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GLOSSARY

Abrasion Resistance: Ability of a wire, cable or material to resist surface wear.

Accelerated Aging: A test in which voltage, temperature, etc. are increased above normal operating values to obtain observable deterioration in a relatively short period of time.

ACSR: Aluminum conductor, steel-reinforced.

Aerial Cable: A cable suspended in the air on poles or other overhead structure.

Airport Lighting Cable: A cable used to power runway and apron lights at airports.

Alloy: A metal formed by combining two or more different metals to obtain desirable properties.

Alternating Current (AC): Electric current that continually reverses its direction. It is expressed in cycles per second (hertz or Hz).

Ambient Temperature: The temperature of a medium surrounding an object.

American Wire Gauge (AWG): A standard system for designating wire diameter. Primarily used in the United States.

Ampacity: The maximum current an insulated wire or cable can safely carry without exceeding either the insulation or jacket material limitations. (Same as Current Carrying Capacity).

Ampere: The unit of current. One ampere is the current flowing through one ohm of resistance at one volt potential.

Analog: Representation of data by continuously variable quantities.

Annealed Wire: Wire, which after final draw-down, has been heated and slowly cooled to remove the effects of cold working.

ANSI: Abbreviation for American National Standards Institute.

Anti-Oxidant: A substance which prevents or slows down oxidation of material exposed to heat.

Armor: Mechanical protection usually accomplished by a metallic layer of tape, braid or served wires.

ASA: Abbreviation for American Standards Association. Former name of ANSI.

ASCII: American Standard Code for Information Interchange.

ASME: Abbreviation for American Society of Mechanical Engineers.

ASTM: American Society for Testing and Materials.

Attenuation: Power loss in an electrical system. In cables, generally expressed in dB per unit length.

Audio Frequency: Those frequencies audible to the human ear, generally considered to be in the range of 32 to 16,000 hertz (Hz).

AWM: Designation for Appliance Wiring Material.

Band Markings: A continuous circumferential band applied to a conductor at regular intervals for identification.

Bandwidth: The difference between the upper and lower limits of a given band of frequencies. Expressed in hertz (Hz).

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

Baud: Unit of data transmission speed representing bits per second. 9600 baud = 9600 bits per second.

Bend Loss: Stated in dB, or decibels, the amount of optical power loss due to outside forces strong enough to allow the light to radiate out through the bend.

Bend Radius: The radius of curvature that a wire or cable can bend without causing any damaging effects.

Binder: A spirally served tape or thread used for holding assembled cable components in place awaiting subsequent manufacturing operations.

Bit: One binary digit.

Bit Error Rate (BER): Discrepancy between outgoing and incoming bits transmitted between data equipment.

Bond Strength: Amount of adhesion between surfaces.

Braid: A fibrous or metallic group of filaments interwoven in cylindrical form to form a covering over one or more wires.

Braid Angle: The smaller of the two angles formed by the shielding strand and the axis of the cable being shielded.

Braid Carrier: A spool or bobbin on a braider which holds one group of strands or filaments consisting of a specific number of ends. The carrier revolves during braiding operations.

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

Breakdown Voltage: The voltage at which the insulation between two conductors is destroyed.

Breakout: The point at which a conductor or group of conductors is separated from a multiconductor cable to complete circuits at various points along the main cable.

BSI: British Standards Institute

Building Wire: Wire used for light and power in permanent installations utilizing 600 volts or less, typically not exposed to outdoor environments.

Bunch Stranding: A group of wires of the same diameter twisted together without a predetermined pattern.

Butyl Rubber: A polymer of isobutylene with small amounts of isoprene. An ozone resistant insulation compound.

BX: Armored building wire, 600V.

Byte: A group of eight binary digits.

Cable Assembly: A length of fiber optic cable with connectors on one or both ends.

Cable Buffer: The protective material used to coat the next layer up from the fiber coating. This is usually 900 μm . Also referred to as buffered fiber. This layer is applied by the cable manufacturer.

Campus Backbone: Wiring between buildings that share telecommunications facilities.

CAD/CAM: Computer Aided Design, Computer Aided Manufacturing.

Capacitance: Storage of electrically separated charges between two plates having different potentials. The value depends largely on the surface area of the plates and the distance between them.

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.

Carrier Frequency: The electromagnetic wave frequency selected to transmit information. Optical carrier frequency is from the infrared, visible range or ultraviolet spectrum areas (10^{12} Hz and above).

Cathodic Protection Cable: Cable used for direct burial dc service in cathodic protection installations for pipelines and other buried or water submerged metallic structures.

