

International Wire Group, Inc.

GLOSSARY OF WIRE & CABLE TERMINOLOGY

A

ABRASION - The destruction of a material caused by scraping or rubbing against a rough, hard surface.

ABRASION MACHINE - A laboratory device for determining the abrasion resistance of wire and cable. The two standard types of machines are the squirrel cage, with square steel bars, and the abrasive grit type.

ABRASION RESISTANCE - The ability of a wire or cable jacket to resist surface wear.

AC - Abbreviation for alternating current. See alternating current. Also abbreviated as ac.

ACCELERATED LIFETEST - A test in which a cable is subjected to extreme conditions to determine the life of a cable.

ACCELERATOR - Chemical additive which hastens a chemical reaction, e.g., a compound added to rubber or Neoprene® mixtures to reduce curing time. Neoprene® is a trademark of the DuPont de Nemours Co.

ACR - Designation for cable with corona resisting insulation.

ACRS - Aluminum conductor, steel reinforced. Aluminum wires stranded around a steel core. Usually used for high voltage cross-country transmission lines.

ADAPTER - a) Device used for joining two fiber optic connectors together. b) A device for connecting two parts (of different diameters) of an apparatus.

ADHESIVE - Usually a synthetic material which, when applied to tapes, potting operations, etc., permits materials to be bonded together.

ADMITTANCE - Symbol Y. The reciprocal of impedance. Given by the formula:

$$Y = G + iB$$

where **G** is the conductance, **B** the susceptance, and **i** equals $\sqrt{-1}$. Since impedance, **Z**, is given by:

$$Z = R + iX$$

where **R** and **X** are the resistance and reactance, respectively, then:

$$Y = (R - iX) / (R^2 + X^2)$$

AEC - Atomic Energy Commission. The government agency which oversees all atomic energy projects.

AERIAL CABLE - A cable suspended in the air on poles or other overhead structures.

AIEE - Formerly American Institute of Electrical Engineers. Now called the Institute of Electrical and Electronic Engineers (IEEE).

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.

AIRCRAFT IGNITION CABLE - A high tension cable designed for use in the ignition systems of internal combustion aircraft engines.

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

AL - Abbreviation for aluminum.

ALKALI - A soluble salt obtained from the ashes of plants and consisting largely of potassium or sodium carbonate.

ALL RUBBER CABLE - A cable in which all voids between conductors are filled with a rubber com-

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pound. This construction gives greater resistance to impact, adds strength, and reduces the tendency to kink. It also reduces flexibility.

ALLOY - A metal made by the fusion of two or more metals.

AL/MY- Abbreviation for Aluminum Mylar®. Sometimes called out as ALMY. Mylar® is a trademark of the DuPont de Nemours Co.

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

ALTERNATING CURRENT - An alternating current is one where the direction of current is reversed at regular intervals. The rate at which reversals occur is expressed in cycles per second (Hertz or Hz). Abbreviated as AC or ac.

ALUMEL® - An alloy used for thermocouple and thermocouple extension wire. Alumel® is a trademark of the Hoskins Mfg. Co.

ALUMINUM CONDUCTOR - A wire or group of wires of aluminum, not insulated from each other, suitable for carrying electrical current.

am - Abbreviation for amplitude modulation. Also abbreviated as AM.

AMBIENT TEMPERATURE - The temperature of a medium (gas or liquid) surrounding an object.

AMERICAN WIRE GAUGE - Abbreviated AWG. See AWG.

AMP - Abbreviation for ampere. See Ampere.

AMPACITY - See current carrying capacity.

AMPERE - The unit expressing the rate of flow of an electrical current. One ampere is the current flowing through one ohm resistance with one volt potential. Abbreviated as amp.

AMPLIFIER - A device usually employing electron tubes or transistors to obtain amplification of voltage, current, or power.

AN - Literally "aircraft number". For example, AN-6

signifies a wire size of No. 6 AWG.

ANALOG - Being or relative to a mechanism in which data is represented by continuously varying physical quantities. Opposite - digital.

ANNEALED WIRE - Wire which has been softened by heating and gradually cooling. Also called soft drawn wire.

ANNULAR CONDUCTOR - An annular conductor consists of a number of wires stranded in three reverse concentric layers around a saturated hemp core.

ANODE - Positive pole of an electric source. Opposite - cathode.

ANSI - Abbreviation for American National Standards Institute. A federation of trade, technical, professional organizations, government agencies, and consumer groups. Coordinates standards development and publishes standards. Operates a voluntary certification program. Used to be called the American Standards Association (ASA).

ANTENNA WIRE - A wire usually of high tensile strength such as Copperweld®, bronze, etc., with or without insulation used as an antenna for radio and electronic equipment. Copperweld® is a trademark of the Copperweld Steel Company.

ANTIOXIDANT - A substance which prevents or slows down oxidation of material exposed to air.

APPROX. - Abbreviation for approximate.

ARAMID - A lightweight strong heat-resistant aromatic polyamide material used in fiber optic strength members.

ARMATURE WIRE - Stranded annealed copper wire, straight lay, soft loose white cotton braid. It is used for low voltage, high current rotor winding motors and generators. Straight lay permits forming in armature slots and compressibility.

ARMOR - An outer braid of metal or spiral steel tapes, primarily for the purpose of mechanical protection. Generally placed over the outer sheath.

AROMATIC - An organic material composed of benzene in a ring structure.

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ARTOS STRIPPER - A machine that will automatically measure to a predetermined length, cut, strip, count, and tie wire in bundles.

ASA - Abbreviation for American Standards Association. Former name of the American National Standards Institute (ANSI). See ANSI.

ASESA - Abbreviation for Armed Services Electro Standards Agency.

ASG - Abbreviation for Aeronautical Standards Group.

ASME - Abbreviation for American Society of Mechanical Engineers.

ASTM - Abbreviation for American Society for Testing Materials. An organization that tests materials and attempts to set standards on various materials for industry.

ATTENUATION - The loss of power or signal in a circuit, generally expressed in decibels (dB) per unit length, usually one thousand (1,000) feet. In optical fiber cables, attenuation is the ratio of input power vs. output power, measured in decibels per unit length, usually dB/km. Abbreviated as attn.

ATTN. - Abbreviation for attenuation. See attenuation.

AUDIO FREQUENCY - The range of frequencies audible to the human ear, approximately 20 to 20,000 Hz.

AUTO PRIMARY WIRE - A single or multi-conductor wire used for original equipment or replacement on automotive products. Normally low voltage, resistant to oil, acid, and weather.

AWG - Abbreviation for American Wire Gauge. The system most commonly used in the United States for describing the size of copper wire. It is based on the circular mil system. One (1) mil equals 0.001 inch. Also referred to as the Brown and Sharpe (B&S) wire gauge.

AWM - Designation for appliance wiring material.

B

B - Symbol for susceptance. See susceptance.

B & S GAUGE - Brown and Sharpe wire gauge used for describing different sizes of copper conductors. It is the same as AWG (American Wire Gauge). See AWG.

BACKBONE - A transmission network that carries information in a fiber optic system. Mainly for indoor applications between floors and areas with different types of cables.

BACKSHELL MOLD - An aluminum mold used to mold a rubber or Neoprene® covering over the backshell of a conductor or plug after it is connected to a cable. The compound is usually chemically cured. Neoprene® is a trademark of the DuPont de Nemours Co.

BALCO® - An alloy of 70% nickel and 30% iron. It is used in devices where self-regulation by temperature is required. Wilbur Driver Company trademark for a resistance wire.

BAND MARKING - A circular band applied at regular intervals to the insulation of a conductor for the purpose of color coding or circuit identification.

BANDED CABLE - Two or more cables which have been banded together by stainless steel strapping.

BANDWIDTH - The frequency range of transmitted electrical or optical signals, expressed in Hertz. The greater or higher the bandwidth, the greater the information carrying capacity.

BARE CONDUCTOR - A conductor not covered with any insulating material.

BASE BAND - The frequency band occupied by all the transmitted modulating signals.

BASE PRICE - The price of copper per pound before any adders are applied. To this base price, adders are used to determine price for drawing the copper into a wire and for tinning or insulating the bare copper wire.

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BATTERY CABLE - A single conductor cable either insulated or uninsulated used for carrying current from batteries to the point where power is needed. May also be used for grounding.

BAUD - Unit of measure for data transmission speed representing bits per second, e.g., 9,600 baud = 9,600 bits per second (bps).

BC - Abbreviation for bare copper.

2BC - Abbreviation for double bare copper shield.

BCCS - Abbreviation for bare copper-clad steel.

BC-S - Abbreviation for double shield; 1 bare copper, 1 silver.

BEADED COAX - A coaxial cable in which the dielectric consists of beads made of various materials.

BELL WIRE - Common term for wire primarily used for making doorbell and thermostat connections.

BELT (BELTEDTYPE CABLE) - Refers to the number of layers of insulation on a conductor or number of layers of jacket on a cable.

BEND RADIUS - The radius of curvature that an optical fiber cable can bend without causing harmful effects on the optical or mechanical performance of the cable.

BENDING LOSS - In a fiber optic system a form of increased attenuation caused by: a) Having the fiber curved around a restrictive radius of curvature; or b) Micro bends caused by minute distortions in the fiber imposed by externally induced disturbances. Excessive bending loss may result from poor drawing or cable manufacturing technique.

BENDING RADIUS - Radius of curvature around which a fiber is bent under a stated pulling force.

BerC - Abbreviation for beryllium-copper alloy.

BIAS - a) A voltage applied to a device to establish a reference level for operation. b) A high frequency voltage combined with an audio signal to reduce distortion.

BINDER - A spirally served tape or thread used for

holding assembled cable components in place awaiting subsequent manufacturing operations.

BLASTING WIRE - Wire used for detonating explosives. It is usually a very inexpensively constructed wire.

BLK - Abbreviation for black.

BMS - Abbreviation for Boeing Material Specification.

BOND STRENGTH - Amount of adhesion between bonded surfaces, e.g., in cemented ribbon cable.

BONDABLE WIRE - An insulated wire whose surface has been specially treated to make it possible to adhere to other materials such as potting compounds. The term usually refers to extruded PTFE insulated wires. The etching process roughens the surface of the insulation permitting an interlocking effect with potting compounds.

BONDED CONSTRUCTION - A type of insulation construction in which the glass braid and nylon jacket are bonded together as in certain wire sizes of MIL-DTL-5086 Type II.

BOOT - A protective covering over any portion of a cable or conductor in addition to its jacket or insulation.

BPS - Abbreviation for bits per second.

BRAID - A fibrous or metallic group of filaments interwoven in cylindrical form to form a covering over one or more wires. It can be made of materials such as cotton, glass, nylon, or copper fibers. Usually fibrous braid is saturated with an impregnant to protect it against moisture and fraying.

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

BRAIDED WIRE - Woven bare or tinned copper wire used as shielding for wires, cables, and ground wire for batteries or heavy industrial equipment. There are many different types of constructions.

BRAKE WIRE - Wires used in the manufacture of

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both home and truck trailers to supply current to the electrical brakes on the equipment.

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

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

BREAKDOWN OF INSULATION - Failure of an insulation resulting in a flow of current through the insulation. It may be caused by the application of too high a voltage or defects or decay in 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. This force is usually expressed in pounds (lbs) or kilograms (kgs).

BREAKOUT - A breakout is a joint where a conductor or conductors break out from a multi-conductor cable to complete circuits at various points along the main cable. The rest of the conductors continue on within the jacket. The breakout may itself be jacketed and the joint sealed.

BROADBAND - A frequency band that extends over a relatively large range.

BUFFER (TUBE) - Metallic or nonmetallic tube used to protect optical fibers from physical damage, providing mechanical isolation and/or protection.

BUILDING WIRE - Commercial wires used in the building trades such as: Types RR, RH, RL, TW, THW, and THHN wires. General used for light and power, 600 volts or less, usually not exposed to outdoor environment.

BUNA RUBBER - A synthetic rubber used as a replacement for natural rubber.

BUNCH STRANDING - A conductor in which all individual wires are twisted in the same direction without a predetermined pattern.

BURIAL CABLE - A cable installed directly in the earth without use of an underground conduit. Also

called "direct burial cable."

BUS (BUS BAR) - A conductor, often a heavy strap or bar, used to make a common connection between several circuits.

BUTT BRAIDER - A machine used for braiding or shielding cable or wire. It may be 8, 16, 24, 32, 48, or 64 carriers. These braiders are manufactured by New England Butt Company and operate on the maypole type principal.

BUTYL - Used for any of various synthetic rubbers made by polymerizing isobutylene.

BX - A very common type of armored building wire in various configurations, rated at 600 volt.

C

c - Abbreviation for centimeter. Also abbreviated cm.

C - Abbreviation for Centigrade. A scale for measuring temperature, water freezes at 0° C and boils at 100° C. See Celsius temperature scale.

CABLE - a) 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. b) A single conductor larger than 9 AWG.

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 CORE - The portion of an insulated cable lying under the protective covering or jacket.

CABLE FILLER - The material used in multi-conductor cables to occupy the spaces formed by the assembly of components thus forming a core of the desired shape (normally cylindrical).

CABLE PULLERS - A cable puller is a tool for pulling cables through a conduit made of metal, plastic, rubber, or Neoprene®. Neoprene® is a trademark of the DuPont de Nemours Co.

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CABLE SHEATH - A cable sheath is a covering of rubber, Neoprene[®], resin, or lead over a wire or cable core. Neoprene[®] is a trademark of the DuPont de Nemours Co.

CABLING FACTOR - Symbol **K**. A constant used in determining the approximate finished O.D. of an unshielded, unjacketed cable. $D = Kd$, where **D** is the diameter, **K** is the factor, and **d** is the diameter of one insulated conductor. A separate constant is used based on the number of conductors used (see Cable Design Formulas page 200).

CAD BR - Abbreviation for cadmium bronze.

CADMIUM - A bluish-white malleable ductile toxic bivalent metallic element used in protective platings and in bearing metals.

CAGED ARMOR - The armor wires within a polyethylene jacket to increase mechanical protection and tensile strength. Often used in submarine cables.

CAL-TRANS - Abbreviation for California Department of Transportation.

CAP - Abbreviation for capacitance. See capacitance.

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. The value depends largely on the surface area of the plates, distance between them, and the composition of the medium between the plates. Abbreviation **CAP**. The unit of measure is farad (f).

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

CAPACITANCE, MUTUAL - The capacitance between two conductors with all other conductors, including shield, short-circuited to ground.

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

CAPACITANCE, UNBALANCED to GROUND - An inequality of capacitance between the ground capacitance of the conductors of a pair which results in a pick up of external source energy, usually from power transmission lines.

CAPACITIVE COUPLING - Electrical interaction between two conductors caused by the capacitance between them.

CATEGORY 1 - A UL designation for inside telephone cable for voice. Also referred to as Level 1.

CATEGORY 2 - A UL designation for inside telephone cable for voice. Also referred to as Level 2.

CATEGORY 3 - A UL designation for inside telephone cable that is the lowest performance level recommended for voice. Also referred to as Level 3.

CATEGORY 4 - A UL designation for inside cable for Data Grade UTP. Also referred to as Level 4.

CATEGORY 5E - A UL designation for inside data cable that is the lowest performance level recommended for enhanced 350 MHz data cable. Also referred to as Level 5.

CATEGORY 6 - A UL designation for inside data cable that is the highest performance data cable.

CATHODE - Negative pole of an electric source. Opposite - anode.

CATV - Abbreviation for Community Antenna Television.

CBO - Brewery cord, Neoprene[®] insulated. Neoprene[®] is a trademark of the DuPont de Nemours Co.

CCA - Abbreviation for copper-clad aluminum.

CCS - Abbreviation for copper-clad steel. See copper-clad.

CCTV - Abbreviation for Closed Circuit Television.

CDDI - Abbreviation for cable distributed data interface.

CEC - Abbreviation for Canadian Electrical Code.

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CELLULAR POLYETHYLENE - Expanded or "foam" polyethylene consisting of individual closed cells suspended in a polyethylene medium.

CELSIUSTEMPERATURE SCALE - Formerly called Centigrade Temperature Scale. A temperature scale based upon the freezing point of water defined as 0° C and the boiling point defined as 100° C.

