Abrasion Resistance: A measure of the ability of a wire, wire covering or material to resist surface wear from abrasion.

AC: Designation for branch circuit and feeder cables with flexible metal tape armor.

A.C. or A-C: Abbreviation for alternating current.

Accelerated Life Test: A test in which wire or cable is subjected to elevated electrical or environmental conditions over a specific period of time. Measurements of performance under these conditions, and over this time span, are extrapolated to predict the performance of the wire or cable over longer periods of time under normal electrical or environmental conditions.

Accelerator: A chemical additive which hastens a chemical reaction under given conditions, known also as a promoter or sensitizer. Used in plastics and rubber compounding to reduce curing time.

Adjacent Conductor: Any conductor touching another conductor within a multi-conductor cable, whether in the same layer or an adjacent layer.

Admittance: The measure of ease with which an alternating current flows in a circuit. The reciprocal of impedance.

Aircraft Ignition Cable: High tension cable for ignition systems of internal combustion aircraft engines.

Aircraft Wire: Wire specifically intended for use in airborne equipment, within airframes, or in aircraft engines or engine-control systems. Designed to withstand severe environmental conditions such as heat, cold, altitude, solvents, fuels, and moisture.

Air-spaced Coaxial Cable: One in which air is the dielectric material. Spirally wound synthetic filaments, beads, or braided filaments may be used to center the conductor.

Alloy: A metal formed by combining two or more elemental metals.

Alternating Current: Electric current that periodically and regularly reverses its direction. The frequency of the change in flow is expressed in cycles per second (Hertz or Hz).

Aluminum: Aluminum conductors have good electrical and thermal conductivity, and light weight. However, they should be used with caution because of the possibility of galvanic corrosion if aluminum conductors are attached to terminals or other items made of metals other than aluminum.

Ambient Temperature: The temperature of the environment surrounding an object.

American Wire Gage (AWG): A standard system used for designating wire diameter. Also known as Brown and Sharpe (B & S) wire gage.

Ampere: The unit expressing the rate of flow of an electrical current. One ampere is the current flowing through one ohm of resistance at one volt potential.

Ampere's Rule: Current in a certain direction is equivalent to the motion of positive charges in that direction. The magnetic flux generated by the current in a wire encircles the current in the counter-clockwise direction when it is approaching the observer.

Angle of Advance: The angle between a line perpendicular to the axis of the cable and axis of any one member or strand of the braid.

Anneal: To heat, then cool a metal in order to relieve mechanical stresses. Annealing metal makes it softer and less brittle.

Annealed Wire: Wire which has been softened by heating. Sometimes referred to as a soft drawn wire.

Anti-Oxidant: Substance which prevents or slows down degradation due to oxidation.

APICAL®: Registered trademark of Allied Chemical Corporation for its polyimide film product.

Arc Resistance: The measure of an insulator's resistance to an electrical current's establishment of an arc (conductive path).

Armored Cable: A cable provided with an outer wrapping or bands of metal, usually steel wires or tapes, for mechanical protection.

ASTM: American Society for Testing and Materials. Many wire and cable materials in North America are produced to ASTM specifications.

Attenuation: Relative power loss in an electrical system. Applied to coaxial cables, the power drop or signal loss in a circuit, expressed in decibels (dB).

AWG: Abbreviation for American Wire Gage.

AWM: Designation for Appliance Wiring Material.

Balanced Line: A cable having two conductors which carry voltages opposite in polarity but equal in magnitude with respect to ground.

Balun: A device for matching an unbalanced coaxial transmission line to a balanced two line system. A balun can also provide impedance transformation.

Bandwidth: The difference between the lowest and highest frequency components of a signal or device, generally measured within ± 3dB of signal attenuation.

Banded Cable: Two or more cables banded together by stainless steel strapping.

Bare Conductor: A conductor not covered with insulating material.

Baud: One bit per second.

Beaded Coax: Coaxial cable with a dielectric consisting of beads made of insulating material.

Beryllium: A metal alloyed with copper to increase strength.

Binder: Spirally served tape or thread used for holding assembled cable components in place while additional manufacturing operations are performed.

Bond Strength: Amount of adhesion between bonded surfaces, usually measured in pounds or PSI.

Bondable Wire: An insulated wire whose surface has been treated to facilitate adhesion to other materials such as potting compounds.

Boot: Protective covering, generally flexible, over the junction between a wire or cable and a terminal or connector. Provides environmental protection and strain relief.

Braid: Woven wire used as shielding for cables and as ground path. Also, a woven fibrous protective outer covering over a conductor or cable.

Glossary

Braid Angle: The angle between the axis of the cable and axis of any one member or strand of the braid (also known as angle of advance). It is further the smaller of the two angles formed by the carrier and the longitudinal axis of the braid.

Braid Carrier: The bobbin on a braiding machine which holds one group of strands or filaments consisting of a specific number of ends. The carrier revolves during the braiding operation

Braid Ends: The strands used to make up one carrier. The strands are wound side by side on the carrier bobbin and lay parallel in the finished braid.

Breakdown: A disruptive electrical discharge through the insulation.

Breakdown Voltage: The voltage at which the insulation between two conductors will break down.

Breakout: The point at which a conductor or conductors break out from a multi-conductor cable to complete circuits at various points along the main cable. The remaining conductors continue on within the jacket.

B & S: Brown & Sharpe Gage, a wire diameter standard. Same as AWG.

Building Wire: Insulated wires used in buildings for light and power. 600 V or less. Usually not exposed to outdoor environment.

Bunched Stranding: Terms applied to group of strands twisted together in a random manner in the same direction in one operation without regard to geometric arrangements of specific strands.

Bus: A common point for electrical circuits to return.

Bus Bar: A heavy copper (or other metal such as aluminum) strip or bar used inside switchboards, power plants, and main panels to carry heavy currents.

Bus Wire: Wire used to connect two terminals inside an electrical unit.

Butt Joint: Joining of two conductors end-to-end, with no overlap and with their axes in line.

"C" (cured) Stage (of resin): The condition of a resin polymer when it is in the solid state, with high molecular weight, being insoluble and infusible.

Cable: Either a stranded conductor with or without insulation and other covering (single-conductor cable), or a combination of conductors insulated from one another (multiple-conductor cable).

Cable Assembly: A cable with connectors on one or both ends.

