RS-232 modem interface signal (sent from the DTE to the modem on pin 4) which indicates that the DTE has data to transmit.

RUBBER, ETHYLENE PROPYLENE (EPR) — A synthetic rubber insulation having excellent electrical properties.

RUBBER INSULATION — A general term used to describe wire insulations made of elastomers such as natural or synthetic rubbers, neoprene, Hypalon, EPR, CPE, and others.

RULAN — DuPont's trade name for their flame-retardant polyethylene insulating material.

S

S — A UL cable type. Hard service flexible cord with thermoset insulation and jacket.

SAE — Society of Automotive Engineers.

S BAND — A band of frequencies between 1,550 and 5,200 megahertz.

SBR — A copolymer of styrene and butadiene. Also GRS or Buna-S.

SCHERING BRIDGE — See Bridge.

SDN — A small diameter multiconductor control cable with neoprene jacket and nylon sheath over polyethylene insulation.

SECONDARY INSULATION — A nonconductive material that protects the conductor against abrasion and provides a second 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.

SELF-EXTINGUISHING — Characteristic of a material whose flame is extinguished after the igniting flame source is removed.

GLOSSARY

SEMICONDUCTOR — In wire industry terminology, a material possessing electrical conduction properties that fall somewhere between conductors and insulators. Usually made by adding carbon particles to an insulator. Not the same as semiconductor materials such as silicon, germanium, etc., used for making transistors and diodes.

SEMICONDUCTING JACKET — A jacket having a sufficiently low resistance so that its outer surface can be kept at substantially ground potential.

SEMIRIGID CABLE — Generally refers to Type MI or Type ALS which can be bent or shaped into a required configuration from coils or reels.

SEMIRIGID PVC — A hard semiflexible polyvinylchloride compound with low plasticizer content.

SEMISOLID — An insulation crosssection having a partially open space between the conductor and the insulation perimeter.

SENSITIVE CONDUCTOR — A conductor terminated to a circuit that is adversely affected by spurious signals.

SEPARABLE INSULATED CONNECTOR — An insulated device to facilitate cable connections and separations.

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

SERIAL INTERFACE — An interface which requires serial transmission, or the transfer of information in which the bits composing a character are sent sequentially. Implies only a single transmission channel.

SERIES CIRCUIT — A circuit in which the components are arranged end to end to form a single path for current.

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

SERVED WIRE ARMOR — Spiral wrap of soft galvanized steel wires wrapped around a cable to afford mechanical protection and increase the cable-pulling tension characteristic.

SERVING — A wrapping applied over the core of a cable or over a wire.

SEU — A UL cable type. Service Entrance Underground Cable, 600 volts.

SEW, SEWF — A CSA cable type. Silicone rubber-insulated equipment wire.

SF — A CSA cable type. Silicone rubber insulated fixture wire, solid or 7 strand conductor, 200°C.

SFF — A CSA cable type. Same as SF, except flexible stranding 150°C.

SG — A CSA cable type. Same as SW except with ground wires.

SGO — A CSA cable type. Same as SWO except with ground wires.

SHD — Portable mine power cable, three or four individually shielded conductors, with grounding conductors, 5 through 25 kV.

SHEATH — The outer covering or jacket over the insulated conductors to provide mechanical protection for the conductors.

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

SHIELD COVERAGE — See Shield Percentage.

SHIELDED INSULATED SPLICE — An insulated splice in which a conducting material is employed over the full length of the insulation for electric stress control.

SHIELDED LINE — A transmission line whose elements confine radio waves to an essentially finite space inside a tubular conducting surface called the sheath, thus preventing the line from radiating radio waves.

SHIELD EFFECTIVENESS — The relative ability of a shield to screen out undesirable radiation. Frequently confused with the term shield percentage, which it is not.

SHIELDING, POWER CABLE — A conducting layer, applied to control the dielectric stresses within tolerable limits and minimize voids.

SHIELD PERCENTAGE — The physical area of a circuit or cable actually covered by shielding material, expressed in percent.

SHORT — A low resistance path that results in excessive current flow and often in damage.

SHOVEL CABLE — Normally an SHD-GC type which supplies high-voltage (2 to 25 kV) power to mobile equipment.

SHRINKING RATIO — The ratio between the expanded diameter and recovered diameter of shrinkable products.

SHRINK TEMPERATURE — That temperature which effects complete recovery of a heat shrinkable product from the expanded state.