CENTI - A prefix to a unit, denoting a submultiple of one-hundredth (10^{-2}) of that unit.

CENTIGRADE TEMPERATURE SCALE - The older name for the Celsius Temperature Scale in English speaking countries. Officially abandoned by international agreements and the U.S. Bureau of Standards in 1948, but still in common usage.

CERTIFICATE OF COMPLIANCE (CONFORMANCE) - A certificate which is normally generated by a quality control department which shows that the product being shipped meets the customer's specifications. Abbreviation C of C, sometimes referred to as CERTS.

CERTIFIED TEST REPORTS - A report providing actual test data on a cable. Tests are normally run by a quality control department which show that the product being shipped conforms to test specifications. Abbreviation CTR or TR.

CERTS - Abbreviation for certificate of compliance. See certificate of compliance.

CF - The designation for cotton fixture wire. It is a cotton insulated, impregnated with moisture resisting, flame-retarding compound. It is used in lighting fixtures up to 90° C.

CF GLASS - Means continuous filament glass yarn which is used in braiding, in making glass fabric, and glass thread.

CFT - The abbreviation for 100 feet.

CHARACTERISTIC IMPEDANCE - a) The impedance that when connected to the output terminals of a transmission line of any length, makes the line appear infinitely long. b) The ratio of voltage to current at every point along a transmission line on which there are no standing waves.

CHEMICALLY CURED COMPOUND - Those compounds which are cured by chemical process rather than by heat and pressure.

CHLORO - Abbreviation for chloroprene. See chloroprene.

CHLOROPRENE - A colorless liquid C_4H_5Cl . Abbreviated as chloro.

CHLOROSULFONATED POLYETHYLENE - A synthetic rubber, made by DuPont de Nemours Co. Resistant to oxidation by ozone, sun, weather, heat, and chemicals, rated 90° C. Abbreviated CP or CSPE. Trade name is Hypalon® which is a trademark of the DuPont de Nemours Co.

CHROMATIC DISPERSION - Different wavelengths travel along an optical medium at different speeds. Wavelengths reach the end of the medium at different times, causing the light pulse to spread. This chromatic dispersion is expressed in picoseconds (of dispersion) per kilometer (of length) per nanometer (of source bandwidth). It is the sum of material and waveguide dispersion.

CHROMEL®-ALUMEL® - The alloy used in making Chromel-Alumel® thermocouple wires. Chromel® is an alloy of nickel and chrome plus nine other elements. Alumel® is an alloy containing nickel, manganese, aluminum, silicon, and nine other elements. Chromel® is nonmagnetic; Alumel® is highly magnetic. Chromel® and Alumel® are trademarks of the Hoskins Mfg. Co.

CHROMIUM - A blue-white metallic element found naturally only in combination and used in alloys and in electroplating.

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

CIRCUIT SIZES - A popular term for building wires sizes 14 through 10 AWG.

CIRCULAR MIL - A term universally used to define cross sectional areas of conductors. It is an area (7.854×10 sq. in.) equal to the area of a circle one-thousandth (10^{-3}) of an inch in diameter. As the

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number of circular mils increases, the size of a wire increases. Abbreviation CM.

CL2 - Abbreviation for Class 2 cable.

CL2P - Abbreviation for Class 2 plenum cable.

CL2R - Abbreviation for Class 2 riser cable.

CL2X - Abbreviation for Class 2 cable, limited use.

CL3 - Abbreviation for Class 3 cable.

CL3P - Abbreviation for Class 3 plenum cable.

CL3R - Abbreviation for Class 3 riser cable.

CL3X - Abbreviation for Class 3 cable, limited use.

CLADDING - a) In fiber optics the layer of material, usually glass, that immediately surrounds the fiber core of optical fiber cable. The cladding is usually coated with another material to provide protection when handling. b) A method of applying a layer of metal over another metal whereby the junction of the two metals is continuously welded.

CLEAVING - The process of separating an optical fiber by a controlled fracture of the glass, for the purpose of obtaining a fiber end, which is flat, smooth, and perpendicular to the fiber axis.

cm - Abbreviation for centimeter. Also abbreviated c.

CM - a) Abbreviation for communication general purpose cable. b) Abbreviation for circular mil. See circular mil.

CMP - Abbreviation for communication plenum cable.

CMR - Abbreviation for communication riser cable.

CMX - Abbreviation for communication cable, limited use.

COATING - A material applied to the surface of a conductor to prevent environmental deterioration, facilitate soldering, or improve electrical performance.

COAX - See coaxial cable.

COAXIAL CABLE - A cable in which one conductor completely surrounds the other, the two being coaxial and separated by a continuous solid dielectric or by dielectric spacers. When the outside conductor is grounded, the inside conductor is not susceptible to external fields from outside sources. Commonly called coax.

COIL - A coiled conductor, wound on a form or core which uses electromagnetic induction to cause changes in a current.

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

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

COLD TEST - Tests performed on cables to check their performance at a specified low temperature as outlined in various specifications.

COLOR CODE - Color code is the use of different colored insulated wires for purposes of identification in a multi-conductor cable.

COMMON AXIS CABLING - In multiple cable constructions, a twisting of all conductors around a "common axis" with two conductor groups then selected as pairs. This method yields smaller diameter constructions than does a separate axis construction, but tends to yield greater susceptible to EMI and ESI.

COMMUNITY TV CABLE - Community TV cables are coaxial cables that are used to transmit television signals from a master antenna to a group of receivers in a community. RG 17/U is used as the primary lead-in, RG 11/U as the secondary lead-in, and RG 59/U as the tap-off lead-in.

COMPACT CONDUCTOR - Refers to a stranded conductor which is rolled to deform the round wires

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to fill the normal interstices between the wires in a strand.

COMPOSITE CABLE - A cable consisting of two or more different types or sizes of wire and/or cable.

COMPOUND - An insulating or jacketing material made by the chemical union of two or more ingredients.

CONCENTRIC LAY CONDUCTOR - A single conductor composed of a central core surrounded by one or more helically laid wires. Each of these succeeding layers is applied with an opposite direction twist. The number of wires laid up the center wire is six, and each succeeding layer consists of six additional wires so that the number of wires in the strands are 7, 19, 37, 61, etc.

CONCENTRIC STRANDING - A central wire or core surrounded by one or more layers of helically wound strands in a fixed round geometric arrangement. Generally each layer, after the first, has six more strands than the preceding layer and is applied in a direction opposite to that of the layer under it.

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

COND. - Abbreviation for conductor. See conductor.

CONDUCTANCE - Symbol G . The measure of the ability of a substance to conduct electricity. The ratio of the current flow to the potential difference causing the flow. The real part of the admittance, Y , which is given by:

$$Y = G + i B$$

where B is the susceptance and i equals

$$\sqrt{-1} .$$

For a direct current circuit, the conductance is the reciprocal of resistance and is measured in ohms. For a circuit containing both resistance, R , and reactance, X , the conductance is given by:

$$G = R / (R^2 + X^2)$$

CONDUCTIVITY - The capability of a material to carry electrical current, usually expressed as a percentage of copper conductivity (copper being 100%). The reciprocal of resistivity.

CONDUCTOR - A material that offers a low resistance to the passage of electric current (see resistivity). When a potential difference is applied across it, a relatively large current flows. A conductor usually consists of copper, aluminum, steel, silver, or other materials. Abbreviated as cond.

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

CONNECTOR - A mechanism used to unite two pieces of cable, both physically and electrically.

CONSERVATION OF ENERGY PRINCIPLE - A principle in physics; the total energy of an isolated system remains constant irrespective of whatever internal change may take place with energy disappearing in one form and reappearing in another.

CONST. - Abbreviation for construction.

CONSTANTAN - An alloy of 55% copper and 45% nickel used in thermocouple with copper in the temperature range of 169° C to 386° C. Temperature coefficient of electrical resistivity, 0.0002 / ° C.

CONT. - Abbreviation for continued.

CONTACT - The part of a conductor which actually carries the electrical current and is touched together or separated to control flow.

CONTINUITY CHECK - A test performed on a length of finished wire or cable to determine if the electrical current flows continuously throughout the length. Each conductor may also be checked against each other to ascertain that no shorts exist between conductors.

CONTINUOUS DUTY - In some portable cords there are two standard number of strands of a given wire size. The one with the greater number (most flexible) is called continuous duty and the other is called stationary duty.

CONTINUOUS VULCANIZATION - The process of extruding on a wire, under high pressure, a uniform seamless, close-fitting tube of a rubber or rubberlike

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compound. The covered wire then continues into a vulcanizing chamber, where, under high pressure and temperature, the insulation or jacket is vulcanized continuously rather than in sections. Abbreviated as cv.

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

COPO - Abbreviation for copolene. See copolene.

COPELENE - Copolene is a dielectric material used in manufacturing coaxial cable. Developed as a substitute for polystyrene, it is composed of polystyrene and polyisobutylene. Since it has undesirable characteristics, it has been replaced by polyethylene. Abbreviated as copo.

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

COPPER-CLAD - Steel wire with a coating of copper welded to it, as distinguished from copper-plated. Abbreviated CCS. Same as Copperweld®. Copperweld® is a trademark of the Copperweld Steel Company.

COPPER CONSTANTAN - Copper and constantan are two materials used in making thermocouple wires. The copper is the positive wire and the constantan is the negative wire.

COPPERWELD® - Copperweld® is the trade name for copper covered steel wire manufactured by Copperweld Steel Company. It is made by an exclusive molten welding process whereby a thick copper covering is inseparably welded to a steel core. Copperweld® thus performs as one metal. Hot rolling, cold drawing, pounding, or temperature changes cannot adversely affect it. Abbreviated as cw.

CORD - A small, flexible insulated conductor or conductors, usual 10 AWG or smaller and not more than four conductors, jacketed to protect the conductors, and most often used for portable applications.

CORD SETS - Portable cords fitted with any type of wiring device at one or both ends.

CORE - a). In cables, a component or assembly of components over which additional components (shield, sheath, etc.) are applied. b). In fiber optic

cable, the central part of the glass construction through which light is transmitted.

CORONA - Ionization of air surrounding a conductor caused by the influence of high voltage.

CORPS OF ENGINEERS - The branch of the United States Army in charge of construction on all military installations.

COVERAGE - The percent of completeness with which a metal braid covers the underlying surface.

COVERINGS - Coverings may consist of textile braids or may be jackets of rubber, plastics, or other materials applied over wires and cables. Such coverings provide mechanical protection and, in some cases, circuit identification.

CP - Abbreviation for chlorosulfonated polyethylene. Also abbreviated as CSPE. See Hypalon®. Hypalon® is a trademark of the DuPont de Nemours Co.

CPC - Abbreviation for copper polyester copper laminate.

CPE - Abbreviation for chlorinated polyethylene, a conductive polyethylene.

CPVC - Abbreviation for chlorinated polyvinylchloride.

CR - Abbreviation for chloroprene rubber. See Neoprene®. Neoprene® is a trademark of the DuPont de Nemours Co.

CRAZING - The minute cracks on the surface of plastic materials.

CRCS - Abbreviation for continuous rigid cable support, synonymous with tray.

CREEPAGE - Electric leakage on a solid dielectric surface.

CROSS-LINKED - Intermolecular bonds between long chain thermoplastic polymers by means of chemical or electron bombardment. The properties of the resulting thermosetting material are usually improved. Abbreviation XL.

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CROSS SECTIONAL AREA OF A CONDUCTOR

Cross sectional area of a conductor is the sum of cross sectional areas of all the individual wires comprising the strand.

CROSS TALK - Signal interference due to cross coupling between nearby conductors producing an unwanted signal in one circuit when a signal is present in the other. A phenomenon usually due to induction.

CSA - Abbreviation for Canadian Standards Association. This is the Canadian counterpart of the Underwriters Laboratories (UL) in the U.S.

CSPE - Abbreviation for chlorosulfonated polyethylene. Also abbreviated as CP. See Hypalon®. Hypalon® is a trademark of the DuPont de Nemours Co.

CURE DATE - a) The date at which the curing cycle is completed on Neoprene® or rubber. b) The date of manufacture. Neoprene® is a trademark of the DuPont de Nemours Co.

CURRENT - The rate of flow of electricity. Usually measured in amperes. Symbol I.

CURRENT CARRYING CAPACITY - The maximum current an insulated conductor can continuously carry without exceeding its insulation and jacket temperature limitations. Also called ampacity.

CUTOFF WAVELENGTH - In fiber optics cable, the wavelength at which a single-mode fiber transmits a single-mode of light.

CV - The abbreviation for continuous vulcanization. See continuous vulcanization.

CW - Abbreviation for Copperweld® conductor. See Copperweld®. Copperweld® is a trademark of the Copperweld Steel Company.

CYCLE - The complete sequence of alteration or reversal of the flow of an alternating electric current.

D

db - Abbreviation for decibel(s). See decibel.

db LOSS - The loss of signal over a path or conductor, expressed in decibels.

DC - Abbreviation for direct current. See direct current. Also abbreviated dc.

DCR - Abbreviation for direct current resistance. The resistance offered by any circuit to the flow of direct current.

DEC - Abbreviation for Digital Equipment Corporation.

DECA - A prefix to a unit, denoting a multiple of ten (10) of that unit.

DECI - A prefix to a unit, denoting a submultiple of one-tenth (10⁻¹) of that unit.

DECIBEL - A unit used to express ratios of sound or signal power, defined by the following formula where **n** is the number of decibels.

$$n = 10 \log_{10} (P_2 / P_1)$$

Where **P₁** and **P₂** are the power levels. Since decibels represent a ratio, it is necessary to establish a reference level in order to indicate an absolute level. For sound, the reference level is a pressure of 0.0002 microbar. Abbreviated as db.

DEGREE RISE - The amount of increase in temperature caused by the introduction of electricity into a unit.

DELAY LINE - A conductor that is made of a specific material in a specific size and length that will permit the delay of an electrical impulse for a predetermined specific length of time. The delay is measured in microseconds or nanoseconds.

DENSITY - The distribution of a quantity (as mass, electricity, or energy) per unit, usually of space.

DESICCANT - Water or moisture absorbent material used to prevent moisture from damaging packaged equipment or other merchandise.

DESIGN VOLTAGE - Voltage at which a cable is designed for maximum work.

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DETECTA-DUCT® - Traffic signal inductance loop detector wire. Detecta-Duct® is a trademark of the Standard Wire & Cable Co.

DIA. - Abbreviation for diameter.

DIELECT. - Abbreviation for dielectric. See dielectric.

DIELECTRIC - Any insulating material that is a non-conductor of electricity. Abbreviated as dielect.

DIELECTRIC ABSORPTION - That property of an imperfect dielectric whereby there is an accumulation of electric charge within the body of the material when it is placed in an electric field.

DIELECTRIC CONSTANT - The factor by which the electric field strength in a vacuum exceeds that in the dielectric for the same distribution of charge. Symbol **K**. The **K** for air is 1.0.

DIELECTRIC LOSS - Energy dissipated as heat when the dielectric is placed in a varying electric field.

DIELECTRIC STRENGTH - The maximum potential gradient (volts per mil) a dielectric will stand without breaking down; the voltage stress required to puncture an insulation of known thickness (in volts per unit, usually volts per mil.)

DIGITAL - Of or relating to calculation by numerical methods or by discrete units. Opposite - analog.

DIODE - Any electronic device that has only two electrodes. There are several different types of diodes, their voltage characteristics determining their application. Diodes are most commonly used as rectifiers.

DIRECT BURIAL CABLE - A cable installed directly in the earth without use of an underground conduit. Also called "burial cable".

DIRECT CURRENT - A direct current is one which flows in one direction. Further classifications of direct currents are: a) Continuous currents which are steady, non pulsating direct currents; b) Constant currents, which continue to flow for a considerable time in the same direction and with unvarying intensity; and c) Pulsating currents, which are regularly varying continuous currents. Abbreviations DC and dc.

DIRECTION OF LAY - The lateral direction in which the strands of a cable run over the top of the cable as they recede from you looking along the axis of the cable.

DISPERSION - A general term for those phenomena that cause a broadening or spreading of light as it propagates through an optical fiber. The three types are modal, chromatic, and waveguide.

DOD - Abbreviation for the U. S. Department of Defense.

DOUBLE SHIELD - Two shields, one over the other. Maximum coverage is 98%.