Cable Core: The portion of an insulated cable lying under the protective covering or coverings. In coaxial cables, the center conductor and dielectric.

Cable Core Binder: A wrapping of tapes or cords around the several conductors of a multiple-conductor cable used to hold them together. Usually supplemented by an outer covering of braid, jacket, or sheath.

Cable Filler: The material used in multiple-conductor cables to occupy the interstices formed by the assembly of the insulated conductors, thus forming a cable core of the desired shape (usually circular).

Cable Sheath: The protective covering applied to cables.

Cabling: Twisting together two or more insulated conductors by machine to form a cable. This also is a term loosely applied to bundling of wires together such as in the forming of wire harnesses.

Cable Factor: Used in a formula for calculating the overall diameter of cables: D=fd where D=cable diameter, f=factor, and d=diameter of one conductor.

Capacitance: That property of a system of conductors and dielectrics which permits the storage of electricity when potential difference exists between the conductors. Its value is expressed as the ratio of a quantity of electricity to a potential difference. A capacitance value is always positive.

Capacitive Coupling: Electrical interaction between two conductors caused by the mutual capacitance between them.

Carrier: The basic woven element of a braid consisting of one or more ends (strands) which creates the interlaced effect.

Cellular Insulation: Material in foamed form with the cells either closed or open (interconnected).

Characteristic Impedance (Z_0): The impedance of a circuit that, when connected to the output terminals of a uniform transmission line (such as a coaxial cable) of arbitrary length, causes the line to appear infinitely long. A uniform line terminated in its characteristic impedance will have no standing waves, no reflections from the end, and a constant ratio of voltage to current at a given frequency at every point on the line.

Cigarette Wrap: Tape insulation wrapped longitudinally instead of spirally over a conductor.

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

Circular Mil: A unit of area equal to the area of a circle whose diameter is 1 mil (0.001 inch); equal to (square mil x .7854). Used chiefly in specifying cross-sectional areas of round conductors.

Cladding: A method of applying a layer of metal over another metal whereby the junction of the two metals is continuously welded. Clad wires have a thicker layer of the covering metal than plated wires.

Closed Cell: Foamed or cellular material with cells which are not interconnected.

Coating: Plating the surface of a conductor to prevent corrosion and facilitate soldering. In wire terminology, "coated" is often used interchangeably with "plated." Term can also apply to an insulating coating.

Coaxial Cable: A cable consisting of two cylindrical conductors with a common axis, one inside the other. The two conductors are separated by a dielectric. The outer conductor, normally at ground-potential, acts as a return path for current flowing through the center conductor and prevents energy radiation from the cable. The outer conductor, or shield, is also used to prevent external radiation from affecting the current flowing in the inner conductor. The outer shield or conductor can consist of braided strands of round or flat wire, or a solid metal tube.

Coil Effect: The inductive effect caused by a spiral-wrapped shield; more pronounced at higher frequency.

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Cold Bend: Test procedure in which a sample of wire or cable is wound around a mandrel of a specified size within a cold chamber, at a specified temperature for a given number of turns at a given rate of speed. The sample is then removed and examined for defects or deterioration in the materials or construction.

Cold Flow: Permanent deformation of materials due to mechanical force or pressure.

Cold Joint: Defective solder joint due to insufficient heating.

Cold Work: Hardening and embrittlement of metal due to repeated flexing action. Also known as work hardening or metal fatigue.

Color Code: A color system for wire or circuit identification by use of solid-colored insulation or stripes, tracers, braids, surface printing, etc.

Compact Conductor: Stranded conductor which is rolled to deform the round wires, forcing them to fill the normal interstices between the wires within the conductor.

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

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

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

Concentric-Lay Conductor: A stranded conductor with a central core surrounded by one or more layers of helically wound strands in a fixed round geometric arrangement. Most commonly, all wires are of the same size and the central core is a single wire. The direction of lay for successive layers may be alternately reversed or in the same direction. If the direction of lay for successive layers is the same, the lay length will increase with each successive layer. The stranded direction of the outer layer is left hand.

Concentric-Lay Cable: Either a concentric-lay conductor as defined above, or a multiple-conductor cable composed of a central core surrounded by one or more layers of helically-laid wires.

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

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 outer layer.

Conductance: The reciprocal of resistance. It is the ratio of current passing through a material to the potential difference at its ends.

Conductivity: Reciprocal of volume resistivity. Conductance of a unit cube of any material.

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

Continuity Test: A test performed on a length of finished wire or cable to determine if the electrical current flows continuously throughout the length.

Continuous Vulcanization: The process of vulcanizing wire insulation after extrusion onto a conductor by passing it through a vulcanizing chamber under high pressure and temperature.

Contrahelical: The layer spiraling in a direction opposite that of the preceding layer within a wire or cable.

Control Cable: A cable used for remote control operation of equipment.

Controlled Impedance Cable: Cable with two or more insulated conductors where impedance between respective conductors is kept constant throughout the entire length.

Copolymer: A compound resulting from the chemical reaction of two chemically different monomers.

Copper: Copper and copper alloys are the most widely-used metals in wire and cable conductors because of their high electrical and thermal conductivity, excellent corrosion resistance, and ease of fabricating, joining and forming. Some of the common types of electrical coppers and copper alloys are:

• Electrolytic tough pitch copper (ETPC) has a minimum copper content of 99.9%. Annealed conductivity averages 101% with a 100% minimum. It is widely used for wire and bus bars.

• Silver bearing copper with a 99.9% copper content provides nearly the same electrical conductivity as ETP copper but offers a higher softening point, greater resistance to creep, and higher strength at elevated temperatures.

• Oxygen-free high conductivity copper (OFHC) has 99.95% minimum copper content with an average annealed conductivity of 101%. This copper has no residual deoxidant. Other coppers use phosphorus, boron, or lithium as deoxidizers to eliminate susceptibility to hydrogen embrittlement and improve weldability.

Copper-Constantan: Thermocouple wire with one copper and one constantan wire. The copper is the positive wire and the constantan is the negative wire. Constantan is an alloy of copper, nickel, manganese, and iron.

Copper-Covered Steel Wire: A wire having a steel core to which is fused an outer shell of copper. Also known as "copperweld."

Cord: A small, very flexible insulated cable constructed to withstand mechanical abuse. (Note: There is no sharp dividing line in respect to size between a cord a cable, but generally, a cord is considered to be 10 AWG and smaller.)