SHRINK TUBING — Tubing which has been extruded, cross-linked, and mechanically expanded which when reheated or released will return to its original diameter.

SHUNT — A very low resistance component used to divert a portion of the current.

SHUNT WIRE — A conductor joining two parts of an electric circuit to divert part of the current.

SI — An international system of standardized units of measurement.

SIC (SPECIFIC INDUCTIVE CAPACITANCE) — See Dielectric Constant.

SIGNAL — Any visible or audio indication which can convey information. Also, the information conveyed through a communication system.

SIGNAL CABLE — A cable designed to carry current of usually less than one ampere per conductor.

SIGNAL-TO-NOISE RATIO — A ratio of the amplitude in a desired signal to the amplitude of noise, usually expressed in db.

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.

SINGLE CABLE — A one-cable system in broadband LANs in which a portion of the bandwidth is allocated for send signals, and a portion for receive signals, with a guard band in between to provide isolation from interference.

- SINGLE MODE** — Optical fiber in which only one mode of light can propagate.
- SINTERING** — Fusion of a spirally applied tape wrap insulation or jacket by the use of high heat to a homogenous continuum. Usually employed for fluorocarbon, nonextrudable materials.
- SIS** — Switchboard wiring made with cross-linked polyethylene insulation.
- SJ** — A UL cable type. Junior hard service, rubber-insulated pendant or portable cord. Same construction as type S, but 300 V.
- SJO** — Same as SJ, but with oil-resistant jacket.
- SJOO** — Same as SJO but with oil-resistant insulation as well as an oil-resistant jacket.
- SJT** — A UL cable type. Junior hard service thermoplastic or rubber insulated conductors with overall thermoplastic jacket. 300 V.
- SJTO** — Same as SJT but oil-resistant thermoplastic outer jacket.
- SJTOO** — Same as SJTO but with oil-resistant insulation.
- SKIN EFFECT** — The tendency of alternating current, as its frequency increases, to travel only on the surface of a conductor.
- S METER** — An instrument to measure signal strength.
- S/N** — See Signal-to-Noise Ratio.
- SNM** — Shielded nonmetallic sheathed cable.
- SO** — A UL cable type. Hard service cord, same construction as type S except oil-resistant thermoset jacket, 600 V.
- SOFT WIRE** — Wire that has been drawn or rolled to final size and then heated (annealed) to remove the effects of cold working.
- SOLID CONDUCTOR** — A conductor consisting of a single wire.
- SOO** — Same as SO but with oil-resistant insulation.
- SOOW-A** — A UL cable type. Portable cord and control cable. 600 V. Same as SOO but UL Listed for outdoor use.
- SOURCE COUPLING LOSS** — Loss of light intensity as the light from a source passes into an optical fiber.
- SOW** — A CSA cable type. A water-resistant thermoset-jacketed portable cord approved for outdoor use.
- SPACER CABLE** — A type of overhead power distribution cable. Spacing is accomplished by ceramic or plastic hangers suspended from a support messenger.
- 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.
- SPC** — Statistical Process Control.
- SPECIFIC INDUCTIVE CAPACITY (SIC)** — Dielectric constant of insulating material.
- 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 electrical conductivity.
- SPLITTER** — A passive device used in a cable system to divide the power of a single input into two or more outputs of lesser power. Can also be used as a combiner when two or more inputs are combined into a single output.
- SP-1** — A UL cable type. All thermoset, parallel-jacketed, two-conductor light duty cord for pendant or portable use in damp locations, 300 V.
- SP-2** — Same as SP-1, but heavier construction, with or without third conductor for grounding purposes, 300 V.
- SP-3** — Same as SP-2, but heavier construction for refrigerators or room air-conditioners, 300 V.
- SPT** — A UL type of thermoplastic-insulated, 2 or 3 conductor parallel cord. Frequently called "Zip cord" or "Lamp cord."
- SQUIRREL CAGE MOTOR** — An induction motor having the primary winding (usually the stator) connected to the power and a current is induced in the secondary cage winding (usually the rotor).
- SR** — Silicone rubber cable 600 V, 125°C.
- SR-AW** — A cable with flexible, nickel-plated copper conductor, silicone rubber insulation, glass braid, 600 V, 200°C.
- SR-C** — A cable with solid copper conductor, silicone rubber insulation, glass braid, 600 V, 125°C.
- SRG** — A cable with ozone resistant silicone rubber insulation with an overall jacket of braided glass yarn impregnated with flame, heat and moisture resistant finish. 150/200°C 600 V appliance and motor lead wire.
- SRGK** — A cable with ozone resistant silicone rubber insulation with braided glass yarn conductor jacket. Cable core of insulated conductors shielded or unshielded, and an overall jacket of braided K-fiber impregnated with flame, heat and moisture resistant finish. 150/200°C 600 V multiconductor cable.
- SRK** — A cable with ozone resistant silicone rubber insulation with an overall jacket of braided K-fiber impregnated with flame, heat and moisture resistant finish. 200°C 600 V fixture wire and power cable.
- ST** — A UL cable type. Hard service cord, jacketed, same as type S except thermoplastic construction. 600 V, 60°C to 105°C.
- STABILITY FACTOR** — The difference between the percentage power factor at 80 volts/mil and at 40 volts/mil measured on wire immersed in water at 75°C for a specified time.
- STANDARD** — A set of rules or protocols that describe how a device should be manufactured so it will be reliable and interoperability (compatibility) with others of the same type from different manufacturers will be maintained.
- STANDING WAVE** — The stationary pattern of waves produced by two waves of the same frequency traveling in opposite directions on the same transmission line. The existence of voltage and current maxima and minima along a transmission line is a result of reflected energy from an impedance mismatch.
- 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.
- STANDING WAVE RATIO (SWR)** — A ratio of the maximum amplitude of a standing wave stated in current or voltage amplitudes.
- STATIC CHARGE** — An electrical charge that is bound to an object. An unmoving electrical charge.