DP - Abbreviation for data processing.

DRAIN WIRE - An uninsulated solid or stranded tinned copper wire which is placed directly under a shield. It touches the shield throughout the cable, and, therefore, may be used in terminating the shield to ground. A big labor saver in terminating all shielded cables. It is completely necessary on spiral shielded cables because it eliminates the possibility of induction in a spiral shield.

DRAWING - In wire manufacturing, pulling of metal through a die or series of dies to reduce diameter to a specific size.

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

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

DUPLEX - Two conductors twisted together, usually with no outer covering. This word has a double meaning and it is possible to have parallel wires and jacketed parallel wires and still refer to them as a duplex.

E

EARTH FAULT - A fault that occurs when a conductor is accidentally connected to earth or when the resistance to earth of an insulator falls below a specific value.

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EARTH POTENTIAL - The potential of a large conducting body, such as the earth, taken to be the arbitrary zero in the scale of electrical potential. Synonymous with zero potential.

ECM - Abbreviation for Electronic Counter Measure. The use of equipment to prevent or induce jamming of electronic equipment, missile systems, radar, radio, and other devices.

ECTFE - Abbreviation for ethylene chlorotrifluoroethylene copolymer. See ethylene chlorotrifluoroethylene. Trade name Halar®. Halar® is a trademark of the Allied Chemical Co.

EEA - Abbreviation for ethylene-ethyl acrylate copolymer.

EHF - Abbreviation for extremely high frequency. See frequency band.

EIA - Abbreviation for Electronics Industries Association. Formerly known as RETMA (Radio Electronics Television Manufacturers Association).

ELASTOMER - A rubberlike substance.

ELECTRICAL DUCT - Any electrical conduit or other raceway round in cross section, approved or listed for use underground, and embedded in earth or concrete.

ELECTROTINNED - Wire tinned with pure tin using an electrolytic process.

ELECTROMOTIVE FORCE - Pressure or voltage. The force which causes current to flow in a circuit. The algebraic sum of the potential differences in a circuit equals the EMF, which is measured by the energy liberated when unit electric charge passes completely round the circuit. A battery of EMF, **E**, will supply a current, **I**, to an external resistance, **R**:

$$E = I(R + r)$$

where **r** is the internal resistance of the battery.

The term "electromotive force" strictly applies to a source of electrical energy but is sometimes misused as being equivalent to potential difference. Symbol **E**. Abbreviated as EMF.

ELONGATION - The state of being elongated or lengthened.

EMC - Abbreviation for electromagnetic compatibility. No emission of interference exceeding FCC limits.

EMF - Abbreviation for electromotive force. See electromotive force.

EMI - Abbreviation for electromagnetic interference.

EMP - Abbreviation for electromagnetic pulse.

ENAMELED WIRE - A conductor with a baked-on varnish enamel; may be 7 AWG through 50 AWG. Intended for use in winding motors, coils, transformers, and other applications of similar usage.

ENERGIZE - To apply rated voltage to a circuit or device, such as the coil of a relay, in order to activate it.

ENERGY - The capacity for performing work.

EP - Abbreviation for ethylene propylene.

EPDM - Abbreviation for ethylene propylenediene monomer rubber.

EPN - Abbreviation for extended performance network cable.

EPOXY - A potting resin used in bonding, e.g., to bond PTFE wire to pot connectors to assure that they are moisture proof.

EPR - Abbreviation for ethylene propylene copolymer rubber. It has properties similar to butyl rubber. The polymer is chemically cross-linked.

ESI - Abbreviation for electrostatic interference.

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

ETFE - Abbreviation for ethylene tetrafluoroethylene. See ethylene tetrafluoroethylene.

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ETHERNET - Local area network configuration.

ETHYLENE - A colorless flammable gaseous unsaturated hydrocarbon C_2H_4 that is found in coal gas. It can be produced by pyrolysis of petroleum hydrocarbon.

ETHYLENE CHLOROTRIFLUOROETHYLENE - A high temperature fluoropolymer of high dielectric strength (HALAR®). Abbreviation ECTFE. Also abbreviated as ECTFE-XI. Halar® is a trademark of the Allied Chemical Co.

ETHYLENE TETRAFLUOROETHYLENE - A high temperature insulation of high dielectric strength. Abbreviation ETFE.

ETHYLENETETRAFLUOROETHYLENE COPOLYMER - A high temperature cross-linked fluoropolymer of high dielectric strength per MIL-C-17. Abbreviation XLETFE.

ETL - ETL Testing Laboratory.

EXTREMELY HIGH FREQUENCY - See frequency band.

EXTRUDE - To shape (as metal or plastic) by forcing through a die.

EXTRUSION - The process of continuously forcing both a plastic or elastomer and a conductor core through a die, thereby applying a continuous coating of insulation or jacket to the core or conductor.

F

f - Abbreviation for farad. See farad.

F - Abbreviation for Fahrenheit. See Fahrenheit.

FAA - Abbreviation for Federal Aeronautics Administration.

FAHRENHEIT - A scale for measuring temperature. Water freezes at 32° F and boils at 212° F. Abbreviated F.

FARAD - A unit of capacitance. Usually expressed in microfarads (μF) one-millionth (10^{-6}) of a farad;

or picofarads (pf) one-trillionth (10^{-18}) of a farad. Abbreviation f.

FATIGUE RESISTANCE - Resistance to metal crystallization that occurs when the conductors or wires break from flexing.

FAULT CURRENT - A current that may flow through a circuit or device as a result of a fault, such as a defect in the insulation.

FDDI - Abbreviation for fiber distributed data interface.

FEP - Abbreviation for fluorinated ethylene propylene. It was formerly called X-100 or FEP-100. This is a fluorocarbon resin.

FEP-IX - Abbreviation for extruded fluorinated ethylene propylene, type IX per MIL-C-17.

FEP-XII - Abbreviation for extruded fluorinated ethylene propylene, type XII per MIL-C-17.

FF - There are two types, commercial and military. Commercial type is UL approved fixture wire. Construction is stranded copper conductor, rubber insulation, and cotton braid. Military type FF is MIL-W-16878D, 1,000 volt, 200° C, sizes 24 AWG to 4/0 AWG. Construction is stranded tin copper conductor, silicone rubber insulation, with or without an outer glass braid.

FG - Abbreviation for fiberglass.

FG BRAID-V - Abbreviation for fiberglass impregnated type V per MIL-C-17.

FHPE - Abbreviation for foamed high density polyethylene.

FIBER OPTICS - Transmission of energy by light through glass fibers.

FIELD - Area through which passes electric and/or magnetic lines of force.

FIGURE 8 CABLE - An aerial cable in which the conductors and steel supporting strand are jacketed together in such a manner that a cross section of the cable approximates the figure eight.

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

FILLED STRAND - Conductor in which the interstices between the individual wires are filled with a compound to prevent moisture migration along the conductor.

FILLER - a) Fillers are used in multi-conductor cable to occupy the voids formed by the assembled conductors. This is done so that the resulting configuration will be round. b) An inert substance added to a compound to improve properties or decrease cost.

FIRE CONTROL EQUIPMENT - This is equipment that automatically directs the firing of armament. It is constructed in accordance with International Municipal Signal Association Standards. These standards recognize 18 to 9 AWG wires and cables that may be insulated with rubber or polyethylene with lead or lead alloy sheath.

FL - Abbreviation for FL poly tape.

FLAME-RESISTANCE - The ability of a material not to propagate flame once the heat source is removed.

FLAME-RETARDANT - Ability of a material to prevent the spread of combustion by a low rate of travel so the flame will not be conveyed.

FLAMMABILITY - The measure of a material's ability to support combustion.

FLASHOVER - A disruptive discharge in the form of an arc or spark between two electrical conductors or between a conductor and earth.

FLASHOVER VOLTAGE - The voltage between two conductors at which flashover just occurs. The dry flashover voltage is the voltage at which flashover occurs when the conductors are separated by a clean dry insulator. The wet flashover voltage is the voltage at which flashover occurs when the clean insulator is wet.

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

FLEX. - Abbreviation for flexible.

FLEX LIFE - The measure of the ability of a conductor or cable to withstand repeated bending.

FLEXOPRENE® - Standard Wire & Cable Co. trademark for flexible, oil resistant portable cord and cable.

FLUOROCARBON - Any of various chemically inert compounds containing carbon and fluorine used chiefly as lubricants, refrigerants, nonstick coatings, and formerly aerosol propellants and in making resins and plastics.

FLUOROPOLYMER - Insulations or jackets characterized by the presence of fluorine in the formulation.

FM - Abbreviation for frequency modulation.

FOAMED PLASTICS - Insulations having a cellular structure.

FP - Abbreviation for fluorocarbon polymer, modified polytetrafluoroethylene (PTFE). See polytetrafluoroethylene.

FPL - Abbreviation for fire protective power-limited signaling circuit cable.

FPLP - Abbreviation for fire protective power-limited signaling circuit plenum cable.

FPLR - Abbreviation for fire protective power-limited signaling circuit riser cable.

FR-1 - See VW-1.

FREQUENCY - The number of times an alternating current reverses itself in one second. Expressed in Hertz (Hz), which is one cycle per second.

FREQUENCY BAND - A particular range of frequencies that forms part of a larger continuous series of frequencies. The internationally agreed radio frequency bands are shown below:

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Wavelength	Band	Frequency
1 mm - 1 cm	extremely high frequency (EHF)	300 - 30 GHz
1 cm - 10 cm	superhigh frequency (SHF)	30 - 3 GHz
10 cm - 1 m	ultrahigh frequency (UHF)	3 - 0.3 GHz
1 m - 10 m 300 - 30 MHz	frequency (VHF)	very high
10 m - 100 m	high frequency (HF)	30 - 3 MHz
100 m - 1,000 m	medium frequency (MF)	3 - 0.3 MHz
1 Km - 10 Km	low frequency (LF)	300 - 30 KHz
10 Km - 100 Km	very low frequency (VLF)	30 - 3 KHz

Microwave frequencies, ranging from VHF to EHF bands are usually subdivided into bands designated by letters. These are not internationally agreed upon but the commonly used subdivisions are shown below:

Band	Frequency (GHz)	Wavelength (cm)
P	0.225 - 0.390	133.3 - 76.9
L	0.390 - 1.550	76.9 - 19.3
S	1.550 - 5.20	19.3 - 5.77
X	5.20 - 10.90	5.77 - 2.75
K	10.90 - 36.00	2.75 - 0.834
Q	36.0 - 46.0	0.834 - 0.652

V	46.0 - 56.0	0.652 - 0.536
W	56.0 - 100.0	0.536 - 0.300

FREQUENCY MULTIPLEXING - The technique of sharing a transmission channel wherein carrier signals of different frequencies are transmitted simultaneously.

FRHF - Abbreviation for flame-retardant and halogen-free. A sheathing material which is flame-retardant, halogen-free, noncorrosive, low-smoke, and non fire propagating.

FRPE - Fire retardant polyethylene.

F/S - Abbreviation for foam skin insulation (expanded polyolefin with a skin of solid polyolefin).

ft - Abbreviation for feet.

FT-4 - CSA designation for vertical tray flame test.

FT-6 - CSA designation for plenum or MI flame test.

FUSED SPIRAL TAPE - This refers to a type of PTFE insulated hook-up wire. The conductor is run through a taping head so that each successive wrap overlays the previous wrap. The spiral wrapped conductor is then passed through a sintering oven where the overlaps are fused together. The wire is then sized and polished.

FUSION SPLICE - A splice accomplished by the application of localized heat sufficient to fuse or melt the ends of two lengths of optical fiber. Same as heat shrink splice.

G

g - Abbreviation for gram.

G - Symbol for conductance. See conductance.

G. CABLE - G. cable is a type W or power cable with ground wires. The total CM (circular mil) area of the ground wires is approximately one-half to three-quarters of the CM area of one of the conductors.

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GAS FILLED CABLE - Paper insulated lead sheath cable filled with gas which provides a self-supervised alarm system. There are three different types; low pressure, medium pressure, and high pressure. They may be installed in ducts, in air, or buried directly.

GAS PRESSURE COMPENSATED - A saturated paper insulated cable containing tubes for the transmission of gas pressure along a cable and with external gas feed to the tubes.

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

GC - Abbreviation for ground conductor.

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

G-GC - Type G-GC mining cable with grounding conductor and a ground check conductor.

GHz - Abbreviation for gigahertz. See gigahertz.

GIGA - A prefix to a unit, denoting a multiple of one billion (10^9) of that unit.

GIGAHERTZ - A term for one billion (10^9) cycles per second. Used to replace the more cumbersome term kilomegacycle. Abbreviation GHz.

GLASS BRAID - Used to provide thermal and/or mechanical protection to the underlying insulation of certain types of conductors.

GPU - Abbreviation for Ground Power Unit. A GPU is a mobile power generator used typically at airports.

GRADED INDEX - In fiber optic cable the refractive index profile that varies with the radius of the core. The refractive indices decrease from the center axis out. The purpose is to reduce modal dispersion and thereby increase fiber bandwidth.

GROMMET - A flexible loop that serves as a fastening, support, or reinforcement; an eyelet of firm material to strengthen or protect an opening or to insulate or protect something passed through it.

GROUND - An object that makes an electrical connection with the earth; a large conducting body (as

the earth) used as a common return for an electrical circuit and as an arbitrary zero potential; synonym for earth.

GROUND FAULT - A failure of transmission involving insulation to shield or insulation to ground wire.

GROUND POWER CABLE - A cable assembly fitted with the applicable terminations to supply power to an aircraft from a ground power unit (GPU).

GROUNDING NEUTRAL - The neutral wire is metallically connected to ground.

GRS - Abbreviation for Government Rubber Synthetic. This is a government standard for Buna-S rubber for jacketing and insulating compounds for military wires and cables.

GS - Abbreviation for galvanized steel.

GTO - Abbreviation for gas tube, sign, and oil burner ignition cable. Stranded tin copper conductor, polyethylene insulation, PVC jacket overall. Manufactured in 14 AWG for 10 kV and 15 kV service.

gu - Abbreviation for gauge.

GW - Abbreviation for galvanized wire.

H

H - Abbreviation for henry (unit of measure of inductance).

H-FILM® - High temperature polyimide Kapton® film. H-FILM® and Kapton® are trademarks of the DuPont de Nemours Co.

HALAR® - Ethylene chlorotrifluoroethylene or ECTFE copolymer. A high temperature insulation. Halar® is a trademark of the Allied Chemical Co. See ethylene chlorotrifluoroethylene.

HALOGEN - Any of the five elements fluorine, chlorine, bromine, iodine, and astatine that form part of group VII A of the periodic table and exist in the free state normally as diatomic molecules.

HAM - An amateur radio operator.

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HARD DRAWN - The conductor is work hardened in the drawing process. Hard drawn refers to the temper of conductors that are not annealed after drawing.

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

HASH MARK STRIPE - A noncontinuous helical stripe applied to a conductor for identification.

HD - Abbreviation for high density.

HDP - Abbreviation for high density polyethylene. Compared to PE (polyethylene) it has higher abrasion resistance, higher weatherability, and lower flexibility at room and low temperature. Also abbreviated as HDPE.

HDPE - Abbreviation for high density polyethylene. Compared to PE (polyethylene) it has higher abrasion resistance, higher weatherability, and lower flexibility at room and low temperature. Also abbreviated as HDP.

HDXLPE - Abbreviation for high density cross-linked polyethylene.

HEAD SET CORD - A very flexible cord used for communication equipment usually 24 AWG to 22 AWG multi-conductor. Usually made with Buna insulation, rubber or Neoprene® jacket; sometimes the outer jacket is a cotton braid. The conductor may be bare copper or cadmium bronze. Neoprene® is a trademark of the DuPont de Nemours Co.

HEAT AND PRESSURE CURE - Uncured rubber or rubberlike compound that is usually cooked in a mold under high pressure at a given temperature. The pressure, temperature, and time required for curing depends upon the type of compound used.

HEAT ENDURANCE - The time of heat aging that a material can withstand before failing a specific physical test.

HEAT SEAL - A method for sealing a tape-wrap jacket by thermal fusion.

HEAT SHOCK - A test to determine stability of a

material by sudden exposure to a high temperature for a short period of time.