Cord sets: Portable cords fitted with any type of wiring device at one or both ends.

Core: A component or assembly of components over which other materials are applied, such as shield, sheath, or armor. In coaxial cables, the core consists of the center conductor and dielectric.

Corona: The phenomenon of air breakdown when electric stress at the surface of a conductor exceeds a certain value. At higher values, stress results in luminous discharge.

Corona Extinction: The voltage at which corona, once initiated, will extinguish as voltage is decreased.

Corona Ignition Point: The voltage at which corona will initiate as voltage is increased.

Glossary

Corona Resistance: The amount of time that insulation will withstand a specified level of corona without breakdown.

Corrosion: Chemical action which causes destruction of the surface of metal by oxidation or chemical combination Also caused by reduction of the electrical efficiency between the metal and a contiguous substance or to the disintegrating effect of strong electrical currents or ground return currents in electrical systems. The latter is known as electrolytic corrosion.

Coulomb: The quantity transferred by one ampere in one second.

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

Coverings: Textile braids or jackets of rubber, plastics, or other materials applied over wire and cables to provide mechanical protection and perhaps identification.

Crazing: Minute cracks on or near the surface of materials such as plastics.

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

Creepage: Electrical leakage on a solid dielectric surface.

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

CS-95: Phelps Dodge High Performance Conductors trade name for extra high strength copper alloy.

Crimp: Compressing (deforming) a metal sleeve onto a conductor to make a mechanical and electrical connection. A proper crimp breaks the oxide layer on the surface of metals, and cold-welds the parts.

Cross-Linking: The setting up of chemical links between the molecular chains of polymers.

Cross-Sectional Area of a Conductor: The sum of the cross-sectional areas of its component wires, that of each wire being measured perpendicular to its individual axis.

Crosstalk: Signal interference between nearby conductors caused by the pickup of stray energy from one conductor by another.

CSA: Canadian Standards Association. Wires used in Canada are specified to CSA standards much the same as wires used in the U.S. are specified to U.L. standards.

Current: The rate of transfer of electricity. Practical unit is the ampere, which represents the transfer of one coulomb per second.

Current Carrying Capacity: The maximum current a conductor can carry without heating beyond a safe limit.

Cut-Through Resistance: Resistance of solid material to penetrating by a sharp object under conditions of pressure, temperature, etc.

CV: Abbreviation for continuous vulcanization.

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

dB: Abbreviation for decibel.

dB Loss: The relative loss of signal in a conductor, expressed in decibels.

D.C.: Abbreviation for direct current.

Decibel (dB): Unit to express ratio differences of power level. Used to express power gain in amplifiers or power loss in passive circuits or cables.

Delay Line: A cable or component made to delay transmitted signals for a specific amount of time.

Denier: A term that describes the weight of a yarn (not cotton or spun rayon) which in turn determines its physical size. One Denier indicates a strand of material 9000 meters long, weighing one gram.

Derating Factor: A factor used to reduce a current carrying capacity of a wire when used in other environments from that for which the value was established. For example, power handling figures stated for sea level are derated for increased altitude.

Dielectric: An insulating material.

Dielectric Absorption: That property of an imperfect dielectric whereby there is an accumulation of electric charges within the body of the material when it is placed in an electric field.

Dielectric Constant: A relative measure of a the effectiveness of a substance as an electrical insulator. It is expressed as the ratio of the substance's permittivity to the permittivity of free space.

Dielectric Loss: Losses due to electric energy being transformed into heat in a dielectric when it is subjected to a changing electric field.

Dielectric Strength: The voltage which an insulating material can withstand before breakdown occurs, usually expressed as a voltage gradient (such as volts per mil).

Dielectric Test: Tests which consist of the application of a voltage higher than the rated voltage for a specified time. The purpose is to determine the adequacy of insulating materials.

Digital Signal: An electrical signal which consists of two distinct states—on and off—as opposed the the constant, periodic nature of an analog signal.

Dip Coating: An insulating coating applied to the conductor by passing the conductor through an applicator containing liquid insulating medium. This is the method typically used for coating magnet wire.

Direct Current: An electric current which flows in only one direction.

Direction of Lay: The lateral direction in which the elements of a cable run over the top of the cable as they recede from an observer looking along the axis of the cable. ASTM symbols are used to indicate direction; S for left-hand, Z for right-hand.

Dissipation Factor (loss tangent, tan approx. power factor): The tangent of the loss angle of the insulating material.

Disturbed Conductor: A conductor that receives energy generated by the field of another conductor.

Disturbing Conductor: Conductor carrying the energy that creates spurious signals in another conductor.

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Double Shield: Two layers of wire braid, one over the other, in direct contact.

Drain Wire: An uninsulated wire laid over the component or components of a cable and used as a ground connection.

Drawing: Pulling metal wire through a die or series of dies for reduction of diameter to a specified size.

Dual Coaxial Cable: Two coaxial cables within a common outer jacket.

Duplex Cable: A cable composed of two insulated single conductor cables twisted together. (Note: The assembled conductors may or may not have a common covering of binding or protecting materials. (See also Parallel Pair.)

Durometer: A measuring device used to measure the hardness of a substance. Also, the measurement of hardness on the Shore scale.

Eccentricity: A measure of the center of a conductor's or cable component location with respect to the circular cross section of the insulation. Expressed as a percentage of center displacement of one circle within the other.

EIA: Abbreviation for Electronic Industries Association.

Elastomer: A material which at room temperature stretches under low stress to at least twice its length and snaps back to its original length upon release of stress.

Electric Strength: See Dielectric Strength.

Electromotive Force (EMF): Pressure or voltage. The force which causes current to flow in a circuit

Electronic Interconnecting Wire: Wires or cables used to make external connections between various units of electronic equipment.

Electromagnetic Coupling: The transfer of energy by varying a magnetic field. Inductive coupling

Electrostatic Coupling: The transfer of energy by varying an electrostatic field. Capacitive coupling

Electro-Tinned: Electrolytic process of tinning wire.

Elongation: The fractional increase in length of a material that is stressed in tension.

Embossing: Marking by raised lettering on the sheath material of a cable.

EMF: Abbreviation for electromotive force or voltage.

Ends: The number of wires or threads on a braider carrier.

End-To-End Check: Test conducted on a completed wire and/or cable run.

Epoxy Resins: Straight-chain resins based on ethylene oxide, its derivatives or homologs. Used for bonding and potting.