GLOSSARY

STAY CORD — A component of a cable, usually a high-tensile textile, used to anchor the cable ends at their points of termination and to keep any pull on the cable from being transferred to the electrical connections.

STEP INDEX FIBER — A multimode optical fiber consisting of a core of uniform refractive index, surrounded by cladding of slightly lower refractive index.

STIFFNESS — As applied to copper, the property of a conductor that causes it to resist permanent deformation by bending.

STO — Same as ST but with oil-resistant thermoplastic outer jacket, 600 V, 60°C.

STOO — Same as STO but with oil-resistant insulation.

STOP JOINT — A splice which is designed to prevent any transfer of dielectric fluid between the cables being joined.

STP — Shielded Twisted Pair. Two wires, wound around each other to help cancel out any induced noise in balanced circuits. Multiple pairs of wires are contained in one sheath, and each wire pair is shielded.

STRAIGHT JOINT — A cable splice used for connecting two lengths of cable, each of which consists of one or more conductors.

STRAIN GAUGE — A device for determining the amount of strain (change in dimension) when a stress is applied.

STRAIN HARDENING — An increase in hardness and strength caused by plastic deformation at temperatures lower than the recrystallization range.

STRAND — One of the wires of any stranded conductor.

STRANDED CONDUCTOR — A conductor composed of a group of wires, usually twisted, or of any combination of such groups of wires.

STRAND LAY — The distance of advance of one strand of a spirally stranded conductor, in one turn, measured longitudinally.

STRESS-RELIEF CABLE — Cable used to relieve stresses in the process of welding pipe joints by inducing heat in pipe sections to be welded, flexible copper strand.

STRESS-RELIEF CONE (TERMINATION) — A device used to relieve the electrical stress at a shielded cable termination; generally used at 5 kV and above.

STRIP — To remove insulation from a wire or cable.

STRUCTURAL RETURN LOSS — Backward reflected energies from uneven parts of the cable structure.

SUBCHANNEL — A frequency subdivision created from the capacity of one physical channel by broadband LAN technology. Bands of frequencies of the same or different sizes are assigned to transmission of voice, data, or video signals. Actual transmission paths are created when each assigned band is divided, using FDM, into a number of subchannels.

SUBSPLIT — The most common form of transmission in the CATV industry. In the sub-split scheme, the bandwidth utilized to send toward the head-end (reverse direction) is much smaller, from approximately 5 MHz to 30 MHz, and the bandwidth utilized to transmit from the head-end (forward direction) is very large from approximately 55 MHz to 300 MHz. The guard band between forward and reverse directions (30 MHz to 55 MHz) provides isolation from interference.

SUBSTRATE — Insulating material of a printed circuit.

SUGGESTED WORKING VOLTAGE — AC voltage that can be applied between adjacent conductors.