HEAT SHRINK - A material that shrinks when heated. Heat shrink tubing is used for insulation, sealing, and protecting wire connections, terminations, and splices.

HEAT SHRINK SPLICE - Same as Fusion Splice except the splice is protected within a heat shrink tube.

HEATER CORD - Flexible stranded copper conductor, cotton wrapped, rubber insulation, and high temperature roving. For indoor use on household appliances such as flat irons, coffee pots, toasters, heaters, and soldering irons.

HECTO - A prefix to a unit, denoting a multiple of 100 (10^2) of that unit.

HELICAL STRIPE - A continuous spiral stripe applied to the insulation of a conductor for the purpose of circuit identification.

HELIX - Something spiral in form; a coil formed by winding wire around a uniform tube; a curve traced on a cylinder or cone by the rotation of a point crossing its right sections at a constant oblique angle.

HENRY - The unit of measure of inductance. It is defined as the inductance of a circuit in which a counter electromotive force of one volt is generated when the current is changing at the rate of one ampere per second. Abbreviation H.

HERTZ - A term replacing cycles per second as an indication of frequency. Abbreviation Hz.

HF - a) Heavy Formvar Magnet Wire. Soft bare copper wire with baked synthetic insulation overall. b) Abbreviation for high frequency. See frequency band.

HF/LS/LT - Abbreviation for halogen-free, low smoke, low toxicity.

HI-POT (HIGH POT) - A test designed to determine the highest potential that can be applied to a conductor without breaking through the insulation.

HIGH FREQUENCY - See frequency band.

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HIGH TENSION - See high voltage. Abbreviation HT.

HIGH VOLTAGE - A wire or cable with an operating voltage over 600 volts.

HL - CSA mark used to identify cables which comply with the Hazardous Location performance requirements of CSA C22.2 No. 174 specification.

HMWPE - Abbreviation for high molecular weight polyethylene.

HOOK-UP WIRE - A wire used for low current, low voltage (under 1,000 volts) applications within enclosed electronic equipment, usually 12 AWG and smaller.

HOTTIN DIP - A process of passing bare wire through a bath of molten tin to provide a coating.

HPD - Heater cord, rubber, and high temperature barrier, insulated with an overall braid.

HPN - Heater cord, Neoprene®, parallel, two conductor. Neoprene® is a trademark of the DuPont de Nemours Co.

HR - Abbreviation for high resistance wire.

hrs - Abbreviation for hours.

HT - a) Abbreviation for high tension. See high voltage. b) Abbreviation for high temperature.

HW - Type designation for heavy wall, 2,500 volt electronic hook-up wire to MIL-W-76.

HYGROSCOPIC - Readily absorbing and retaining moisture.

HYPALON® - A synthetic rubber, chlorosulfonated polyethylene (CSPE or CP). Hypalon® is a trademark of the DuPont de Nemours Co. Resistant to oxidation by ozone, sun, weather, heat, and chemicals, rated 90° C.

Hz - Abbreviation for Hertz. See Hertz.

I

I - Symbol used to designate current. See current.

IACS - Abbreviation for International Annealed Copper Standard. Refined copper for electrical conductors: 100% conductivity at 20° C for 1 m X 1 mm² has 1/58 ohm resistivity, 8.93 (changed to 8.89 in 1977) grams per mm² density, 0.000017 per degree C coefficient of linear expansion, and 1/254.45 per degree C coefficient of variation of resistance.

IC - Abbreviation for integrated circuit.

ICEA - Abbreviation for Insulated Cable Engineers Association, formerly IPCEA.

ID - Abbreviation for identification.

I.D. - Abbreviation for inside diameter.

IEC - Abbreviation for International Electrotechnical Commission, similar to the International Standards Organization (ISO).

IEEE - Abbreviation for Institute of Electrical and Electronic Engineers. Formerly American Institute of Electrical Engineers (AIEE) and Institute of Radio Engineers (IRE).

IMP - Abbreviation for impedance. See impedance.

IMPACT STRENGTH - A test for determining the mechanical punishment a cable can withstand without physical or electrical breakdown by impacting with a given weight, dropped a given distance, in a controlled environment.

IMPEDANCE - A measure of the response of an electric circuit to an alternating current. Measured in ohms (volts per ampere). Symbol Z. The current is opposed by the capacitance and inductance of the circuit in addition to the resistance. The total opposition to current flow is the impedance, given by the formula:

$$Z = R + iX$$

where **R** is resistance, **X** is reactance and **i** equals $\sqrt{-1}$.

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The real part, the resistance, represents a loss of power due to dissipation. The imaginary part, the reactance, indicates the phase difference between the voltage and current. It is either positive or negative depending on whether the current lags or leads the voltage, respectively. In a circuit containing only resistance or in a resonant circuit, the current and voltage are in phase and **Z** is purely resistive. In a circuit containing only reactance, the current and voltage are out of phase and **Z** is purely imaginary, i.e., there is no dissipation in the circuit. Reciprocal of admittance. Abbreviated imp.

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

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

IMPREGNATED CABLE - A cable with paper insulation in which the insulating properties of the paper tapes are improved by impregnating them with an insulating compound, such as oil.

IMPULSE STRENGTH - The voltage breakdown of insulation under voltage surges on the order of microseconds in duration.

IMSA - Abbreviation for International Municipal Signal Association, specification for fire alarm cable.

in - Abbreviation for inches.

INCL - Abbreviation for including.

INDEX OF REFRACTION - See refractive index.

INDIV - Abbreviation for individual.

INDUCED CURRENT - An electric current that flows in a conductor as a result of a changing magnetic flux density, in which lines of magnetic flux intersect with the conductor.

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

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.

INDUCTIVE COUPLING - Cross talk resulting from the electromagnetic field of one conductor on another.

INSERTION LOSS - The total optical power loss caused by the insertion of an optical component such as a connector, splice, or coupler.

INSULATION - That portion which is relied upon in a cable to segregate and protect the conductor from the other conductors, conducting parts, or from ground.

INSULATION LEVEL - The impulse voltage breakdown of cables and equipment.

INSULATION RESISTANCE - The resistance offered by an insulating material to the flow of current resulting from an impressed DC voltage.

INSULATOR - a) A nonconducting substance such as porcelain, plastic, glass, rubber, etc; b) a device made of such material used for separating or supporting conductors to prevent undesired flow of electricity.

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

INTERCOM WIRE - Wire used to connect communication instruments, telephones, telegraphs, etc.

INTERLACED TAPES - Two or more tapes, generally of different composition, applied simultaneously in such a manner that a portion of each tape overlays a portion of the other tape.

INTERSTICE - A space that intervenes between things.

IPCEA - Abbreviation for Insulated Power Cable Engineers Association. Now ICEA.

IPE - Abbreviation for irradiated polyethylene tape.

IRE - Abbreviation for Institute of Radio Engineers, now IEEE.

IRON CONSTANTAN - A combination of metals used in thermocouple, thermocouple wires, and

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thermocouple lead wires. The iron wire is positive. The constantan is the negative wire.

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

ISA - Abbreviation for Instrument Society of America.

ISO - Abbreviation for International Standards Organization.

ISO 9000 - An international quality assurance program.

J

J-BOX - Abbreviation for junction box. A box for joining different runs of raceway or cable, plus space for connecting and branching the enclosed conductors.

JACKET - A covering over insulation usually non-metallic, plastic, rubber, cotton, Neoprene®, fluoro-polymer, or glass. Neoprene® is a trademark of the DuPont de Nemours Co.

JAN-C-17A - Joint Army-Navy specifications covering coaxial cables used for high frequency applications in radio, television, radar, etc.

JAN-C-76A - Joint Army-Navy specifications covering radio hook-up wire. Types SRIR, SRHV, WL, and SRRF. Superseded by MIL-W-76.

JOULE - The unit of measure for energy or work. The international joule is equal to the work required to maintain a current of one ampere for one second in a resistance of one ohm.

JUMPER - Usually a temporary connection. A short length of conductor to connect between terminals, across a break in a circuit, or around an instrument.

JUTE FILLER - Rope like strands of material used in cables for filling in the voids to form a rounded final cable shape.

K

K - Abbreviation for Karma®. Karma® is a trademark of the Driver Harris Company.

K BAND - A band of microwave frequencies. See frequency band.

KAPTON® - Trade name for polyimide resin. See polyimide. Kapton® is a trademark of the DuPont de Nemours Co.

KARMA® - Trade name of the Driver Harris Company for a resistance wire composed of 74.5% nickel, 20% chromium, 2.75% aluminum, and 2.75% copper. Abbreviated K.

KEVLAR® - Trademark of the DuPont de Nemours Co. for the para-aramid fiber polyparaphenylene terephthalamide. See polyparaphenylene terephthalamide.

kgs - Abbreviation for kilograms.

kHz - Abbreviation for kilohertz. See kilohertz.

KILO - A prefix to a unit, denoting a multiple of one thousand (1,000) of that unit; a prefix used in computing to denote a multiple of one thousand, twenty four (2¹⁰).

KILOHERTZ - One thousand (1,000) cycles per second. Abbreviation kHz.

KILOVOLT - One thousand (1,000) volts. Abbreviation kV.

KILOVOLT AMPERE - One thousand (1,000) volts x amperes. Abbreviation kVA

KILOWATT - A unit of measure of power equal to one thousand (1,000) watts. Abbreviation kW.

KIRCHOFF'S LAWS - The algebraic sum of the currents at any point in a circuit is zero; the algebraic sum of the product of the current and the impedance in each conductor in a circuit is equal to the electromotive force in the circuit.

km - Abbreviation for kilometer (1,000 meters).

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KOVAR - An alloy of iron, nickel, and cobalt.

kV - Abbreviation for kilovolt (1,000 volts). See kilovolt.

kVA - Abbreviation for kilovolt ampere (1,000 volt ampere). See kilovolt ampere.

kW - Abbreviation for kilowatt (1,000 watts). See kilowatt

KYNAR[®] - Trademark of the Pennwalt Corporation for polyvinylidene fluoride. See polyvinylidene fluoride.

L

L - Symbol for inductance. See inductance.

L BAND - A band of microwave frequencies. See frequency band.

LACQUER FINISH - A finish applied over braided wire or cable for appearance, for moisture proofing, to reduce friction, and resist abrasion.

LAMINATES - A buildup of layers of material to increase thickness as in braid varnished cambric (VCB).

LAMP CORD - Flexible stranded conductor cord, rubber or plastic insulated, used in wiring of lamps, household fans, and similar appliances. Not subject to hard usage. UL approved.

LAN - Abbreviation for Local Area Network. See local area network.

LAPEL MIKE CABLE - Small O.D., flexible microphone cable.

LASER - Acronym from **l**ight **a**mplification by **s**timulated **e**mission of **r**adiation. A source of intense monochromatic coherent radiation in the visible, ultraviolet, or infrared regions of the electromagnetic spectrum. The narrow beam can be either pulsed or continuous.

LATEX - Rubber material used for insulation of wire.

LAUNCH FIBER - An optical fiber used to couple and condition light from an optical source into an optical fiber. Often the launch fiber is used to create an equilibrium modal distribution in multi-mode fiber. Also referred to as launching fiber.

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

lbs - Abbreviation for pounds.

LDPE - Abbreviation for low density polyethylene.

LEACHING AND NON LEACHING - In a leaching wire, the plasticizer will migrate or leave the vinyl compound when exposed to the heat of baking. The wire so treated becomes brittle and hard. A non leaching wire will retain its plasticizer under extreme temperature conditions and remain flexible after baking. Non leaching wire is desirable for use as motor lead wire.

LEAD CURED - A cable that is cured or vulcanized in a metallic lead mold.

LEAD-IN - The cable that connects the active part of an aerial to the transmitter or receiver.

LEAKAGE - The passage of an electric current along a path other than that intended due to faulty insulation or isolation in a circuit, component, device, or other piece of apparatus.

LED - Abbreviation for light emitting diode.

LEVEL 1, 2, 3, 4, & 5 - Underwriters Laboratories' performance designations for unshielded, twisted pair cables. See Category 1, 2, 3, 4, or 5.

LF - Abbreviation for low frequency. See frequency band.

LINE VOLTAGE - The voltage existing in a cable or circuit.

LITZWIRE - Short for litzendraht wire. A construction of fine individually insulated strands specially woven or braided together to reduce skin effect and thus lower resistance to high frequency currents.

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LOCAL AREA NETWORK - A baseband or broadband interactive bidirectional communication system for voice, video, or data use on a common cable medium. Abbreviation LAN.

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

LOOP RESISTANCE - The total resistance of two conductors measured round-trip from one end.

LOOSETUBE (BUFFER) - A type of cable construction in which the fiber is placed in a plastic tube with a diameter much larger than the fiber itself. The loose tube isolates the fiber from exterior mechanical forces acting on the cable. The space between the tube and fiber is often filled with a gel which serves to cushion the fiber.

LOSS FACTOR - The product of the dissipation and dielectric constant of an insulating material.

LOW FREQUENCY - See frequency band.

LOW LOSS - A cable that has a small amount of power loss when extended over long lengths.

LOW NOISE - A cable constructed in such a manner as to reduce to a minimum any signals generated by the motion of the cable components in respect to each other. Used to reduce the noise level in coaxial or microphone cable circuits.

LOW TENSION - Low voltage as applied to ignition cable.

LT - Abbreviation for low temperature non contaminating jacket, Type II.

LW - Abbreviation for light wall, 300 volt, electronic hook-up wires to MIL-W-76.

M

m - Abbreviation for meter. See meter.

M - Abbreviation for Mylar®. See Mylar®. Mylar® is a trademark of the DuPont de Nemours Co. Also abbreviated as MY.

mA - Abbreviation for milliampere, one-thousandth (10^{-3}) of an ampere.

MAG. OX. - Abbreviation for magnesium oxide.

MAGNET WIRE - Insulated copper wire used for winding coils, motors, and transformers.

MAINS - The source of domestic electrical power distributed nationally throughout the U.K. The mains frequency is the frequency at which the electrical power is supplied. This is 50 hertz in the U.K. and 60 hertz in the U.S.

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.

MAT - Abbreviation for material.

MATV - Abbreviation for Master Antenna TV.

MAX - Abbreviation for maximum.

Mbps - Abbreviation for megabits per second.

MC - Abbreviation for megacycle.

MCM - Abbreviation for one thousand (1,000) circular mils, e.g., 500 MCM = 500,000 circular mils.

MECHANICAL SPLICE - A fiber splice accomplished by fixtures or materials, rather than by thermal fusion. Index matching material may be applied between the two fiber ends.

MEDIUM FREQUENCY - See frequency band.

MEGA - A prefix to a unit, denoting a multiple of one million (1,000,000) of that unit.

MEGAHERTZ - One million (1,000,000) cycles per second. Abbreviation MHz.

MEGAWATT - One million (1,000,000) watts. Abbreviation MW.

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MELAMINE - A thermosetting resin chemically known as melamine formaldehyde. It has excellent resistance to acids and alkalies and good resistance to water and solvents. Has high strength, high insulation resistance as compared to plastics.

MESA - Abbreviation for Mining Enforcement and Safety Administration. Formerly PBM (Pennsylvania Bureau of Mines).

MESSENGER - The linear supporting member, usually a high strength steel wire, used as the supporting element of a suspended aerial cable. The messenger may be an integral part of the cable or exterior to it.

METER - The unit of length defined as the length of the path traveled by light in vacuum during a time interval of $1/299,792,458$ of a second. One meter equals 39.3701 inches. Abbreviation m.

MF - Abbreviation for medium frequency. See frequency band.

Mfd - Abbreviation for microfarad. See microfarad.

MFG. - Abbreviation for manufacture/manufacturing.

MFT - Abbreviation for one thousand (1,000) feet.

MHD - Abbreviation for medium hard drawn copper wire.

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

MHz - Abbreviation for megahertz, one million (1,000,000) cycles per second. Formerly mc. See megahertz.

MI - Nomenclature for mineral insulated cable, made with one or more conductors using mineral for insulation and overall solid metal tube sheath.

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

MICRO - A prefix to a unit, denoting a submultiple of one-millionth (10^{-6}) of that unit.

MICRO BENDING - Minute but severe bends in the fiber of fiber optic cable that result in light displacement and increased loss. Most micro bending can be avoided by the correct selection of materials and proper cabling, handling, and installation techniques.