ETFE: Ethylene Tetrafluoroethlyene. See Tefzel.

ETP: Abbreviation for Electrolytic Tough Pitch copper. See copper.

External Interference: The effects of any electrical waves or fields which cause sounds other than the desired signal. Static.

Extrusion: Continuously forcing plastic, rubber, or elastomer material through an orifice to apply it as insulation or jacketing to conductor or cable.

Farad: Unit of Capacitance. The capacitance of a capacitor which, when charged with one coulomb, gives a difference of potential of one volt.

Fatigue Resistance: Resistance to metal crystallization which leads to conductors or wires breaking from flexing.

Feedthrough: Terminal or connector that carries current or signal through a wall or panel.

FEP: Abbreviation for Fluorinated Ethylene Propylene. See Teflon FEP.

FEPB: NEC designation for FEP insulated wire with glass or asbestos braid.

Ferrous: Composed of or containing iron. A ferrous metal exhibits magnetic properties.

Fiber: A thread or threadlike structure such as glass yarn.

Fiberglas: See *Glass*.

Filament: A very fine fiber.

Filler: Materials used in multi-conductor cables to occupy the interstices formed by the assembled conductors. Also, a substance, often inert, added to a plastic to improve properties and/or decrease cost.

Film: Sheet material less than .010" thick.

Flame Resistance: Ability of the material to extinguish flame once the source of heat is removed.

Flammability: Measure of the material's ability to support combustion.

Flashover: A disruptive discharge around or over the surface of an insulator.

Flat Braid: Woven braid of flattened wires or strips of sheet metal or metal foil. Sometimes used as a high current conductor at low voltages.

Flat Cable: A multiconductor cable with the conductors parallel to each other and on the same plane.

Flat-Conductor Cable: A cable with flat conductors.

Flex Life: Ability of a conductor, wire, or cable to withstand repeated bending.

Floating Circuit: A circuit which has no connection to ground.

Fluorinated Ethylene Polypropylene (FEP): See Teflon FEP.

Flux: The rate of flow of energy across or through a surface. Also, a substance used to prevent oxidation on surfaces to be joined during soldering.

FM: Frequency Modulation.

Foamed Plastics: Resins in flexible or rigid sponge form, with the cells closed or open (interconnected). Foamed insulations provide low dielectric constants and weight savings.

Foaming Agents: Chemicals added to plastics and rubbers that cause them to assume a cellular structure.

Frequency: The number of times an alternating current repeats its cycle in one second.

Fused Spiral Tape: Wire insulation or cable jacket of spiral-wrapped PTFE tape which is passed through a sintering oven to fuse the overlapped areas of the tape.

Glossary

Gage or Gauge: A term used to denote the physical size of a wire. See AWG.

Gigahertz (GHz): Frequency of one billion Hertz (cycles per second).

Glass: Glass fibers are used in yarn servings, fillers, and braids, and as strength members. High tensile strength, non-flammability, flexibility, and resistance to moisture and high temperatures are typical characteristics of glass fibers. Dielectric properties and protection against abrasion depend on their uses in combination with other materials or treatments.

Gold: Used for plating other metals because of its high conductivity and resistance to corrosion.

GRD: Abbreviation for ground.

Ground: An electrical term meaning to connect to the earth or other large conducting body which serves as an earth in order to make a complete electrical circuit. Also a point within a wiring circuit connected to ground.

Ground-Power Cable: A cable assembly fitted with appropriate terminations to supply power to an aircraft from ground power unit.

Ground-support cable: Cable construction, usually rugged and heavy, for use in ground support control or power systems.

Ground Wire: A conductor leading from equipment to ground.

Grounded: Connected to earth or to a conducting body that serves in place of the earth.

Halar®: Registered trademark of Ausimont U.S.A., Inc. Ethylene chlorotrifluoroethylene (ECTFE). A copolymer similar to ETFE but with one of the four fluorine atoms replaced by chlorine.

Halon®: Registered trademark of Ausimont U.S.A., Inc., Ethylene chlorotetrafluoroethylene (ECTFE). A copolymer of ethylene and tetrafluoroethylene.

Hard Drawn Copper Wire: Copper wire that has not been annealed after drawing.

Harness: A group of wires or cables laid parallel or twisted by hand, usually with many breakouts, laced or bundled together.

Heat Endurance: The time of heat aging that a material can withstand before failing a specific physical test.

Heat Seal: In cabling, a method of sealing a tape wrap jacket by means of thermal fusion.

Heat Shock: Test to determine stability of a material by sudden exposure to a high temperature for a short period of time.

Helical: Spiral.

Helix: Spiral winding.

Henry: Unit of inductance when the induced electromotive force of one volt is produced by the inducing current changing at the rate of one ampere per second.

Hertz (Hz): One cycle per second.

High Strength Copper Alloy Conductor: A conductor which shows a maximum 20% increase in resistance and a minimum of a 70% increase in breaking strength over the equivalent construction in pure copper while exhibiting a minimum elongation of 5% in 10 inches.

High Voltage: Generally considered to be a wire or cable with an operating voltage of over 600 volts.

High Voltage Time Test: An accelerated life test on a cable sample in which voltage is the factor increased.

Hi-Pot: A test designed to determine the highest potential that can be applied to a conductor without breaking through the insulation.

Hook-Up Wire: Insulated wire used for low current, low voltage (under 1000 V) applications internally within enclosed electronic equipment.

Hot: A wire carrying current.

Hot Tin Dip: A process of passing bare wire through a bath of molten tin to provide a coating.

Hybrid Cable: Multi-conductor cable containing two or more types of components.

Ignition Cable: Cable designed primarily for automotive ignition systems.

Impact Strength: Measurement of a wire or cable's ability to resist damage from impact from a specific weight, dropped a specific distance or at a specific acceleration, under specific conditions.

Impedance: The total opposition that a circuit offers to the flow of alternating current or any other varying current at a particular frequency. It is a combination of resistance and reactance, measured in ohms and designated by Z.

Impregnate: To fill the voids and interstices of a material with a compound. Does not imply complete fill or complete coating of the surface by a hole-free film.

Impulse: A surge of unidirectional polarity.

Impulse Strength: The voltage breakdown of insulation under voltage surges on the order of microseconds in duration.

Impulse Test: An insulation test in which the voltage applied is an impulse voltage of specified wave shape.