SUPERCONDUCTORS — Materials whose resistance and magnetic permeability are virtually zero at very low temperatures.

SUPPRESSOR — A device used to reduce or eliminate unwanted voltages in electric or electronic circuits. For example, a resistance conductor in, or a resistor in series with, a sparkplug cable, to suppress interference which would otherwise affect radio reception in and near the vehicle.

SURFACE RESISTIVITY — The resistance of a material between two opposite sides of a unit square of its surface. It is usually expressed in ohms.

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

SV — A UL cable type. Vacuum cleaner cord, two or three conductor, rubber insulated. Overall rubber jacket. For light duty in damp locations, 300 V 60°C.

SVO — A UL cable type. Same as SV except oil-resistant thermoset jacket, 300 V 60°C or 90°C.

SVT — A UL cable type. Same as SV except thermoplastic jacket. 300 V, 60°C or 90°C.

SVTO — A UL cable type. Same as SVT, except with oil-resistant thermoplastic jacket, 60°C.

SW — A CSA cable type. Rubber jacketed power supply cable (8 AWG to 2 AWG) 600 V.

SWEEP TEST — A test given to check attenuation by an oscilloscope, as in coaxial cable.

SWO — Same as SW except neoprene jacketed.

SWT — A CSA cable type. Plastic-jacketed power supply cable (8 AWG to 2 AWG) 600 V.

T

T — Thermoplastic vinyl, building wire, 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 dielectric strength test in which the test sample is submerged in water and voltage is applied between the conductor and water as ground.

TAP — (1) Baseband — The component of a connector that attaches a transceiver to a cable, (2) Broadband — (Also called a directional tap or multitap) a passive device used to remove a portion of the signal power from the distribution line and deliver it onto the drop line.

TAPED INSULATION — Insulation of helically wound tapes applied over a conductor or over an assembled group of insulated conductors.

TAPED SPLICE — A joint with hand-applied tape insulation.

TAPE WRAP — A spirally applied tape over an insulated or uninsulated wire.

TC — A UL cable type. See Tray Cable, NEC Art. 340.

TCLP — Toxicity Characteristic Leaching Procedure. A test created by the EPA to determine whether an item can be safely discarded in an ordinary (nonhazardous) landfill.

T CONNECTOR — A cable adapter that attaches a PC with a network interface module to the network.

TEAR STRENGTH — The force required to initiate or continue a tear in a material under specified conditions.

TECHNICAL AND OFFICE PROTOCOLS (TOP) — A Boeing version of the MAP protocol aimed at office and engineering applications.

TEFLON — Trademark of the DuPont Co. for FEP, PTFE, and PFA polymers.

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 maximum load per unit of original cross-sectional area that a conductor attains when tested in tension to rupture.

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.

TERMINATOR — A resistive device used to terminate the end of cable or an unused tap into its characteristic impedance. The terminator prevents interference-causing signal reflections.

TEST LEAD — A flexible, insulated lead wire used for making tests, connecting instruments to a circuit temporarily, or for making temporary electrical connections.

TEW — Canadian Standards Association type appliance wires. Solid or stranded single conductor, plastic insulated, 105°C, 600 V.

TEXTILE BRAID — Any braid made from threads of cotton, silk, or synthetic fibers.

TF — A UL cable type. Fixture wire, thermoplastic-covered solid or 7 strands, 60°C.

TFE — One of three types of Teflon. Also known as PTFE (polytetrafluoroethylene).

TFF — Same as TF but flexible stranding, 60°C.

TFFN — Same as TFF but with nylon outer jacket.

TFN — Same as TF but with nylon outer jacket.

TG — Flexible nickel or nickel-clad copper conductor, Teflon tape, glass braid, 200°C.

TGGT — PTFE Teflon tape insulation with an insulation covering of wrapped glass yarn and an overall sheath of braided glass yarn impregnated with a moisture, heat, flame and fraying resistant compound. 600 V, 250°C appliance wire.

TGS — Solid or flexible copper, nickel-clad iron or copper, or nickel conductor. Teflon tape, silicone glass braid, 600 V 250°C.

THERMAL AGING — Exposure to a thermal condition or programmed series of conditions for predescribed periods of time.

THERMOCOUPLE — A device consisting of two dissimilar metals in physical contact, which when heated will develop an emf output.

THERMOCOUPLE ELEMENT — A thermocouple designed to be used as part of an assembly, but without associated parts such as terminal block, connecting head, or protecting tube.