MICROFARAD - A unit of measure for capacitance. One-millionth (10^{-6}) of a farad. Abbreviation μF or Mfd.

MICROMETER - A unit of length equal to one-millionth (10^{-6}) of a meter, formerly called micron. Abbreviated μm .

MICROMINIM[®] - Ultra-flexible micro-miniature wire. A trade name of Standard Wire & Cable Co.

MICRON - A unit of length equal to one-millionth (10^{-6}) of a meter, now renamed as the micrometer. Abbreviated μm .

MICROSECOND - One-millionth (10^{-6}) of a second.

MICROWAVE - An electromagnetic wave with a wavelength in the range 3 millimeters to 1-3 meters, i.e., between infrared radiation and radio waves on the frequency spectrum. See frequency band.

MICROWAVE FREQUENCY - See frequency band.

MIGRATION - The movement of the non resinous plasticizers in vinyl which takes place at elevated or lowered temperatures. The migrating plasticizer from the jacket will contaminate the polyethylene core of a coaxial cable and thus change its electrical characteristics.

MIKE CABLE or MICROPHONE CABLE - A flexible, generally shielded cable used to connect the microphone to the amplifier.

MIL - a) Abbreviation for one-thousandth (10^{-3}) of an inch (0.001"). b) A unit used in measuring the diameter of wire or thickness of insulation. c) Abbreviation for military specification (mil spec).

MIL-C - Military cable specification.

MILLI - A prefix to a unit, denoting a submultiple of

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one-thousandth (10^{-3}) of that unit.

MILLIMETER - Unit of measure for linear distance. One millimeter equals one-thousandth (10^{-3}) of a meter. Abbreviation mm.

MILLISECOND - One-thousandth (10^{-3}) of a second. Abbreviation ms.

MIL SPEC - Abbreviation for military specification.

MIL STD - Abbreviation for military standard.

MIL-W - Military wire specification.

MIN. - Abbreviation for minimum.

MINIATURE WIRE - Refers to insulated conductors of approximately 20 to 34 AWG with a small overall diameter as compared to usual constructions.

MIP - Abbreviation for mylene irradiated polymer.

mm - Abbreviation for millimeter. See millimeter.

MMfd - Abbreviation for one-trillionth (10^{-12}) of a farad. Commonly referred to as a picofarad (pF).

MODAL DISPERSION - Pulse spreading due to multiple light rays traveling different distances and speeds through a fiber.

MODE - A path of light through a fiber of a fiber optic cable.

MODE FIELD DIAMETER - In single-mode fiber, the region in which light propagates is larger than the glass core diameter. This mode field diameter is a measured value and often listed as a requirement with core diameter in fiber specifications.

MODES - Individual paths in optical waveguides. Single-mode fiber has only one mode, the fundamental mode, while multi-mode fiber has several hundred modes. The upper limit to the number of modes is determined by the core diameter of the waveguide.

MODULUS OF ELASTICITY - The ratio of stress to strain in an elastic material.

MOISTURE RESISTANCE - Ability of a material to resist absorbing moisture from the air or when immersed in water.

MOLDED PLUG - A connector, male or female, molded on either end of a cord or cable.

MONOMER - The basic chemical unit used in building a polymer.

MP - Abbreviation for multipurpose cable.

MPa - Abbreviation for mega pascal (10^6 pascals), the metric unit of pressure.

MPG - Abbreviation for multipurpose general purpose cable.

MPP - Abbreviation for multipurpose plenum cable.

MPR - Abbreviation for multipurpose riser cable.

MSHA - Abbreviation for Mining Safety and Health Administration.

MT - Abbreviation for machine tool wire used for internal wiring of appliances or tools. Solid or stranded conductor. Thermoplastic insulations.

MTW - Abbreviation for machine tool wire, plastic insulated, 600 volt, varies 90° C to 105° C.

MULTI-CONDUCTOR - More than one conductor within a single cable complex.

MULTI-MODE FIBER - An optical fiber whose core diameter is large compared with the optical wavelength and thus can contain a large number of modes.

MULTIPLEX - Being or relating to a system of transmitting several messages/signals simultaneously on the same circuit or channel.

MV - Abbreviation for millivolt, one-thousandth (10^{-3}) of a volt.

MW - a) Abbreviation for megawatt, one million (10^6) watts. b) Abbreviation for milli watt. One-thousandth (10^{-3}) of a watt. c) Usually, used in reference to one thousand (1,000) volt plastic insulated wire covered by MIL-W-76.

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MY - Abbreviation for Mylar®. See Mylar®. Mylar® is a trademark of the DuPont de Nemours Co. Also abbreviated as M.

MYLAR® - Trade name for DuPont de Nemours Co. polyester material (polyethylene terephthalate) used in the form of a tape. A synthetic compound with high dielectric properties. Abbreviated as MY and M.

N

N - a) Abbreviation for newtons. See newton. b) Abbreviation for nichrome.

N/A - Abbreviation for not applicable.

NA - Abbreviation for numerical aperture. See numerical aperture.

NANO - A prefix to a unit, denoting a submultiple of one-billionth (10^{-9}) of that unit.

NANOMETER - One billionth (10^{-9}) of a meter. Abbreviated nm.

NANOSECOND - One-billionth (10^{-9}) of a second.

NATIONAL ELECTRIC CODE - Recommendations of the National Fire Protection Association (NFPA) are revised every three years. City, county, or state regulations may differ from code regulations and take precedent over NEC Code rules, which of themselves, have no legal status.

NATIONAL FIRE PROTECTION ASSOCIATION - The organization whose prime mission is to maintain and publish the National Electrical Code.

NAVAIR - Abbreviation for Naval Air Systems Command (see NMC).

NAVELEX - Abbreviation for Naval Electronics Systems Command (see NMC).

NAVFAC - Abbreviation for Naval Facilities Engineering Command (see NMC).

NAVORD - Abbreviation for Naval Ordnance Systems Command (see NMC).

NAVSEA - Abbreviation for Naval Sea Systems Command.

NAVSHIPS - Abbreviation for Naval Ships Systems Command (see NMC).

NAVSUP - Abbreviation for Naval Supply Systems Command (see NMC).

NBFU - Abbreviation for National Board of Fire Underwriters.

NBS - Abbreviation for National Bureau of Standards.

NC - a). Abbreviation for nickel-plated copper. Also abbreviated as NPC. b). Abbreviation for nickel-clad copper. Also abbreviated as NCC. c). Abbreviation for nickel conductor.

NCC - Abbreviation for nickel-clad copper. Also abbreviated as NC.

NCCCS - Abbreviation for nickel-covered copper-clad steel.

NEC - Abbreviation for National Electric Code. See National Electric Code.

NEMA - Abbreviation for National Electrical Manufacturers Association. Maintains standardization of electrical motors, gear reducers, and wire and cable specifications.

NEOPRENE® - A synthetic rubber made by the polymerization of chloroprene and characterized by superior resistance (as to oils). Neoprene® is a trademark of the DuPont de Nemours Co.

NET LOSS - The difference between the attenuation and the gain in any circuit, device, network, or transmission line.

NEUTRAL - a). Having no net positive or negative electric charge at earth potential. b). c) Denoting the line that completes the domestic mains supply and is connected to earth at the power station.

NEWTON - The unit of force in the metric system of physical units that is of such size that under its influence a body whose mass is one kilogram would experience an acceleration of one meter per second

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per second. Abbreviated N.

NFPA - Abbreviation for National Fire Protection Association. See 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. The nickel has been rolled and fused to the copper before drawing. It has a very high resistivity and can operate at extremely high temperatures. Abbreviated NCC and NC.

NICROME® - Driver Harris Company's trade name for an alloy of 60% nickel, 16% chromium, and the balance steel. Used exclusively in wire wound resistors and heating elements.

nm - Abbreviation for nanometer. One-billionth (10^{-9}) of a meter.

NMC - Abbreviation for Naval Material Command. Central Navy agency for the development, procurement, maintenance, supply, disposal, distribution, and storage of material. Includes the following Systems Commands; the Naval Ships Systems Command (NAVSHIPS), the Naval Ordnance Systems Command (NAVORD), the Naval Air Systems Command (NAVAIR), the Naval Electronics Systems Command (NAVELEX), the Naval Facilities Engineering Command (NAVFAC), and the Naval Supply Systems Command (NAVSUP).

NO. - Abbreviation for number.

NOM. - Abbreviation for nominal.

NOMEX® - DuPont de Nemours Co. trademark for a temperature resistant, flame-retardant nylon.

NON CONTAMINATING - Refers to a type of PVC jacketing material whose plasticizer will not migrate into the dielectric of a coaxial cable and thus avoids contaminating and destroying the dielectric.

NONFERROUS - Not of iron. Refers to alloys which have no iron or steel as ingredients.

NON HYGROSCOPIC - Material does not absorb moisture.

NON MIGRATING - Same as non contaminating.

NPC - Abbreviation for nickel-plated copper. Also abbreviated as NC.

NPLF - Abbreviation for non power-limited fire protective signaling circuit cable.

NPLFP - Abbreviation for non power-limited fire protective signaling circuit plenum cable.

NPLFR - Abbreviation for non power-limited fire protective signaling circuit riser cable.

NRC - Abbreviation for Nuclear Regulatory Commission.

NUMERICAL APERTURE - In fiber optics, the sine of half the angle over which a fiber can accept light, it is a function of the relationship between the refractive index of the core and that of the cladding. It is the "light gathering ability" of a fiber, defining the maximum angle to the fiber axis at which light will be accepted and propagated through the fiber. Abbreviation NA. NA is also used to describe the angular spread of light from a central axis, as in exiting a fiber, emitting from a source, or entering a detector.

NYLON - A group of polyamide polymers which are used for wire and cable jacketing. Mechanical and chemical protection 105° C.

NYLON JACKETED - Refers to the outer covering of nylon on wire or cable which can either be an extruded layer or a braid of nylon filaments.

O

O.D. - Abbreviation for outside diameter.

OEM - Abbreviation for Original Equipment Manufacturer.

OFC - Abbreviation for optical fiber conductive general purpose cable.

OFCG - Abbreviation for optical fiber conductive fire resistant general purpose cable.

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OFCP - Abbreviation for optical fiber conductive plenum cable.

OFCR - Abbreviation for optical fiber conductive riser cable.

OFFGASSING - Percentage of a specified gas released during the combustion of an insulating or jacketing material.

OFHC - Abbreviation for oxygen free, high conductivity copper. It has no residual deoxidant, 99.95% minimum copper content and an average annealed conductivity of 100%.

OFN - Abbreviation for optical fiber non conductive general purpose cable.

OFNG - Abbreviation for optical fiber non conductive fire resistant general purpose cable.

OFNP - Abbreviation for optical fiber non conductive plenum cable.

OFNR - Abbreviation for optical fiber non conductive riser cable.

OHM - The unit of measure for electrical resistance, reactance, and impedance. A constant current of one ampere produces a force of one volt. Symbol Ω .

OHM (300) LEAD WIRE - Television lead-in wire. Leads signal in from the antenna to the set.

OHM'S LAW - The electric current, **I**, flowing in a conductor or resistor is linearly proportional to the applied difference, **V**, across it. From the definition of resistance, **R**, Ohm's law can be written:

$$V = IR \text{ (i.e., Volts = Current x Resistance.)}$$

OIL FILLED CABLE - Paper insulated, lead sheathed cable, into which high grade mineral oil is forced under pressure, saturating the insulation. The main object is to prevent moisture and gases from entering. It is also easier to detect flaws due to leakage, as the oil is kept under constant pressure at all times.

OIL FILLED PIPE CABLE - Basically the same as oil filled cable, but inside of rigid pipe instead of lead sheath. Sometimes it is a standard oil filled cable

inserted into rigid pipe under pressure, both units being oil filled. Usually for much higher voltage where constant pressure is maintained at all times.

OIL RESISTANT - Performance characteristics of a material against exposure to a specific oil.

OKOCORD® - Trade name for portable power cables made by Okonite Company.

OKOPRENE® - Trade name for Neoprene® covered wire and cable made by Okonite. Neoprene® is a trademark of the DuPont de Nemours Co.

OPEN WIRE - Synonymous with overhead line. A conductor that is not surrounded by insulation and is supported separately above ground.

OPER. - Abbreviation for operating.

OPTICAL RECEIVER - Unit for converting optical signals into electrical signals.

OPTICAL TIME DOMAIN REFLECTOMETER - An instrument that measures transmission characteristics of fiber by sending a pulse of light down the fiber and measuring the light scattered across the length and reflected back from the end as a function of time. Used to measure attenuation, point discontinuities, and fiber length, as well as to find breaks.

OPTICAL TRANSMITTER - Unit for converting electrical signals into optical signals.

OSHA - Abbreviation for Occupational Safety and Health Act.

OUTGASSING - The dissipation of gas from a dielectric evidencing decomposition.

OVERCOAT - Individual strands of tin copper wire stranded together and then covered with a tin coating.

OVERHEAD LINE - Synonymous with open wire. A conductor that is not surrounded by insulation and is supported separately above ground.

OVERLOAD - Any load delivered at the output of an electrical device, circuit, machine, or other apparatus that exceeds the rated output of the equipment.

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OXIDIZE - To change (a compound) by increasing the proportion of the electronegative part or charge (an element or ion) from a lower to a higher positive valence; remove one or more electrons from an atom, ion, or molecule.

OXYGEN BOMB TEST - To determine aging effect, heat, tensile strength, and elongation of wire. The wire is placed in a bomb at 70° C, under 300 psi using pure oxygen gas for a period of 48 to 96 hours.

OXYGEN INDEX - Percentage of oxygen necessary to support combustion of a specified material.

OZ - Abbreviation for ounce.

OZONE - Form of oxygen produced by discharge of electricity into air. Chemical symbol O₂.

P

PAIR - Two insulated wires of a single circuit associated together.

PAIRING - The union of two insulated single conductors through twisting.

PAN CURED - Method of vulcanizing. Coils of unvulcanized insulated wire are coiled in pans and vulcanized under pressure with live steam.

PAP - A commonly used term for air core (unfilled) direct burial telephone cable with a corrugated aluminum shield.

PAPER INSULATED - Insulation used for telephone cable, high voltage cable, and magnet wire. Has high dielectric strength; however, pretty much passe because of better insulations.

PAR - Acronym for **precision approach radar**.

PARALLEL CABLE - Two insulated conductors in parallel in a cable.

PATCH CABLE - A power cable with plugs or terminals on each end of the conductor or conductors used to connect equipment.

PATCH CORD - Usually braid covered, with plugs

or terminals on each end. Used to connect jacks or blocks in switchboards or analog programming systems. Called a patch cord because it is used to "patch" a circuit.

P BAND - A band of microwave frequencies. See frequency band.

PBM-109 - Trailing mine cable with an outer sheath of flame-resistant Neoprene®. Cable conforms to requirements of Pennsylvania Bureau of Mines and the Federal Bureau of Mines. Neoprene® is a trademark of the DuPont de Nemours Co.

PBX - Abbreviation for private branch exchange.

PC - Abbreviation for Physical Contact adaptor. In fiber optics, the physical contact refers to connectors which provide back reflections (also referred to as return loss) of less than 30 db. D4 adaptors allow the fibers to be butted together, resulting in a constant index of refraction in the optical transmission path, thereby eliminating most of the reflection. In non-PC adaptors, the fiber cores are brought into close proximity to each other with a small air gap (usually only a few microns) between them.

PCP - A commonly used term for air core (unfilled) direct burial cable with a corrugated copper shield.

PCTFE - Abbreviation for polychlorotrifluorethylene. One of the fluoropolymers which has a high dielectric strength used at temperatures to 250° C.

PE - Abbreviation for polyethylene. A thermoplastic insulation having excellent electrical properties. Also abbreviated as poly and pol.

PEAK VOLTAGE - The maximum voltage reached during an alternation of frequency.

PEF - Abbreviation for polyethylene foam. Also abbreviated as PE Foam.

PE FC - Abbreviation for polyethylene flooding compound.

PE Foam - Abbreviation for polyethylene foam. Also abbreviated as PEF.

PE-III - Abbreviation for clear polyethylene.

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PE-III A - Abbreviation for high molecular weight, black polyethylene, type IIIA, per MIL-C-17.