Inductance: The property of a circuit or circuit element that opposes a change in current flow. Inductance thus causes current changes to lag behind voltage changes. Inductance is measured in henrys.

Inhibitor: A corrosion inhibitor is a material which prevents or delays oxidation and galvanic action on a connector surface, or the interface of different conductors. Also, a chemical compound added to a mixture to restrain its chemical reaction until a desired condition exists.

Inorganic: Designating—or composed of—matter other than animal or vegetable, such as earthy or mineral matter.

Insulated Wire: A conductor of electricity covered with a non-conducting material.

Insulation: Material having a high resistance to the flow of electric current to prevent leakage of current from a conductor.

Insulation Resistance: The ratio of the applied voltage to the total current between two electrodes in contact with a specified insulator.

Insulator: A material of low electrical conductivity.

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

Interstice: A minute space between one thing and another, especially between things closely set or between the parts of a body, such as the spaces between strands in a stranded conductor.

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

IPCEA: Abbreviation for Insulated Power and Cable Engineers Association.

Iron-Constantan: Thermocouple wire with one iron and one constantan wire. The iron is the positive wire and the constantan is the negative wire. Constantan is an alloy of copper, nickel, manganese, and iron.

Irradiation: The use of ionizing radiation to alter the molecular structure of plastic materials.

Jack: A plug-in type terminal widely used in electronic apparatus for temporary connections. Also, the half of a mating pair of connectors which does not incorporate the active mating mechanism.

Jacket: The outer covering of a cable.

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

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

Jute: A natural fiber used in cables for filling interstices to give a round cross-section.

Kapton®: Registered trademark of DuPont for its polyimide film.

Kilovolt Ampere: 1000 volts X amperes.

Kirchoff's Laws: 1) The algebraic sum of the currents which meet at any point is zero. 2) In any closed circuit the algebraic sum of the products of the current and the resistance in each conductor in the circuit is equal to the electromotive force in the circuit.

KYNAR®: Registered trademark of Pennwalt Corporation. Polyvinylidene fluoride (PVDF) is rated at 135˚C.

Lacing Cord or Twine: Natural or synthetic fiber used for lacing and tying cable forms, hookup wires, cable ends, cable bundles, and wire harness assemblies.

Lacing Tape: Flexible flat fabric tape for tying harnesses and wire bundles, securing of sleeves and other items, and general lacing and tying applications.

Lacquer Finish: A coating of lacquer applied over braided wire or cable for appearance and protection against fraying, wicking, moisture absorption, and abrasion.

Laminates: Two or more layers, usually of different materials, bonded or laminated together.

Lamp Cord: Flexible stranded conductor cord, with rubber or plastic insulation, usually 14 to 18 AWG. Used for speaker cord, fans, lamps, etc.

Lap Wrap: Tape wrapped around an object in an overlapping condition.

Lay: The lay of any helical element of a cable is the axial length of a turn of the helix of that elements. (The helical elements of a cable may be the individual strands in a concentric-lay cable, or each insulated conductor in a multiple-conductor cable.) Also referred to as pitch.

Lead wire: A connecting wire, such as a test lead, battery lead, or conductor brought out from a coil or winding.

LF: Abbreviation for Low Frequency (30–300 KHz).

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

Line Cord: A two-wire cord terminating in a two-prong plug at one end used to connect equipment or appliances to a power outlet.

Line Voltage (Mains Voltage): Public power-supply voltage. In the U.S., 115 to 120 volts AC.

Litz Wire: Wire made from a number of fine, separately-insulated strands specially braided or woven together for reduced skin effect and lower resistance to high frequency currents for lower RF losses. The full name is Litzendraht Wire.

Longitudinal Wrap: Tape applied longitudinally with the axis of the core being covered as opposed to a helical or spiral tape wrapped core.

Loss Factor: The product of the power factor and the dielectric constant.

Lossy Line: A coaxial cable with high attenuation.

Low Loss: Comparative term applied to a dielectric material or cable that has a small amount of power loss over long lengths making it suitable for transmission of radio frequency energy.

Low Noise Cable: Cable configuration specially constructed to eliminate spurious electrical disturbances caused by capacitance changes or self-generated noise.

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

Lug: Termination, usually crimped or soldered to the conductor.

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

Marker Tape: A printed tape laid parallel to the conductors under the jacket of a cable for identification.

Marker Thread: A colored thread laid parallel and adjacent to the strands of an insulated conductor for identification.

MCM: Abbreviation for one thousand circular mils.

Melt Index: Extrusion rate of a thermoplastic material through an orifice of specified diameter and length under specified conditions of time, temperature, and pressure.

Melt Range: The difference in degrees between the melt point of material and its flow point.

MFd: Abbreviation for microfarad, one millionth of a farad. The standard unit of capacitance.

Microwave: A short electrical wave with a wave length usually less than 30 cm.

Microwave Frequency: Frequency usually above 100 megahertz.

Migration of Plasticizer: Loss of plasticizer from an elastomeric plastic compound with subsequent absorption by an adjacent material with lower plasticizer concentration.

MIL: When all-uppercase, an abbreviation for U.S. military specifications.

Mil: .001" (1/1000 inch).

Mismatch: A termination or connector having a different impedance from that for which a circuit or cable is designed.

Modulus of Elasticity: The ratio of stress to strain in a material that is elastically deformed.

Moisture Absorption: The amount of moisture in percentage that an insulation will absorb under specified conditions.

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

Molecular Weight: The molecular weight of a compound is the sum of the atomic weights of the atoms in the molecules that form the compounds.

Monomer: A low molecular weight substance consisting of molecules capable of reacting with like or unlike molecules to form a polymer.

Multiple-Conductor Cable: A combination of two or more conductors cabled together and insulated from one another and from sheath or armor where used. (Note: special cables are referred to as 3-conductor cable, 7-conductor cable, 50-conductor cable, etc.)

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

Multiplex: The transmission of two or more signals of differing frequencies through a single transmission line.

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

NEC: Abbreviation for National Electrical Code, which covers the use of wire and cable in many applications.

NEMA: Abbreviation for National Electrical Manufacturers Association.

Neoflon®: Trademark of Daikin Industries, LTD.

Neoflon® ETFE: Registered trademark for Daikin Industries, LTD. Polylene tetrafluoroethylene is a 150˚C rated fluoropolymer used for wire insulation and cable jacket.