THERMOCOUPLE EXTENSION CABLE — A cable comprised of one or more twisted thermocouple extension wires under a common sheath.

THERMOCOUPLE EXTENSION WIRE — A pair of wires of dissimilar alloys having emf temperature characteristics complementing the thermocouple with which it is intended to be used, such that when properly connected allows the emf to be faithfully transmitted to the reference junction.

THERMOCOUPLE LEAD WIRE — An insulated pair of wires used from the thermocouple to a junction box.

THERMOPLASTIC — A material which softens when heated and becomes firm on cooling.

THERMOSET — A material which has been hardened or set by the application of heat or radiation, and which, once set, cannot be resoftened by heating. The application of heat or radiation is called "curing."

THHN — A UL cable type. 600 V, 90°C nylon-jacketed building wire.

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-QUARTER-HARD WIRE — As applied to aluminum, wire that has been processed to produce a strength approximately midway between that of half-hard wire and that of hard-drawn wire.

THREE-WIRE SYSTEM — A DC or single-phase AC system comprising three conductors, one of which is maintained at a potential midway between the potential of the other two.

THW — A UL cable type. Thermoplastic vinyl-insulated building wire. Flame-retardant, moisture and heat resistant. 75°C Dry and wet locations.

THWN — A UL cable type. Same as THW but with nylon jacket overall. Rated 75°C wet and 90°C dry.

TIA — Telecommunication Industries Association.

TINNED WIRE — See Coated Wire.

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.

TKGT — PTFE Teflon tape insulation with an insulating covering of felted K-fiber yarn and an overall sheath of braided glass yarn impregnated with a moisture, heat, flame and fraying resistant compound. 250°C 600 V apparatus and Motor Lead wire.

TNC — A threaded connector for miniature coax; TNC is said to be an abbreviation for threaded-Neill-Concelman. Contrast with BNC.

TOP — Technical Office Protocol. An OSI profile designed for the technical and office LAN environment.

TOPCOAT — Bare (untinned) copper wire, stranded then coated with pure tin.

TPE — Thermoplastic Elastomer.

TRACER — A means of identifying polarity.

TRANSCEIVER — A device required in baseband networks which takes the digital signal from a computer or terminal and imposes it on the baseband medium.

GLOSSARY

TRANSCEIVER CABLE — Cable connecting the transceiver to the network interface controller allowing nodes to be placed away from the baseband medium.

TRANSITION SPLICE — A cable splice which connects two different types of cable.

TRANSMISSION — The dispatching of a signal, message, or other form of intelligence by wire, radio, telegraphy, telephony, facsimile, or other means (ISO); a series of characters, messages, or blocks, including control information and use data; the signaling of data over communications channels.

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.

TROLLEY WIRE — A round or shaped solid, bare, hard conductor ordinarily used to supply current to motors through traveling current collectors.

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

TRAY CABLE — A factory-assembled multiconductor or multipair control cable approved under the National Electrical Code for installation in trays.

TREEING — Microscopic tree-like channels in medium voltage, e.g., 15 kV, cable insulation that can lead to cable failure.

TRIAxIAL — A three conductor cable with one conductor in the center, a second circular conductor concentric with and insulated from the first, and a third circular conductor insulated from and concentric with the second, and an 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.

TRUNK CABLE — A main cable used for distribution of signals over long distances throughout a cable system.

TRUE CONCENTRIC — A cable conductor in which each successive layer has a reversed direction of lay from the preceding layer.

TR-XLP — Water tree retardant cross-linked polyethylene.

TUBING — A tube of extruded nonsupported plastic material.

TURNKEY SYSTEM — Any system that is completely assembled and tested and that will be completely operational by turning it "on."

TV CAMERA CABLE — Multiconductor (often composite) to carry power for camera, lights, maneuvering motors, intercom signals to operators, video, etc. Usually heavy duty jacketed.

TW — A UL cable type. Thermoplastic vinyl-jacketed building wire, moisture resistant 60°C.

TWINAXIAL CABLE — A shielded coaxial cable with two central insulated conductors.

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 unit.

TWIN-LEAD — A transmission line having two parallel conductors separated by insulating material. Line impedance is determined by the diameter and spacing of the conductors and the insulating material and is usually 300 ohms for television receiving antennas. Also called balanced transmission line and twin-line.

TWINNER — A device for twisting together two conductors.

TWINNING — Synonymous with pairing.