PERCENT CONDUCTIVITY - Conductivity of a material expressed as a percentage of that of copper.

PERFLUOROALKOXY - High temperature compound in the fluorocarbon family of dielectrics. Used at temperatures to 250° C. Abbreviation PFA. Also abbreviated as PFA-XII, per MIL-C-17.

PETROL WIRE - Wire insulated to withstand immersion in gas and oil. Usually thermoplastic with or without a nylon jacket.

pF - Abbreviation for picofarad. See picofarad.

PFA - Abbreviation for perfluoroalkoxy resin. See perfluoroalkoxy.

PFA-XIII - Abbreviation for perfluoroalkoxy resin. See perfluoroalkoxy.

PIB - Abbreviation for polyisobutylene, type B, per MIL-C-17.

PIC - A general term for any type of plastic insulated telephone cable.

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

PICO - A prefix to a unit, denoting a submultiple of one-trillionth (10^{-12}) of that unit.

PICOFARAD - A unit of measure for capacitance; one-trillionth (10^{-12}) farads. Abbreviation pF.

PIGTAIL WIRE - Fine stranded, extra flexible, rope lay, lead wire.

PIPE TYPE CABLE - Pressure cable. Pressure medium is a loose rigid metal pipe.

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

PLAIN ENAMEL - Type of magnet wire. Wire is dip coated with a varnish and then baked.

PLANAR - Of, relating to, or lying in a plane; two-

dimensional in quantity.

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

PLATED - Covered with an adherent layer mechanically, chemically, or electrically.

PLENUM - The air return path of a central air handling system, either duct work or open space, over a dropped ceiling.

PLENUM CABLE - Cable approved by Underwriters Laboratories for installation in plenums without the need for conduit. Generally the insulation and jackets are fluorocarbon based materials.

PLSJ - Cord, light duty, all rubber, parallel, two conductor, 300 volt.

PLT - Same as PLSJ except plastic.

PLTC - Abbreviation for parallel tray cable.

P/N - Abbreviation for part number.

PNR - Control cable using polyethylene and nylon on the conductors and PVC jacket.

PO - Rayon parallel lamp cord with a stranded copper conductor, separator, rubber insulation, cotton braid, rayon braid overall. Used in dry places on small appliances.

POL - Abbreviation for polyethylene. Also abbreviated PE and poly. See polyethylene.

POLY - Abbreviation for polyethylene. Also abbreviated PE and pol. See polyethylene.

POLYALKALENE - A polymer, typically polyethylene, made from alkene monomer. Primary insulation compound used in MIL-W-81044.

POLYAMIDE - a) A compound characterized by more than one amide group. b) A polymeric amide (nylon).

POLYCHLOROPRENE - Chemical name for Neoprene®. Used for jacketing wire and cable that will be subject to rough usage, moisture, oil, greases, solvents, and/or chemicals. May also be used as

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a low voltage insulating material. Neoprene® is a trademark of the DuPont de Nemours Co.

POLYESTER - Any of a group of polymers that consists basically of repeated units of an ester and are used especially in making fibers or plastics. More specifically, polyethylene terephthalate which is used extensively in the production of a high strength moisture resistant film used as a cable core wrap.

POLYETHYLENE - A thermoplastic material, polymerized ethylene. They are basically pure hydrocarbon resins, often with small amounts of other additives to impart needed properties. All members of the polyethylene family are excellent dielectrics. Electrically they are far superior to any other extrudable dielectric in use today. Outstanding electrical properties include high insulation resistance, high dielectric strength, low dielectric constant, low dielectric loss at all frequencies, excellent resistance to cold flow, and good abrasion resistance. One or more members of the polyethylene family also have the following properties: Resistance to sunlight, weather, chemicals, and flame. Polyethylene is widely used for insulation on telephone, signal and control cables, high frequency electronic cables, high voltage and low voltage power cables, line wire, neutral supported secondary and service drop cables. They are suitable for direct earth burial. Temperature ratings vary with type and application from 75° C up. Abbreviation PE, POL, and POLY.

POLYIMIDE - A relatively high temperature plastic developed for use as a dielectric or jacketing material, Kapton®. Usually laminated to FEP and used as heat sealable tape. It does not burn and has high abrasion resistance. Kapton® is a trademark of the DuPont de Nemours Co.

POLYMER - A material of high molecular weight formed by the chemical union on monomers.

POLYOLEFIN - A family of thermoplastics based upon the unsaturated hydrocarbons known as olefins. When combined with butylene or styrene polymers, they form compounds such as polyethylene and polypropylene.

POLYPARAPHENYLENE TEREPHTHALAMIDE - This synthetic has high tensile strength at low weight, low elongation to break, high modulus (structural rigidity), low electrical conductivity, high chemical

resistance, low thermal shrinkage, high toughness (work-to-break), excellent dimensional stability, high cut resistance, flame-resistant, and self-extinguishing properties. Trade name KEVLAR®. KEVLAR® is a trademark of the DuPont de Nemours Co.

POLYPROPYLENE - A thermoplastic polymer of propylene with good electrical characteristics, high tensile strength, and resistance to heat.

POLYSTYRENE - A rigid transparent thermoplastic of good physical and electrical insulating properties used especially in molded products, foams, and sheet materials. Abbreviation PS.

POLYSULFONE - A polymer highly resistant to mineral, acid, alkali, and salt conditions. Good dielectric properties up to 350° F.

POLYTETRAFLUOROETHYLENE - This is modified ETFE, a copolymer of ethylene and tetrafluoroethylene. This is the most thermally stable and chemically resistant carbonaceous insulating compound. It is unaffected by sunlight, moisture, and practically all chemicals. Temperature range is -90° C to 250° C and electrical properties are very constant over the temperature range and a wide range of frequencies. This insulation may be applied by extrusion, taping, dip-coating, and in cases where other material is used, by dispersion coating. Both conventional and ribbon type wires and cables are made as well as magnet wire. This insulation material is used as dielectric, insulation, and extruded jackets. Abbreviation is PTFE. Most common trade name is Teflon®. Teflon® is a trademark of the DuPont de Nemours Co.

POLYURETHANE - Enamel that has excellent moisture resistance, easily soldered, also has excellent winding properties as a magnet wire insulation. Abbreviation PU.

POLYVINYLCHLORIDE - A family of insulating compounds whose basic ingredient is either polyvinylchloride or its copolymer with vinyl acetate, in combination with appropriate plasticizers, stabilizers, fillers, and pigments. Like many other plastic materials, these insulations can be compounded to provide a wide variety of properties for various applications. Among the properties obtained are: Resistance to moisture, cold, heat, flame, oils, solvents, chemicals, and ozone. Electrical properties are adequate for low voltage power applications. Temperature ratings up to

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105° C are recognized by UL for certain applications. These insulations are widely used for types T and TW building wires, series street lighting cable, machine tool wiring, hook-up and appliance wiring, overhead line wire, control and signal cables, and many others. Known as PVC or Vinyl. Abbreviation PVC.

POLYVINYLIDENE FLUORIDE - VF_2 vinylidene fluoride resin is a crystalline, high molecular weight polymer of VF_2 having high dielectric strength as well as abrasion resistant characteristics. This thermoplastic resin, a fluorocarbon, is characterized by good mechanical, electrical, and chemical properties. In primary insulation and in jackets for multi-conductor cables, it has a temperature range of -80° F to 300° F. This material can be extruded, applied as a film or solution, or by dispersion coating. This compound offers excellent resistance to abrasion and cut-through. Radiation cross-linking provides improved heat resistance. Abbreviation PVDF. Known as Kynar®. Kynar® is a trademark of the Pennwalt Corporation.

PORTABLE POWER CABLE - Extra flexible, all rubber insulated to allow hard usage. Some cables have additional protection of shielded conductors, metallic or nonmetallic, and can have Neoprene® sheath overall. Neoprene® is a trademark of the DuPont de Nemours Co.

POTENTIAL DIFFERENCE - The difference in electric potential between two points, equal to the line integral of the electric field strength between points. If a charge is moved from one to the other of the points by any path, the work done is equal to the product of the potential difference per unit length.

POTTING - The sealing of a cable termination or other component with a liquid which thermosets into an elastomer making the joint moisture proof or air tight.

POWER CABLE - A cable of various sizes, various constructions, and insulations used to supply power to a variety of types of equipment.

POWER FACTOR - The ratio of resistance, **R**, to impedance, **Z**. The ratio of the actual power of an alternating current to apparent power. Mathematically, the cosine of the angle between the voltage applied and the current resulting.

POWER FREQUENCY - The frequency at which

domestic and industrial mains electricity is supplied and distributed. In the U.K. the standard value is 50 hertz; in the U.S. it is 60 hertz.

POWER LINE - See transmission line.

POWER RATING - AC voltage that can be applied between adjacent conductors.

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

PPE - Abbreviation for polypropylene ethylene.

PRESSURE CABLE - Oil impregnated, paper insulated conductors. Lead or steel pipe outer covering, in which positive pressure is constantly maintained. Has higher dielectric strength, greater insulation stability, increased current-carrying capacity, and saves space.

PRICE'S GUARD WIRE - A wire conductor used to prevent surface leakage current associated with an insulator from reaching the measuring instrument during determination of insulation resistance, particularly of cables.

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

PRIMARY VOLTAGE - Initial or main voltage.

PROP. - Abbreviation for propagation.

PROPYLENE - A flammable gaseous hydrocarbon C_3H_6 obtained by cracking petroleum hydrocarbons.

PS - Abbreviation for polystyrene. See polystyrene.

psi - Abbreviation for pounds per square inch.

PS TAPE - Nonmetallic shielding, very flexible. Remains in positive contact with insulation. Prevents formation of air gaps between conductor and insulation.

PTFE - Abbreviation for polytetrafluoroethylene. See

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polytetrafluoroethylene. Most common trade name is Teflon®. Teflon® is a trademark of the DuPont de Nemours Co.

PU - Abbreviation for polyurethane. See polyurethane.

PUFF - Colloquial term for one picofarad. See picofarad.

PULLING EYE - A device on the end of a cable to which a pulling line is attached for pulling the cable into a conduit or duct.

PULSE CABLE - Type of coaxial cable with or without a magnetic core constructed to transmit repeated high voltage pulses without degradation. Usually multi-shielded.

PULSE COMMUNICATIONS - Telecommunications involving the transmission of information by means of pulse modulation. Pulse communication is used in systems that operate by means of time-division multiplexing.

PUNCTURE VOLTAGE - The value of voltage that causes an insulator to be punctured when it is subjected to a gradually increasing voltage.

PUT UP - Packaging of finished wire or cable.

PVC - Abbreviation for polyvinylchloride. See polyvinylchloride.

PVC-I - Abbreviation for black polyvinylchloride, contaminating, type I, per MIL-C-17.

PVC-II - Abbreviation for gray polyvinylchloride, contaminating, type II, per MIL-C-17.

PVC-IIA - Abbreviation for black polyvinylchloride, contaminating, type IIA, per MIL-C-17.

PVC-IV - Abbreviation for black polyvinylchloride, contaminating, type IV, per MIL-C-17.

PVC-105° C - Specially compounded high temperature polyvinylchloride.

PVD - Abbreviation for polyvinylidene fluoride, Kynar®. Also abbreviated PVDF. See polyvinylidene fluoride. Kynar® is a trademark of the Pennwalt Corporation.

PVDF - Abbreviation for polyvinylidene fluoride, Kynar®. Also abbreviated PVD. See polyvinylidene fluoride. Kynar® is a trademark of the Pennwalt Corporation.

Q

Q BAND - A band of microwave frequencies. See frequency band.

QPL - Abbreviation for Qualified Products List issued by a United States Government Agency.

QUAD - A four conductor cable.

R

R - a) Symbol for resistance (see resistance) or resistor. b) 600 volt copper conductor stranded or solid, rubber insulated, cotton braid (rubber filled tape 6 AWG and larger). Cotton braid saturated with moisture resisting, flame-retarding compound smoothly finished. Used for power wiring. c) Abbreviation for riser.

RAD - The unit of measure for a radiation dose which is absorbed, equal to 0.01 joule per kilogram.

RADAR - Acronym for **radio detecting and ranging**. A system that measures distances and usually the direction to an object by determining the amount of time required for electromagnetic energy to travel to and return from the object.

RADIO - A general term, principally an adjective, applied to the use of electromagnetic waves between 10 KHz and 3 GHz and, in particular, their transmission through space.

RAM EXTRUDER - Wire making machinery for pressure and heat extruding PTFE insulation over a conductor. A predetermined amount of cylindrical shaped molded PTFE powder is placed in a cylinder chamber. A ram is pushed through the cylinder by a jack screw, forcing the PTFE through an orifice or tip through which the conductor is moving and forms a homogeneous tube of insulation around

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the conductor. The unsintered insulated wire is then passed through a curing oven to complete the process. The limitation of a ram extruder is the size of the slug of preformed PTFE powder. Since it is of constant size, when the slug is exhausted it is the end of the run. It cannot be continuously fed. As the diameter increases, the maximum length of wire to be covered decreases.

RATED TEMPERATURE - The maximum temperature at which an electric component can operate for extended periods without loss of its basic properties.

RATED VOLTAGE - The maximum voltage at which an electric component can operate for extended periods without undue degradation or safety hazard.

REACTANCE - The part of the total impedance of a circuit not due to pure resistance, measured in ohms. Symbol X . It is the imaginary part of the complex impedance, Z given by:

$$Z = R + iX$$

where R is resistance, X is reactance and i equals $\sqrt{-1}$.

Reactance is due to the presence of capacitance or inductance in a circuit. The effect of reactance is to cause the voltage and current to become out-of-phase.

RECEIVER - A detector and electronic circuitry to change optical signals to electrical signals.

REEL - Circular container on which wire is wound for storage or transit, usually made of wood or metal.

REFLECTION LOSS - The part of a signal which is lost due 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.

REFRACTIVE INDEX - The ratio of the speed of light in a vacuum to the speed of light in a material. Also called Index of Refraction.

REFRACTION - Deflection from a straight path undergone by a light ray or energy wave in passing obliquely from one medium (as air) into another (as glass) in which its velocity is different.

REPEATER - A device that receives signals in one circuit and automatically delivers corresponding signals to one or more other circuits, usually amplifying the signal.

RESIN - A solid or semi-solid organic substance, originally of plant origin but largely synthesized now. It may be clear, yellowish, or brown, ranging from transparent to translucent; typically a nonconductor of electricity and soluble in organic solvents but not in water. Consequently, resins are widely used in insulating, potting, and encapsulating. Resins are broadly classified as thermoplastic or thermosetting according to whether they soften or harden with the application of heat.

RESISTANCE - The tendency of a material to resist the passage of an electric current and to convert electrical energy into heat energy. Symbol R . It is the ratio of the applied potential difference across a conductor to the current flowing through it (see Ohm's law). If the current is an alternating current, the resistance, measured in ohms, is the real part of electrical impedance, Z , given by the formula:

$$Z = R + iX$$

where i equals $\sqrt{-1}$ and X is the reactance.

RESISTANCE WIRE - Wire constructed from a material, such as Nichrome® or constantan, that has a high resistivity and low temperature coefficient of resistance. It is used for accurate wire-wound resistors. Nichrome® is a trademark of the Driver Harris Company.

RESISTIVITY - An intrinsic property of a material equal to the resistance per unit length and unit cross sectional area. Reciprocal of conductivity. The lower the resistivity of a material the better conductor it is. Materials can be classified as conductors, semi-conductors, or insulators according to their resistivity. Conductors have a resistivity of 10^{-6} to 10^{-8} ohms per meter, semi-conductors have a resistivity of 10^{-6} to 10^{-7} ohms per meter, and insulators have a resistivity of 10^{-7} to 10^{-23} ohms per meter.

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RESPOOL - To rerun material from one package spool to another for various purposes, such as to verify lengths, inspect for defects, or to a specified packaging by customer.

RETRACTILE CORD - A cord in which the insulation and/or jacket has been specially treated so that it will return to its original contracted form from an extended condition.

REV. - Abbreviation for revision.

RF - a) Abbreviation for radio frequency. b) Tinned copper conductors, rubber insulation, cotton braid saturated with moisture resisting, flame-retarding compound, smoothly finished in white, black, red, green, blue, and yellow for identification. The lubricated surface finish of the wire permits easy pulling through conduits.