Neoflon® FEP: Registered trademark of Daikin Industries, LTD. Fluorinated ethylene polypropylene (FEP) is a 200˚C rated fluoropolymer used for wire insulation and cable jacket.

Neoflon® PFA: Registered trademark of Daikin Industries, LTD. Perfluoroalkoxy (PFA). A 250˚C rated fluoropolymer used for wire insulation and cable jacket.

Nickel: This metal offers a combination of corrosion resistance, formability, and tough physical properties. For these reasons, nickel is used for alloying purposes and in nickel-clad copper wire. Nickel-plated conductors are more tarnish-resistant than silver-plated conductors, but require activated flux for soldering.

Noise: In a cable, any extraneous signals which interfere with the signal being transmitted.

Nylon: The generic name for synthetic fiber-forming polyamides. Used in wires and cables as a yarn for wire serving and braid, for extruded jackets; and as a coating.

OD: Abbreviation for outside diameter.

Ohm: Unit of electrical resistance. Resistance of a circuit in which a potential difference of one volt produces a current of one ampere.

Ohm's Law: Current in terms of electromotive force E and resistance R: given by the equation: I=E/R.

Open Cell: Foamed or cellular material with cells which are interconnected.

Organic: Designating or composed of matter originating in plant or animal life or composed of chemicals of hydrocarbon origin, either natural or synthetic.

Overcoat: A stranded conductor fused together with an overall tin coating.

Overpotential: A voltage above the normal operating voltage of a device or circuit.

Overvoltage: See overpotential.

Ozone: Form of oxygen produced by discharge of electricity into air.

Parallel Pair: A duplex construction where the two insulated conductors are laid parallel and then covered overall with a braid or jacket. It is often referred to as "duplex cable".

Percent Conductivity: Conductivity of material expressed as a percentage of that of copper (copper conductivity = 100%).

Percent Plating: Quantity of plating on a conductor expressed as percentage of weight; thus, for the same percentage, as the conductor diameter increases, so does the thickness of the plating.

Permittivity: The ratio of the electric displacement in a medium to the intensity of the electric field producing it. The property of a dielectric material that determines how much electrostatic energy can be stored per unit volume when unit voltage is applied. See Dielectric Constant.

Phase: A specific point of advancement in an electrical cycle, measured from an arbitrary starting point; expressed in degrees (360˚ = one cycle).

Phase shift: Change in phase of a voltage or current after passing through a circuit or cable.

Picks Per Inch: The number of times the carriers in a braid cross over each other in the same direction along the longitudinal axis for each inch of cable length.

Pitch Diameter: Diameter of a circle passing through the center of the conductors in any layer of multi-conductor cable.

Plain Conductor: A conductor consisting of one metal only.

Planetary Twister: A twisting machine whose payoff spools are mounted in rotating cradles that hold the axis of the spool in a fixed direction as the spools are revolved about one another so the wire will

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not kink as it is twisted.

Plastic: Natural and synthetic polymers, (excluding rubbers), which can be shaped by heat and pressure into a shape which is retained upon cooling.

Plastic Deformation: Change in dimensions of an object under load which is not recovered when the load is removed.

Plasticizer: Chemical agent added to plastics to make them softer and more flexible.

Plating: Generally implies electroplating. Immersion of a metal object into a liquid bath (electrolyte) in which another metal is dissolved. When a current is applied, the dissolved metal migrates from the electrolyte and coats the surface of the immersed metal.

Polarity: 1) An electrical condition determining the direction in which current tends to flow. 2) The quality of having two opposite charges.

Polyamide: A compound characterized by more than one amide group. See nylon.

Polyethylene: A thermoplastic material composed of polymers of ethylene. A variety of types of polyethylene are used in wires and cables.

Polyflon® TFE: Registered trademark of Daikon Industries LTD. Tetrafluoroethylene (TE). A 260˚C rated fluoropolymer that can be used for insulation and jacket applications.

Polyimide: An organic polymer resin used for wire insulation in both film form and as a coating over an insulation or jacket. See Kapton.

Polymer: A substance formed by a chemical reaction in which two or more small organic molecules join to form large molecules composed of repeating small molecules. This term is often used interchangeably with "plastic."

Polymerization: The process or chemical reaction by which low-molecular-weight monomers are converted to high-molecular-weight polymers.

Polypropylene: A plastic made by the polymerization of high-purity propylene gas in the presence of an organo-metallic catalyst at relatively low pressures and temperatures. It is similar to polyethylene but stiffer.

Polytetrafluoroethylene (PTFE): The most thermally stable and chemically resistant of all carbonaceous insulating compounds. It is unaffected by sunlight, moisture, and most chemicals. Temperature range is –90˚ to +250˚C and electrical properties are very constant over the temperature range and a wide range of frequencies. Insulation may be applied by extrusion, taping, dip-coating, and in cases where another material is used, by dispersion coating.

Polyurethane: Cable jacketing material which offers good abrasion resistance and high flexibility.

Polyvinyl Chloride (PVC): An inexpensive thermoplastic material composed of polymers of vinyl chloride. PVC is widely used for primary wire insulation or jacketing in low-temperature applications.

Polyvinylidene Fluoride (PVDF): A fluorocarbon with good mechanical, electrical, and chemical properties. It is used for primary insulation and in jackets for multi-conductor cables.

Potential Voltage: The work per unit charge required to bring any charge to the point at which the potential exists.

Potting: Sealing of a cable termination or other part with a liquid composition which hardens into an elastomer or solid.

Power: The time rate at which work is done; equal to W/t where W is amount of work done in time t. Power will be obtained in watts if W is expressed in joules and t in seconds.

Power Cables: Cables designed to distribute primary power to various types of equipment.

Power Factor: 1) In an alternating current circuit, the number of watts indicated by watt meter, divided by the apparent watts, the latter being the watts as measured by a voltmeter and a meter. 2) The multiplier used with the apparent watts to determine how much of the supplied power is available for use. 3) That quantity by which the apparent watts must be multiplied in order to determine the true power. 4) Mathematically, the cosine of the angle of phase difference between current and voltage applied.

Primary Insulation: The insulation directly surrounding a conductor.

Propagation Delay: Time delay between input and output of signal, measured in nanoseconds per foot of cable.

PTFE: Polytetrafluoroethylene.

PVC: Polyvinyl chloride.

Quad: A four conductor cable.