TWISTED PAIR — A pair of insulated copper conductors that are twisted around each other, mainly to cancel the effects of electrical noise; typical of telephone and LAN wiring.

U

U-BEND TEST — A cable test in which the insulation is tested for resistance to corona and ozone.

UF — A UL cable type. Thermoplastic underground feeder or branch circuit cable.

UHF — Ultrahigh frequency, the band extending from 300 to 3,000 MHz as designated by the Federal Communications Commission.

UL — Underwriters' Laboratories, Inc.

UL LISTED — A product that has been tested and found to comply with Underwriters Laboratories' standards.

ULTRASONIC CLEANING — Immersion cleaning aided by ultrasonic waves which cause microagitation.

ULTRASONIC DETECTOR — A device that detects ultrasonic noise such as that produced by corona or leaking gas.

ULTRAVIOLET — Radiant energy within the wavelength range 10 to 380 nanometers. It is invisible, filtered out by glass, and causes suntan.

UNBALANCED LINE — A transmission line in which voltages on the two conductors are unequal with respect to ground, e.g., coaxial cable.

UNBALANCED-TO-GROUND — Describing a two-wire circuit, where the impedance-to-ground on one wire is measurably different from that on the other, compare with balanced-to-ground.

UNIDIRECTIONAL CONDUCTOR — See Concentric-lay Conductor.

UNIDIRECTIONAL STRANDING — A term denoting that in a stranded conductor all layers have the same direction of lay.

UNILAY — More than one layer of helically laid wires with the direction of lay and length of lay the same for all layers. See Concentric-lay Conductor.

USE — A UL cable type. Underground service entrance cable, XLP or rubber-insulated, Hypalon or XLP jacketed.

UTP — Unshielded Twisted Pair. Two wires, usually twisted around each other to help cancel out any induced noise in balanced circuits. An unshielded twisted pair cable usually contains four pairs of wire in a single cable jacket.

V

V — Volts. The SI unit of electrical potential difference. One volt is the difference in potential between two points of a conducting wire carrying a constant current of one ampere when the power dissipated between these two points is equal to one watt.

VA — Volt-ampere. A designation of power in terms of volts and amperes.

VAR — A unit of reactive power that means volt-amperes, reactive.

VARMETER — An instrument used by power companies to measure the kvar consumption.

V BAND — A band of frequencies between 46 and 56 gigaHertz.

VC — Varnished-cambric insulation.

VDE — Association of German Electrical Engineers.

VELOCITY OF PROPAGATION — The transmission speed of an electrical signal down a length of cable compared to its speed in free space. Usually expressed as a percentage.

VG — Varnished-glass or nylon braid, 600 V or 3,000 V, 130°C.

VHF — Very high frequency, the band extending from 30 to 300 MHz (television channels 2 to 13 and most FM radio) as designated by the Federal Communications Commission.

VIDEO PAIR CABLE — A transmission cable containing low-loss pairs with an impedance of 125 ohms. Used for TV pick ups, closed-circuit TV, telephone carrier circuits, etc.

VISCOSITY — Internal friction or resistance to flow of a liquid: the constant ratio of shearing stress to rate of shear.

VLF — Very low frequencies, the band extending from 10 to 30 kHz, as designated by the Federal Communications Commission.

VOICE FREQUENCY (VF) — Describes an analog signal within the range of transmitted speech, typically supported by an analog telecommunications circuit.

VOICE PAIR CABLE — A transmission cable containing low-loss pairs with an impedance of 125 ohms. Used for TV pick ups, closed-circuit TV, telephone carrier circuits, etc.

VOLT — A unit of electrical "pressure." One volt is the amount of pressure that will cause one ampere of current to flow through one ohm of resistance.

VOLTAGE — Electrical potential or electromotive force expressed in volts.

VOLTAGE BREAKDOWN — A test to determine the maximum voltage insulated wire can withstand before failure.

VOLTAGE, CORONA EXTINCTION — The minimum voltage that sustains corona, determined by applying a corona producing voltage, then decreasing the voltage until corona is extinct.

VOLTAGE DIVIDER — A network consisting of impedance elements connected in series to which a voltage is applied and from which one or more voltages can be obtained across any portion of the network.

VOLTAGE DROP — The voltage developed across a conductor by the current and the resistance or impedance of the conductor.

VOLTAGE, INDUCED — A voltage produced in a conductor by a change in magnetic flux linking that path.