RF CONNECTOR - Connector used for connecting or terminating coaxial cable.

RFI - Abbreviation for radio frequency interference.

RG - Abbreviation for Radio Frequency (Government). Prefix for many coaxial cables.

RHRW - Tinned copper conductors, rubber insulation, saturated braid, flame and moisture resistant finish for moist locations.

RHW - 75° C rubber insulated. Heat and moisture resistant insulation with an outer cover of moisture resistant, flame-retardant and a nonmetallic covering. Generally used in wet locations.

RIBBON CABLE - A flat cable with individually insulated conductors processed together in a parallel position. Conductors may be all in one color, or each individual conductor may be of a different color.

RIDGE MARKER - One or more ridges running laterally along the outer surface of plastic wire for purposes of identification.

RIGID COAXIAL CABLE - Non flexible coaxial cable, usually a metal tube armored coaxial cable.

RIGID WAVEGUIDE - A type of coaxial cable. A metal form (usually an extrusion) using air as a dielectric.

RIM Helix - Abbreviation for resin insulated magnet wire.

RIP CORD - A parallel construction of two or more insulated conductors which may be easily separated leaving the insulation of the conductors undisturbed.

RISER - A UL designation for cable approved to go from one floor to another floor in a multistory building.

RMS - Abbreviation for Root Mean Square. It is a means of expressing AC voltage in terms of DC. It is approximately 80% of AC peak voltage.

ROENTGEN - The amount of radiation that will produce one electrostatic unit of ions per cubic centimeter volume.

RoHS - RoHS is the acronym for Restriction of Hazardous Substances. RoHS, also known as Directive 2002/95/EC, originated in the European Union and restricts the use of specific hazardous materials found in electrical and electronic products. All applicable products in the EU market after July 1, 2006 must pass RoHS compliance. For the complete directive, see Directive 2002/95/EC of the European Parliament. The substances banned under RoHS are lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium (CrVI), polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE).

ROPE LAY STRAND - A conductor made of multiple groups of filaments. A 7 x 19 rope lay strand has 19 wires laid into a group and then 7 such groups laid cabled into a conductor.

RR - An all rubber nonmetallic underground cable suitable for direct burial in the earth or in conduit. It has heat and moisture resistant insulation and an outer Neoprene® jacket. Neoprene® is a trademark of the DuPont de Nemours Co.

RUB - Abbreviation for rubber.

RUBBER MOLD - A metal mold containing a cavity that will give the desired form or part. The part is made by placing uncured rubber or synthetic compound in the cavity and curing under heat and pressure.

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S

S - a) Abbreviation for silver-plated copper. Also abbreviated as SPC. b) 600 volt senior service rubber insulated portable cord. 18 AWG two conductor through 6 AWG four conductor.

2S - Abbreviation for silver-plated copper double shield.

SA - a) Abbreviation for silver-covered alloy. b) Nomenclature for silicone rubber insulation with high temperature barrier or glass overall for use up to 125° C.

S BAND - A band of microwave frequencies. See frequency band.

SC - Abbreviation for silver-covered copper. Also abbreviated as SCC.

2SC - Abbreviation for two silver-plated copper shields.

SCB - Abbreviation for silver-plated cadmium bronze. Also abbreviated as SCCad Br.

SCBerC - Abbreviation for silver-covered beryllium-copper alloy.

SCC - Abbreviation for silver-covered copper. Also abbreviated as SC.

SCCA - Abbreviation for silver-covered copper-clad aluminum. Also abbreviated SCCAL.

SCCad Br - Abbreviation for silver-covered cadmium bronze. Also abbreviated as SCB

SCCAL - Abbreviation for silver-covered copper-clad aluminum. Also abbreviated SCCA.

SCCS - Abbreviation for silver-covered copper-clad steel. Also abbreviated as SCS.

SCHSCA - Silver-coated high strength copper alloy.

SCPE - Semi-conducting polyethylene.

SCS - Abbreviation for silver-covered copper-clad steel. Also abbreviated as SCCS.

SCW - Abbreviation for silver-plated Copperweld® conductor. Copperweld® is a trademark of the Copperweld Steel Company.

SD - Abbreviation for soft drawn (annealed).

SECONDARY INSULATION - A high resistance dielectric material which is placed over primary insulation to protect it from abrasion.

SECTOR STRAND - A group of wires laid in triangular shape with rounded corners, for use as one conductor of a three conductor cable with 120° angle between faces, and with 90° angle for a four conductor cable.

SEGMENTAL CONDUCTOR - In single conductor cables one million (1,000,000) CM or more, the conductors are divided into three or four segments, insulated from each other by paper tapes, to reduce current resistance in AC circuits.

SELENIUM CURE - Process used in curing Neoprene® and rubber jacketed wires and cables. The process makes a dense, tough, durable jacket. Neoprene® is a trademark of the DuPont de Nemours Co.

SELF-EXTINGUISHING - The characteristic of a material whose flame is extinguished after the igniting flame is removed.

SELF-SUPPORTING AERIAL CABLE - A cable consisting of one or more insulated conductors assembled or cabled with a steel core or attached to a separate steel cable, which supports the weight of the cable. It may be from pole to pole or in a vertical position on a tower.

SELF-SUPPORTING CABLE - A cable with a steel support strand capable of supporting the cable weight across spans.

SEMI-CONDUCTING JACKET - A jacket having a sufficiently low resistance so that its outer surface can be kept at substantially ground potential by a grounded conductor in contact with it at frequent intervals.

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SEMI-CONDUCTOR - Any of a class of solids whose electrical conductivity is between that of a conductor and that of an insulator in being nearly as great as that of a metal at high temperatures and nearly absent at Low temperatures.

SEMI-RIGID - Rigid to some degree or in some part.

SEMI-TIGHT BUFFER - Type of optical fiber cable construction where each fiber is loosely surrounded by a protective coating to a diameter of 900 microns.

SEPARATOR - Layer of insulating material between: (a) Conductors and insulation; and (b) Between cable components and jacket.

SERVING OF A CABLE - A serve is a separator applied directly over the conductor. The serve may consist of one or a combination of materials such as paper, cotton, silk, nylon, or rayon. These materials may be applied spirally or laterally.

SF - Fixture wire, silicone rubber insulated. Can be solid or stranded.

SFF - Same as SF but in flexible grade stranding.

SH-A - Portable power cable, commonly known as shovel cable, Neoprene® jacket, usually three or four conductors individually shielded. Cable rated 5 kV. Neoprene® is a trademark of the DuPont de Nemours Co.

SH-B - Similar to SH-A except shield over all conductors.

SH-C - Similar to SH-B except with grounds.

SH-D - Similar to SH-A except with grounds.

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

SHF - Abbreviation for super high frequency. See frequency band.

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

SHIELD COVERAGE (PERCENTAGE) - The physical area of a cable that is actually covered by the shielding material and is expressed in percent.

SHIELDED CONDUCTOR - An insulated conductor which has been shielded by a copper braid or tape, aluminum foil, copper foil, or a semi-conductive vinyl. The purpose is to confine the electrical field.

SHIELDED MULTI-CONDUCTOR CABLE - A cable with a multiplicity of conductors with a metallic or nonmetallic shield over the cable core.

SHORTS - Less than standard lengths of wire or cable which are generated by making cuts for special orders, i.e., remnants.

SHRINK TUBING - A thermoplastic tube, when heated, shrinks and cures to a smaller diameter. Used to seal joints, etc.

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

SIGNAL - A current used to convey information, either digital, analog, audio, or video.

SIGNAL CABLE - A cable designed to carry current of less than 1 ampere per conductor.

SIGNAL GENERATOR - A device used to furnish current at a known frequency, modulated, and to deliver a measured voltage only at the terminals of the generator without appreciable radiation at any other point.

SIGNAL-TO-NOISE RATIO - At any point in an electronic circuit, device, or transmission system, the ratio of one parameter of a desired signal to the same or corresponding parameter of the noise. In broadcast communication the signal-to-noise ratio is often quoted in decibels and the noise parameter taken as its root mean square value.

SIL/DAC-VI - Abbreviation for Dacron braid over silicon rubber, Type VI, per MIL-C-17.

SILICONE - A thermoplastic elastomer insulation with excellent heat resistance.

SILICONE IMPREGNATED - The complete saturation of insulating tapes or braids with a silicone varnish

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compound. The process may be performed under a vacuum. The compound serves as a heat and flame-retardant as well as a binder.

SIMPLEX CABLE - A single fiber optical cable.

SINGLE-MODE FIBER - An optical waveguide in which only one mode propagates due to its small core diameter of approximately 9 microns.

SINTERED - Usually refers to curing of PTFE. To cause to become a coherent mass by heating without melting. .

SIS - XLP (cross-linked polyolefin) switchboard wire.

SJ - 300 volt junior service rubber insulated UL approved portable cord, rubber jacket. 18 AWG two conductor through 16 AWG four conductor.

SJO - 300 volt junior service rubber insulated UL approved portable cord, Neoprene® jacket. Neoprene® is a trademark of the DuPont de Nemours Co.

SJT - 300 volt junior service vinyl insulated UL approved portable cord, vinyl jacket.

SJTO - 300 volt. Same as SJO except all thermoplastic construction.

SKELETON BRAID - Widely separated braid of fiber, copper, or steel may be used to hold core together, for reinforcing jacket or for shielding.

SKIN EFFECT - In an alternating current system, a phenomenon that occurs at increased frequencies causing an increase in resistance of the conductor causing the outer skin to carry most of the current. The phenomenon increases in intensity the higher the frequency.

SLEEVING - A braided, knitted, woven tube.

SNCCS - Abbreviation for silver-covered nickel-covered copper-clad steel.

SO - A 600 volt senior service Neoprene® jacket UL approved portable cord; 18 AWG two conductor through 10 AWG four conductor. Neoprene® is a trademark of the DuPont de Nemours Co.

SOLDER - A metal or metallic alloy used when melted to join metallic surfaces; an alloy of lead and tin so used.

SOLDERABLE NYLON LITZ - Litz wire made up of solderize strands with a nylon serve overall.

SOLDEREZE - Magnet wire insulated with polyurethane base enamel.

SOLID CONDUCTOR - A conductor composed of one wire. Generally 18 AWG through 6 AWG, used where flexibility is not required.

SONAR - Acronym from **s**ound **n**avigation **r**anging. A method of detecting and locating underwater objects by transmitting a pulse of sound energy, usually ultrasonic, then measuring the return "reflected" echo.

SP-1 - Lamp cord, parallel, all rubber, two conductor, 300 volt.

SP-2 - Similar to SP-1 except heavier insulation.

SP-3 - Similar to SP-1 except heavier insulation, also may have a ground.

SPACE FACTOR - Given values in coil winding for amount of space available.

SPARK TEST - A test given to wire or cable to determine if there are defects in the insulation. A semi-destructive test, in that it will find weak spots in insulation by a spark breaking through thin spots or pinholes in the jacket when a high voltage potential from the conductor to an outside source is applied. Where these sparks emanate, the cable is cut, thus shortening the cable. This test should only be run once on a wire or cable.

SPC - Abbreviation for silver-plated copper. Also abbreviated as S.

SPECIFIC GRAVITY - The ratio of the density (mass per unit volume) of a material to that of water.

SPECIFIC INDUCTIVE CAPACITY - Dielectric constant of insulating material. Abbreviated as K, SK, SIC.

SPHINCTER RING - A high ratio heat shrinkable strain relief grommet that can be placed over the

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cable assembly after the assembly is fabricated.

SPIRAL SHIELD - A metallic shield of fine stranded wires applied spirally rather than braided.

SPIRAL WRAP - The helical wrap of a material over a core.

SPLICE - A permanent joint between two optical waveguides.

SPOOL - Circular container on which wire is wound for storage or transit, usually made of plastic, paper, or metal.

SP SHIELD - Abbreviation for silver-plated shield.

SPT-1 - Same as SP-1 except in plastic.

SPT-2 - Same as SP-2 except in plastic.

SPT-3 - Same as SP-3 except in plastic.

sq. - Abbreviation for square.

SR - Abbreviation for silicone rubber insulated cable, 600 volt.

SRAW - Abbreviation for silicone rubber insulated, overall glass braid, with nickel-plated copper conductor, flexible stranding, 600 volt.

SRL - Abbreviation for structural return loss.

SRML - Abbreviation for silicone rubber motor lead.

SS - Abbreviation for stainless steel.

SSC - Abbreviation for silver-covered strip.

SSPE - Abbreviation for semi-solid polyethylene. Also abbreviated as SS poly.

SS Poly - Abbreviation for semi-solid polyethylene. Also abbreviated as SSPE.

SSPS - Abbreviation for semi-solid polystyrene.

SSTFE - Abbreviation for semi-solid tetrafluorethylene, TFE.

SSTUBE - Abbreviation for stainless steel tube.

ST - Same as SJT, except 600 volt.

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 specific time.

STANCOTE® - Standard Wire & Cable Co. trade name for plastic insulated wire.

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, specifically taking into account the mismatch between source, line, and load. The standing wave ratio **S** is given by the formula:

$$S = V_{\max} / V_{\min} = I_{\max} / I_{\min}$$

In an ideally matched system, **S**=1 indicating the presence of a pure traveling wave and no reflected power. As the proportion of power reflected increases, **S** approaches infinity, which value would indicate a pure standing wave.

STANFLEX® - Standard Wire & Cable Co. trade name for rubber jacketed portable cords and cables.

STATIC - Disturbing effects produced in a radio, telephone, or television receiver by atmospheric or various natural or man-made electrical disturbances.

STATIONARY DUTY - See continuous duty.

STEP INDEX - In fiber optics the refractive index profile characterized by a uniform refractive index within the core and a sharp decrease at the core cladding interface. It usually refers to a multi-mode fiber.

STRAND - A single uninsulated wire.

STRANDED CONDUCTOR - A conductor made with a specified number of strands. Rope lay strand, for example, is a conductor made of multiple groups of strands (filaments). A 7 x 19 rope lay strand has 19 wires laid into a group and then seven such groups cabled laid into a conductor.

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STRENGTH MEMBER - Included in a cable configuration for purposes of adding tensile strength only. Does not conduct any power or signal.

STRIP INSULATIONS - Strip process insulation consists of one or more longitudinal strips of unvulcanized thermosetting material folded around a conductor and vulcanized after application.

SUBMARINE CABLE - Cable used underwater from one point to another for power or communication. Lead sheath and/or rubber jacket.

SUBSTRATE - Insulating material of a printed circuit.

SUGGESTED WORKING VOLTAGE - Usually refers to the AC voltage that can be applied between adjacent conductors.

SUPER HIGH FREQUENCY - See frequency band.

SUSCEPTANCE - Symbol B . The imaginary part of the admittance, Y , which is given by:

$$Y = G + iB$$

where G is the conductance and i equals $\sqrt{-1}$. For a circuit containing both resistance, R , and reactance, X , the susceptance is given by:

$$B = -X / (R^2 + X^2)$$

SV - Vacuum cleaner cord 18/2, 300 volt, light duty rubber, portable.

SVO - Same as SV except with Neoprene® jacket. Neoprene® is a trademark of the DuPont de Nemours Co.

SVT - Same as SV except non marking plastic jacket.

SWEEPTEST - A method to determine the frequency response of a cable by generating an RF voltage whose frequency is varied at a rapid constant rate over a given range. A test commonly made on coaxial cables.

SWEPT COAX - Coaxial cable which has been checked by the sweep test and certified by the manufacturer.

SWITCHBOARDWIRE - High temperature insulated wire such as TA or AVB, used to wire switchboards and control apparatus. It is heat, flame, and corrosive vapor resistant.

SYN. RUB. - Abbreviation for synthetic conductive rubber.

SYNTH - Abbreviation for synthetic.

T

T - The old UL designation for switchboard wire insulated with thermoplastic lead wire.

TA - The UL designation for switchboard wire insulated with thermoplastic and a high temperature barrier.

TAGT - Stranded nickel-clad copper conductor insulated with fused PTFE tape, high temperature barrier, and PTFE impregnated glass braid. 600 volt, 250° C rating.

TANKTEST - A voltage dielectric test in which the test sample is submerged in water and voltage is applied between the conductor and water as ground.