Reactance: Opposition offered to the flow of alternating current by inductance or capacitance of a component or circuit.

Receptacle: A connector mounted on equipment, a panel, or a wall.

Red Plague: A powdery red cuprous oxide growth sometimes found on silver coated copper conductors and shield braids. It is fungus-like in appearance and appears in random spots along the length of a conductor or shield. It most often occurs at the point of crossover in a shield or in the interstices of a standard conductor. Proper design, manufacture and installation has largely eliminated this problem. Small amounts of water are required to initiate this reaction.

Resin: An organic substance of natural or synthetic origin characterized by being polymeric in structure and predominantly amorphous.

Resistance: Property of a conductor that determines the current produced by a given difference of potential. The ohm is the practical unit of resistance.

Resistive Conductor: A conductor used primarily because it possesses the property of high electrical resistance.

Resistivity: The ability of a material to resist passage of electrical current either through its bulk or on a surface. The unit of volume resistivity is the ohm-cm; of surface resistivity, the ohm.

Respool: To transfer material from one package spool to another for various purposes, such as to verify lengths.

RETMA: Former Radio-Electronics-Television Manufacturers Association; name changed to Electronic Industries Association (EIA).

Glossary

RF: Abbreviation for radio frequency.

RF Connector: Connector used with coaxial cable.

Ribbon Cable: Flat cable with conductors that have been individually insulated and the insulators joined on the same plane.

RG/U: Old U.S. military designation for coaxial cables covered by specification MIL-C-17.

RMS: Abbreviation for root-mean-square. When the term is applied to alternating voltage and current it means the effective value; that is, it produces the same heating effect as a direct current or voltage of the same magnitude. It is also a mean of expressing a-c voltage in terms of d-c. In practical terms, approximately 80% of the a-c peak voltage.

Rockwell Hardness: A test for hardness in which a hardened steel ball or diamond point is pressed the material under test; also the scale by which the hardness determined by this test is expressed.

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

Rope Concentric: A group of stranded conductors assembled in a concentric manner. The direction of lay of the outer rope members is usually left hand.

Rope-Lay Conductor or Cable: A cable composed of a central core surrounded by one or more layers of helically laid groups of wire. (Note: This kind of cable differs from a concentric-lay conductor in that the main strands are themselves stranded. In the most common type of rope-lay conductor or cable, all wires are of the same size and the central core is a concentric-lay conductor.)

Rope Unilay: A group of stranded conductors assembled in a unilay manner. The direction of lay of the unilay rope is left hand.

Round Conductor Flat Cable: A cable made with parallel round conductor in the same plane.

SAE: Abbreviation for Society of Automotive Engineers.

Secondary Insulation: A non-conductive material whose functions are to protect the primary insulator against abrasion and provide a second electrical barrier. Placed over the primary insulation.

Self-Extinguishing: The characteristic of a material that extinguishes its own flame after the igniting flame is removed.

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

Serving: A wrapping applied over the core of a cable or over a wire. Servings may be in the form of filaments, fibers, yarn, tape, etc.

Shield: A metallic layer placed around an insulated conductor or group of conductors to prevent electrostatic or electromagnetic interference between the enclosed wires and external fields. This shield can be braided or served wires, oil wrap, foil backed tape, a metallic tube, or conductive vinyl or rubber.

Shield Coverage: The percentage of the underlying layer optically covered by a braided shield.

Shield Effectiveness: The ability of a shield to screen out interference, relative to a solid tube (100%).

Shrinkable Tubing: Polyolefin tubing which shrinks to a predetermined diameter when heated; used for mechanical protection of splices and joints and as markers.

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

Signal: A current used to convey information (as opposed to power).

Silicone: Polymeric materials in which the recurring chemical group contains silicon and oxygen atoms as links in the main chain.

Silver: Silver is commonly used to plate wire conductors because of its high conductivity, corrosion resistance, and solderability, providing many of the benefits of gold plating but at far lower cost.

Sintering: Forming articles by compressing, then heating powdered materials (such as PTFE) to a temperature below their melting point.

Skin Effect: The phenomenon wherein the depth of penetration of electric currents into a conductor decreases as the frequency of the current increases.

Skived Tape: Tape made by shaving a thin layer from a cylinder of material, a method frequently used to produce PTFE tape.

Sleeving: A braided, knitted, or woven tube.

Solid Conductor: A conductor consisting of a single wire.

SPC: Silver-plated copper.

SPCW: Silver-plated copperweld (copper-covered steel).

Spark Test: A test performed on wire and cable to determine the amount of pin holes or other defects in the insulation.

Sparkover: A disruptive discharge between electrodes of a measuring gap, such as sphere gap or oil testing gap.

Specific Gravity: The density (mass per unit volume) of any material divided by that of water at a standard temperature.

Specific Inductive Capacity: See dielectric constant.

Split Conductor Cable: A cable in which each conductor is composed of two or more insulated conductors normally connected in parallel.

Spurious Signals: Undesired voltages in conductors caused by electrostatic magnetic or electrostatic coupling from other conductors or from external sources.

Standing Wave Ratio: See *Voltage-Standing Wave Ratio*.

Strand: One of the wires, or groups of wires, of any stranded conductor.

Stranded Conductor: A conductor composed of a group of wires, or of any combination of groups of wires. The wires in a stranded conductor are usually twisted or braided together.

Strip: To remove insulation from a wire.

Submarine Cable: Cable used underwater for power or communication, covered with a lead sheath and / or a rubber jacket.

Superconductors: Materials in which the resistance approaches zero, generally at very low (cryogenic) temperatures. Superconductivity can

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be exhibited by many metallic elements, alloys, and intermetallic compounds.

Surface Leakage: The passage of current over the boundary surfaces of an insulator as distinguished from passage through its volume.

Surface Resistivity: The resistance of material between two opposite sides of unit square of its surface. Surface resistivity may vary widely with the conditions of measurement.

Surge: A transient upward variation in the current and / or potential at a point in the circuit.

Sweep Test: Checking the frequency response of a coaxial cable by generating an RF voltage, with the frequency varied through a given frequency range at a rapid constant rate while monitoring the result on an oscilloscope.

Tank test: A voltage dielectric test in which the specimen to be tested is submerged in a liquid (usually water) and a voltage potential applied between the conductor and the liquid as ground.

Tape Insulation: Insulation of helically-wound tapes applied over a conductor or over an assembled group of insulated conductors.