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 mismatched radio frequency transmission line.

VOLTAGE TO GROUND — The voltage between an energized conductor and earth.

VOLUME RESISTIVITY — The resistance in ohms of a body of unit length and unit cross-sectional area.

VULCANIZATION — A chemical reaction in which the physical properties of a polymer are changed by reacting it with cross-linking agents.

VW-1 — Vertical wire flame test. Formerly designated as FR1. A UL fire rating for single conductor cables. The test is described in UL Standard 1581.

W

W — (1) Symbol for watt or wattage, (2) A UL cable type. Heavy duty portable power cable, one to six conductors. 600 V, without grounds.

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.

WATER BLOCKED CABLE — A multiconductor cable having interstices filled with a water-blocking compound to prevent water flow or wicking.

WATER COOLED LEADS — Furnace Cables. High Energy Cables. Usually welding cable strands cabled with a hose core for carrying coolant — used in heavy duty welding equipment, electric furnace applications, plating and various chemical processes.

WATER TREES — A type of insulation deterioration that can occur after long term immersion in water with an electrical stress applied.

WATT — A unit of electrical power. One watt is equivalent to the power represented by one ampere of current under a pressure of one volt in a DC circuit.

WAVEFORM — A graphical representation of a varying quantity. Usually, time is represented on the horizontal axis, and the current or voltage value is represented on the vertical axis.

WAVE FRONT — (1) That portion of an impulse (in time or distance) between the 10% point and the point at which the impulse reaches 90% of crest value, (2) the rising part of an impulse wave.

WAVELENGTH — The distance between the nodes of a wave. The ratio of the velocity of the wave to the frequency of the wave.

WAVESHAPES REPRESENTATION — The designation of current or voltage by a combination of two numbers. For other than rectangular impulses: (a) virtual duration of the wave front in microseconds, (b) time in microseconds from virtual zero to the instant at which one-half of the crest value is reached on the tail. For rectangular impulses: (a) minimum value of current or voltage, (b) duration in microseconds.

GLOSSARY

WEIGHT RESISTIVITY — The resistance in ohms at a specified temperature of a body of uniform cross section and of unit weight and unit length.

WELDING — Joining the ends of two wires, rods, or groups of wires (a) by fusing, using the application of heat or pressure or both, by means of a flame torch, electric arc, or electric current or (b) by cold pressure.

WHEATSTONE BRIDGE — A device used to measure DC resistance. See Bridge.

WICKING — The longitudinal flow of a liquid in a wire or cable due to capillary action.

WIRE — A rod or filament of drawn or rolled metal whose length is great in comparison with the major axis of its cross section.

WIRE BRAID — Flexible wire constructed of small size strands in tubular form. Used for shielding or connections where constant flexing is required.

WIRE GAUGE (AWG) — The American Wire Gauge, originally called Brown & Sharpe Gauge. A system of numerical wire sizes starting with the lowest numbers for the largest sizes. Gauge sizes are each 20.6% apart based on the cross-sectional area.

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.

WITHSTAND TEST VOLTAGE — The voltage that the device must withstand without flashover, disruptive discharge, puncture, or other electric failure when voltage is applied under specified conditions.

WP — Weatherproof construction for overhead wires.

WORKSTATION — (1) Input/Output equipment at which an operator works; (2) a station at which a user can send data to, or receive data from, a computer or other workstation for the purpose of performing a job.

WRAPPER — An insulating barrier applied as a sheet of tape wrapped around a coil periphery.

X

X — Symbol for reactance.

X BAND — A band of frequencies between 5,200 and 10,000 megahertz.

XHHW — A UL cable type. Cross-linked polyethylene insulated small diameter building wire rated 75°C wet and 90°C dry.

XHHW-2 — A UL cable type. Cross-linked polyethylene insulated small diameter building wire rated 90°C wet and dry.

XLP — Cross-linked polyethylene. Also written XLPE.

XPLE — Cross-linked polyethylene.

Y

YIELD STRENGTH — The point at which a substance changes from elastic to viscous.

Z

Z — Symbol for impedance.

ZETABON — Dow's trade name for an acrylic acid copolymer coated aluminum tape.

ZIPPER TUBING — Alpha's trade name for harnessing/jacketing material containing a zipper-track type closure. The zipper arrangement allows installation with no need to disconnect previously wired schemes for its installation. See Loc-Trac.

ZYTEL — DuPont's trade name for nylon resins.