TC - a) Abbreviation for tinned copper. b) Type TC power and control tray cable.

2TC - Abbreviation for tinned copper double shield.

3TC - Abbreviation for tinned copper triple shield.

4TC - Abbreviation for tinned copper quadruple shield.

TCCS - Abbreviation for tinned copper-clad steel.

TCW - Abbreviation for tinned Copperweld®. Copperweld® is a trademark of the Copperweld Steel Company.

TEFLON® - Teflon® is DuPont de Nemours Co.'s trade name for their family of fluorocarbon resins including Teflon® TFE (tetrafluoroethylene), Teflon®

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FEP (fluorinated ethylene propylene), and Teflon® PFA (perfluoroalkoxy). See tetrafluoroethylene and perfluoroalkoxy.

TEFLON® IMPREGNATED - Refers to the saturation of a heat resistant fibrous glass braid with Teflon® suspension. After saturation, the Teflon® is cured. Teflon® is a trademark of the DuPont de Nemours Co.

TEFZEL® - Trademark of the DuPont de Numerous Co. Abbreviation ETFE. See ethylene tetrafluoroethylene.

TELEMETRY CABLE - Cable used for the transmission of information from instruments to the peripheral recording equipment.

TELEPHONE WIRE - This is a general term referring to many different types of communication wire. It refers to a class of wires and cables rather than a specific type.

TELLURIUM CURE - A curing process similar to selenium cure, except a different element is used.

TEMP. - Abbreviation for temperature.

TEMPERATURE COEFFICIENT OF RESISTANCE - The amount of resistance change of a material per degree of temperature change.

TEMPERATURE RATING - The maximum temperature at which an insulating material may be used in continuous operation without loss of its basic properties.

TENSILE STRENGTH - The pull stress required to break a given specimen. In fiber optics, the maximum allowed pulling force until a specific attenuation is reached. The stated value is short-term.

TERMINAL - Any fitting used for making a convenient electrical connection.

TEST LEAD - A flexible, insulated lead wire which usually has a test probe on one end. It is ordinarily used for making temporary electrical connections. The insulation normally is rubber, the standard colors are red and black.

TEST REPORTS - The permanent records made by a wire manufacturer of the tests performed on a

batch of wire to a specification.

TETRAFLUOROETHYLENE - A fluorocarbon resin. Abbreviation TFE.

TEW - Nomenclature for appliance wire by Canadian Standards Association (CSA), plastic insulated, solid or stranded conductor, 600 volt.

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

TF - The UL designation for fixture wire, solid soft copper conductor, insulated with thermoplastic lead wire.

TFE - Abbreviation for tetrafluoroethylene.

TFF - Same as TF, except stranded copper conductor.

TG - PTFE tape with overall glass braid, stranded nickel-clad copper conductor.

TGGT - Flexible stranded nickel-coated copper conductor with PTFE tapes, covered by wrapped fiberglass yarns. A fiberglass braid jacket is applied over insulation and is treated with high-temp saturant. 600 volt, 250° C rating.

THERMAL RATING - The maximum and/or minimum temperature at which a material will perform its function without undue degradation.

THERMAL RESISTANCE - The resistance of a substance to conductivity of heat.

THERMAL SHOCK - A test to determine the ability of a material to withstand heat and cold by subjecting it to rapid and wide changes in temperature.

THERMOCOUPLE - A union of dissimilar metals in which a voltage is generated due to a change in temperature. The voltage is usually in micro or milli volts.

THERMOCOUPLE EXTENSION - Same as thermocouple lead wire.

THERMOCOUPLE LEAD WIRE - An insulated pair of wires used from the couple to a junction box or to the recording instrument.

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THERMOCOUPLE WIRE - Wire drawn from special metals or alloys and calibrated to established specifications such as for the U.S. Bureau of Standards or Instruments Society of American standards.

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

THERMOSET - A material which hardens or sets when heat is applied, and which, once set, cannot be re-softened by heating. The application of heat is called "curing".

THERMOSTAT WIRE - Single or multi-conductor wire, bare soft solid copper conductor, usually PVC insulated. May be twisted and/or jacketed. May have enameled or nylon covered conductors and may have a metal armor covering. May also have a high temperature barrier insulation. It is used to transmit electrical signals between the thermostat and the heating or cooling unit.

THHN - Building wire, plastic insulated, 90° C, 600 volt, nylon jacket. Used in dry locations.

THINNET - RG58 type coaxial cable used in local area network configurations.

THW - Building wire, plastic insulated, heat, flame, and moisture resistant, 75° C.

THWN - Same as THW with overall nylon jacket. Used in dry and wet locations.

TIGHT BUFFER - Type of fiber optic cable construction where each fiber is tightly buffered by a protective thermoplastic coating to a diameter of 900 microns.

TINNED COPPER - Tin coating added to a copper conductor or braid to aid in soldering and inhibit corrosion. Abbreviated as TC.

TINSEL CORD - Extra flexible cord made with tinsel conductors to give the ultimate in flexibility. Used mostly in the communications field on headsets, handsets, and anywhere that repeated flexibility is necessary.

TINSEL WIRE - A low voltage, stranded wire in which each strand is very thin copper ribbon spirally wrapped around a textile yarn. Insulation is generally

a textile braid. Intended for use where severe flexing is expected.

TOKEN RING - A star-wired ring architecture used for computer LAN data communications.

TOLERANCE - a) The allowable deviation from a standard especially the range of variation permitted in maintaining a specified dimension in machining a piece; or b) The variance between the quantity ordered and the quantity shipped, generally accepted in the wire industry to be plus or minus 10%.

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

TPDDI - Abbreviation for twisted pair distributed data interface.

TPE - A highly flexible jacket material of thermoplastic elastomer.

TP-PMD - Abbreviation for twisted pair physical medium dependent.

TR - Abbreviation for (certified) test reports. See certified test reports

TRACER STRIPE - When color coding is accomplished by more than one stripe on the same wire. The first stripe, or widest, is called the base stripe, the others, usually narrower, are called tracer stripes.

TRANSFER MOLD - A type of rubber mold. The term derived from the method used of moving the compound into the cavity of the mold. The compound is forced or transferred by pressure, from a cavity in the top of the mold through sprues, into the lower section.

TRANSFORMER - A device for transferring electrical energy in an AC circuit by means of electromagnetic induction. Each circuit is represented by a winding around a common magnetic core, the ratio of the voltage in the two circuits being (in an ideal transformer) equal to the ratio of the number of turns. From Ohm's Law and the Conservation of Energy Principle, it follows that (except for losses) the product of current and voltage is the same in both circuits.

TRANSMISSION LINE - Synonymous with power line. One or more insulated conductors arranged to

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transmit electrical energy signals from one locality to another.

TRANSMITTER - A driver and a source used to change electrical signals to optical signals.

TRAPWIRE - A low voltage wire used at hinge points, where severe flexing occurs, usually in burglar alarm systems. It is made with tinsel conductor to withstand the repeated flexing.

TRAY - A metal raceway for holding cable.

TRAY CABLE - A factory assembled multi-conductor control, signal, and power cable specifically approved under the NEC for installation in trays.

TRIAD - A group of three insulated conductors twisted together with or without a sheath overall. Usually color coded for identification. Also called a triplex.

TRIAxIAL - Refers to a three conductor cable with one conductor in the center, a second circular conductor concentric with the first, and a third circular conductor insulated from and concentric with the first and second, usually with insulation, and a braid or impervious sheath overall.

TRIBOELECTRIC NOISE - Noise generated in a shielded cable due to variations in capacitance between shielding and conductor as the cable is flexed.

TRIPLEX - A group of three insulated conductors twisted and/or sheathed or held together mechanically. Usually color coded or ridge marked. Also called triad.

TUBING - A tube of extruded non supporting plastic or metallic material.

TV - Abbreviation for Television. The transmission of images by means of radio waves or wires.

TV CAMERA CABLE - A portable, flexible cable consisting of several coaxial cables and other conductors cabled together, overall shield and usually Neoprene® jacketed. It is used to carry signals between the camera and transmitter and plate and heater currents to the camera. Neoprene® is a trademark of the DuPont de Nemours Co.

TW - The UL designation for thermoplastic insulated wire for use in conduit, underground, and wet locations. It is a common building wire having a bare soft copper conductor, which may be either solid or stranded.

TWINAX - A shielded coaxial cable with two central conductors. Also called twinaxial.

TWINAXIAL - A shielded coaxial cable with two central conductors. Also called twinax.

TWIN CABLE - A pair of insulated conductors of 8 AWG or larger, twisted or laid parallel and/or sheathed or held together mechanically under a common covering.

TWIN WIRE - A pair of insulated conductors of 9 AWG or smaller, twisted or bonded together and not identifiable from each other.

TWISTED PAIR - Two insulated conductors twisted together without a common covering.

U

UF - Single or multi-conductor, with or without ground, used for direct burial underground feeders and branch circuits between buildings, yard lights, floodlights, and similar installations.

UG - The two letter designation that proceeds the number on connectors for coaxial cable. It means Universal Government.

UHF - Abbreviation for ultra high frequency. See frequency band.

UL - Abbreviation for Underwriters Laboratories Inc. A nonprofit organization that maintains and operates laboratories for the examination and testing of devices, systems and materials relative to life, fire and casualty, hazards, and crime prevention. Founded in 1894, the enterprise is sponsored by the National Board of Fire Underwriters.

UL APPROVED - A product that has been tested and approved to Underwriters Laboratories standards.

ULTRA HIGH FREQUENCY - See frequency band.

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Abbreviation UHF.

UNBALANCED CIRCUIT - A transmission line in which voltage on the two conductors are unequal with respect to ground, e.g., a coaxial cable.

UNILAY CONDUCTOR - A central core surrounded by one or more concentric layers of helically wound strands in a fixed geometrical arrangement with the direction of lay the same for each layer and the central core.

UNSINTERED - Means uncured. This word is usually used to differentiate between cured and uncured PTFE tape.

UNSWEPT - Coaxial cable that has not had an attenuation check (sweep test).

URC - Nomenclature for weatherproof wire.

USASI - Abbreviation for United States of American Standards Institute. Superseded ASA and in turn was superseded by ANSI.

USE - Neoprene[®] jacketed underground service entrance cable. Neoprene[®] is a trademark of the DuPont de Nemours Co.

UTP - Abbreviation for unshielded twisted pair.

UV - Abbreviation for ultraviolet.

V

V - Abbreviation for voltage. See voltage.

VA - Abbreviation for volt-ampere. A designation of power in terms of volts and amperes.

V BAND - A band of microwave frequencies. See frequency band.

VEL. - Abbreviation for velocity.

VELCRO[®] - Set of nylon strips of interlocking barbs on one strip and hooks on another that can be fastened and unfastened repeatedly. Velcro[®] is a trademark of the Velcro Industries B.V.

VELOCITY OF PROPAGATION - Is the ratio of the speed of an electric signal down a length of cable compared to the speed of light in free space. All insulated cables have this ratio and it is expressed in percentage. It is the reciprocal of the square root of the dielectric constant of the cable insulation. For example, in the case of coaxial cables with polyethylene dielectric, this ratio is 65% to 66%.

VERTICAL RISER CABLE - Steel wire armored power cable for vertical runs in a building.

VERY HIGH FREQUENCY - See frequency band. Abbreviation VHF.

VERY LOW FREQUENCY - See frequency band. Abbreviation VLF.

VHF - Abbreviation for very high frequency. See frequency band.

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.

VITON[®] - A synthetic family of elastomer for high performance jacketing material. It possesses very good resistance to chemicals, heat, fire, and good mechanical properties. Viton[®] is a trademark of DuPont Dow Elastomers.

VLF - Abbreviation for very low frequency. See frequency band.

VOLT - A unit of measure of electromotive force. One volt is the amount of pressure that will cause one ampere of current in one ohm of resistance. Abbreviation V.

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

VOLTAGE BREAKDOWN - A test to determine maximum voltage of insulated wire before electrical current leakage through insulation occurs.

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VOLTAGE RATING - The highest voltage which may be applied to a wire or cord for continuous service in conformance with the governing standards or specifications.

VOLUME RESISTIVITY (SPECIFIC INSULATION RESISTANCE) - The electrical resistance between opposite faces of a 1 centimeter cube of insulating material, commonly expressed in ohms per centimeter.

VS. - Abbreviation for versus.

VSWR - Abbreviation for Voltage Standing Wave Ratio. The ratio of the voltage maximum to voltage minimum which exists in a transmission line. Caused when there is reflection of incident wave, due to a discontinuity or improper match to the transmission line (see Standing Wave Ratio).

VW-1 - Vertical flame test for wire and cable. A standard established by Underwriters Laboratories. Formerly known as FR-1.

W

W - a) Abbreviation for watt. See watt. b) Heavy duty portable power cable, Neoprene® jacket, in single or multiple conductors, 600 volt. Neoprene® is a trademark of the DuPont de Nemours Co. c) Abbreviation for with.

WALL THICKNESS - Refers to insulation thickness or jacket thickness that has been applied.

WATER ABSORPTION - A test to determine the water absorbed by a material after a given immersion period.

WATER BLOCKED CABLE - A multi-conductor cable having voids filled to prevent water flow or wicking.

WATT - The unit of measure of electric power. One watt is equivalent to the power represented by one ampere of current under a pressure of one volt in a DC circuit. Abbreviation W.

WAVEGUIDE - A transmission line that consists of a suitably shaped hollow conductor, which may be filled with a dielectric material, and that is used to guide

ultrahigh frequency electromagnetic waves propagated along its length. The most common shapes of waveguide are rectangular and cylindrical; the most common dielectric is air. A cylindrical waveguide is sometimes known as a wave duct; one that contains a solid rod of dielectric is a uniconductor waveguide. If a wide range of frequencies is to be transmitted, a ridged waveguide may be used. The presence of the ridges extends the possible range of frequencies that may be propagated in a particular transmission mode but the transmission is greater than in the equivalent rectangular waveguide.

WAVEGUIDE DISPERSION - Dispersion caused by the fact that light travels at different speeds in the core and cladding of single-mode fibers.

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

W BAND - A band of microwave frequencies. See frequency band.

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

WIRE - A slender rod or filament of drawn metal. The term is a generally used one, which may refer to any single conductor. If larger than 9 AWG or multiple conductors, it is usually referred to as a cable.

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

WIRE GAUGE - 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 cross sectional area. Abbreviation AWG.

WOLLASTON WIRE - Extremely fine platinum wire that is used for electroscope wires, micro fuses, and hot-wire instruments. It is produced by coating platinum wire with a sheath of silver, drawing them together into a relatively fine uniform diameter wire, and then dissolving the silver with a suitable acid. Diameters to about one micrometer may be produced by this method.

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WOVEN CABLES - A method of producing a flat or ribbon type cable by holding the conductors together with thread as a result of a weaving process.

X

X - Symbol for reactance. See reactance.

X-100 - See FEP.

X BAND - A band of microwave frequencies. See frequency band.

XETFE - Abbreviation for cross-linked extruded, modified ethylene tetrafluoroethylene copolymer. See ethylene tetrafluoroethylene.

X GUIDE - A transmission line that is used for the propagation of surface waves and consists of a length of dielectric material with a X-shaped cross section.

XHHW - Cross-linked polyethylene insulated, rated at 90° C in dry locations and 75° C in wet locations.

XL - Abbreviation for cross-linked insulation. See cross-linked.

XLAP - Abbreviation for cross-linked extruded alkane-imide polymer.

XLETFE - Abbreviation for cross-linked ethylene tetrafluoroethylene copolymer. See ethylene tetrafluoroethylene copolymer.

XLP - Abbreviation for cross-linked polyethylene. Also abbreviated as XLPE.

XLPA - Abbreviation for cross-linked extruded polyalkene.

XLPE - Abbreviation for cross-linked polyethylene. Also abbreviated as XLP.

XL POLYOLEFIN - Cross-linked polyolefin.

XLPVF - Abbreviation for cross-linked extruded polyvinylidene fluoride.

Y

Y - Symbol for admittance. See admittance.

yrs. - Abbreviation for years.

Z

Z - Symbol for impedance. See impedance.

ZERO POTENTIAL - See earth potential.

ZIP CORD - Parallel cable that can be easily separated by pulling apart.