Tear Strength: Force required to initiate or continue a tear in a material under specified conditions.

Teflon® FEP: Registered trademark of the DuPont Company. Fluorinated ethylene polypropylene. A 200˚C rated fluoropolymer used for insulation and jacket applications.

Teflon® PFA: Registered trademark of the DuPont Company. Perfluoroalkoxy. A 250˚C rated fluoropolymer used for insulation and jacket applications.

Teflon® TFE: Registered trademark of the DuPont Company. Tetrafluoroethylene. A 260˚C rated fluoropolymer used for insulation and jacket applications.

Tefzel®: Registered trademark of the DuPont Company. Ethylene tetrafluoroethylene (ETFE), is a 150˚C rated fluoropolymer used for insulation and jacket applications.

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

Tensile Flex: Trademark for Phelps Dodge Alloy 135 high strength copper alloy.

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

Tension Set: The condition when a plastic material shows a permanent deformation caused by a stress, after the stress is removed.

Test Lead: A flexible, insulated lead wire with a test probe on one end, used for making temporary electrical connections.

TFE: Polytetrafluoroethylene.

Thermal Conductivity: Ability of a material to conduct heat.

Thermal Endurance: The time at a selected temperature over which a material deteriorates to a predetermined level of electrical, mechanical, or chemical performance under prescribed conditions of test.

Thermal Expansion (Coefficient of): The change in length of a material for a unit change in temperature.

Thermal Resistance of a Cable: The resistance offered by the insulation and other coverings to the flow of heat from the conductor or conductors to the outer surface.

Thermal Shock: Rapid application of heat or cooling to detect distortion or memory.

Thermocouple: A device for measuring temperature when two electrical conductors of dissimilar metals are joined at the point of heat to be measured. A resulting voltage difference, directly proportional to the temperature, is developed across the free ends of the conductors and is measured potentiometrically.

Thermocouple Lead Wire: An insulated pair of wires connecting a thermocouple to a junction box or recording instrument.

Thermoplastic: A classification of resin that can be softened and resoftened by repeated heating.

Thermosetting: A resin which cures when cooled after being melted once and cannot be resoftened by heating.

Tinned Wire: Wire that has been coated with a layer of tin or solder to facilitate soldering.

Tinsel Wire: A low voltage, highly flexible stranded wire. Each strand is very thin conductor ribbon spirally wrapped around a textile yarn. Insulation is generally a textile braid.

Topcoat: Term used to describe an unplated stranded conductor fused together with an overall tin coating.

Tracer: A means of identifying polarity. Two common types are ridges along the axis of the insulation perceptible to the touch and bands of contrasting color in braid or wind.

Tracer Stripe: When more than one color coding stripe is required, the first, or widest, stripe is the base stripe; the other, usually narrower stripes, are termed tracer stripes.

Transfer Impedance: A measure of coaxial cable shielding performance determined by the ratio of the voltage on the conductors enclosed by a shield to the surface currents on the outside of the shield. Cables with low transfer impedance have higher shielding effectiveness.

Transmission Loss: The decrease power during the transmission of energy from one point to another, expressed in decibels.

Triaxial: Similar to a coaxial cable, but with an additional layer of dielectric and a second braided shield between the inner shield and the jacket. The center conductor and inner shield are used for signal, and the outer shield used for grounding.

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

Triplex Cable: A cable composed of three insulated single conductors and often one bare conductor, all twisted together. (Note: The assembled conductors may or may not have a common covering of binding or protecting material.)

Tubing: Extruded non-supported plastic or elastomer material in a tubular form. Heat-shrinkable tubing of cross-linked polymers is

commonly used for insulation and/or strain relief over wire splices or cable-connector attachments.

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

Twinaxial Cable: Cable with two insulated conductors sharing a common shield and jacket, usually with a tightly-controlled characteristic impedance.

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

UHF: Abbreviation for Ultra High Frequency (300MHz–3GHz).

UL: Abbreviation for Underwriters Laboratories, Inc.

Ultraviolet Degradation: Deterioration caused by long exposure of a material to sunlight or other radiation containing ultraviolet (10–400 nanometer) rays.

Unidirectional Concentric Stranding: A stranding where each successive layer has a different lay length, thereby retaining a circular form with migration of strands from one layer to another.

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

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

Velocity of Propagation: The ratio of the transmission speed of an electrical signal down a length of cable compared to the speed in free space. It is approximately equal to 100 divided by the square root of the relative dielectric constant.

Vinyl Resin: A synthetic resin formed by the polymerization of compounds containing the group $CH2 = CH$. See polyvinyl.

Viscosity: A measure of the resistance of a fluid to flow (usually through a specific orifice).

Volt: Unit of electromotive force. It is the difference of potential required to make a current of one ampere flow through a resistance on one ohm.

Voltage: Electric pressure that exists between two points and is capable of producing a flow of current when a circuit between the two points is closed. Used in place of *electromotive force*, *potential*, or *potential difference*.

Voltage Drop: The amount of voltage loss from original input in a conductor of given size and length.

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

Voltage-Standing Wave Ratio (VSWR): The measure of impedance mismatch between a transmission line and its load at a given frequency. The higher the VSWR, the greater the mismatch. Expressed as a ratio of the actual mismatch to a perfect match, i.e. 1.25:1.

Voltage Stress: That stress found within a material when subjected to an electrical charge.

Volume Resistivity (Specific Insulation Resistance): The electrical resistance between opposite faces of a 1-cm cube of insulating material, commonly expressed in ohm-centimeters.

VSWR: Voltage-standing wave ratio.

Wall Thickness: The cross-sectional thickness of a wire insulation or cable jacket.

Water Absorption: Ratio of the weight of water absorbed by a material to the weight of the dry material.

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

Watt: Unit of power or work done at a rate of one joule per second or rate of work represented by current of one ampere under a pressure of one volt (volt-ampere).

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

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

Wire: A conductor of round, square or rectangular section. Either bare or insulated.

Wire Gage: A system of numerical designations of wire sizes. See American Wire Gage (AWG).

Wrapping: The method of insulating wire by serving insulating tapes around a conductor.

X: Designation for reactance.

Yield Strength: The lowest stress at which a material undergoes plastic deformation. Below this stress, the material is elastic; above it, viscous.

Z: Designation for impedance.

Z_0: Designation for characteristic impedance.

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