CATV: An acronym for Community Antenna Television.



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Cellular Polyethylene: expanded or "foam" polyethylene consisting of individual closed cells suspended in a polyethylene medium.

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

Certified Test Report (CTR): A report providing actual test data on a cable. Tests are normally run by a Quality Control Department, which shows that the product being shipped conforms to test specifications.

Characteristic Impedance: The impedance that, when connected to the output terminals of a transmission line of any length, makes the line appear infinitely long. The ratio of voltage to current at every point along a transmission line on which there are not standing waves.

Circular Mil: The area of a circle on mil (.001") in diameter; 7.854×10^{-7} sq. in. Used in expressing wire cross sectional area.

CL2: Cables intended for general purpose use within buildings in accordance with the National Electric Code Section 725-53 (e).

Cladding: The material surrounding the core of the fiber. This material provides optical insulation and holds (confines) the modes in the fiber.

Cleaver: A device used to cleanly break the fiber prior to installing the connector.

CM: Cables intended for general purpose communications use within buildings in accordance with the National Electric Code Section 800-53 (c).

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

Cold Bend Test: Bending a wire or cable around a specified diameter at low temperature to determine if the insulation or jacket material will crack.

Cold Flow: Deformation of the insulation due to mechanical force or pressure (not due to heat softening).

Common Carrier: Public transmission link such as the Bell or General Telephone Systems.

Common Mode: (Noise), caused by a difference in "group potential". By grounding at either end rather than both ends (usually grounded at source) one can reduce this interference.

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

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.

Conductance: The ability of a conductor to carry an electrical charge. The ratio of the current flow to the potential difference causing the flow. The reciprocal of resistance.

Conductivity: The capability of a material to carry electrical current - usually expressed as a percentage of copper conductivity (copper being 100%).

Conductor: An uninsulated wire suitable for carrying electrical current.

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

Connector: A device used to physically and electrically join two or more conductors.

Continuous Vulcanization: Simultaneous extrusion and curing of elastomeric wire coating materials.

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

Copolymer: A compound resulting from the polymerization of two different monomers.

Copper-Clad: Steel with a coating of copper welded to it, as distinguished from copper-plated.

Copper-Covered Steel/Wire: A wire having a steel core to which is fused an outer shell of copper.

Cord: A small, very flexible insulated cable.

Corrosion: The deterioration of a material by chemical reaction or galvanic action.

CPE (Chlorinated Polyethylene): Jacketing compound characterized by physical, aging, flame and oil resistant properties comparable to Neoprene and Hypalon. Lower coefficient of friction than Neoprene and Hypalon for easier installation. Its halogen content is equivalent to Hypalon - significantly lower than PVC.

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

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

Critical Angle: The angle above which total internal reflection happens. At angles lower than the critical angle, the light is refracted through the cladding.

Cross-Linked: A term denoting intermolecular bonds between long chain thermoplastic polymers, effected by chemical or irradiation techniques.

Cross Talk: A type of interference caused by signals from one circuit being coupled into adjacent circuits.

C.S.A: Abbreviation for Canadian Standards Association, a non-profit, independent organization which operates a certification service for electrical and electronic materials and equipment.

CSPE (Chlorosulfonated Polyethylene): Insulation compound with good electrical properties and oxidation resistance to high temperatures, the environment and chemicals. Excellent resistance to ozone.

C-Track: A cable guide mechanism manufactured of either plastic or metal used in continuous flexing applications.

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

Cycle Life: The number of repetitive flex motions that a wire or cable can withstand prior to breakdown.

Decibel (dB): A unit to express differences of power level. A term that expresses two power levels used to indicate gains or losses in a system.

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

Dielectric: Any insulating material between two conductors, which permits electrostatic attraction and repulsion to take place across it.

Dielectric Constant (E): The ratio of the capacitance using the material in question as the dielectric, to the capacitance resulting when the material is replaced by air.

Dielectric Strength: The voltage which an insulation can withstand before breakdown occurs.

Digital: Representation of data by discrete characters.

Direct Current (DC): An electric current which flows in one direction.

DLO (Diesel Locomotive): Cable with bunch or rope stranded copper conductors and a thermoset insulation/jacket. Usually manufactured in compliance with AAR specification.

Drain Wire: In a cable, the uninsulated wire in intimate contact with a shield to provide for easier termination of such a shield to ground.

GLOSSARY

Dual Coaxial Cable: Two individually insulated conductors laid parallel or twisted and placed within an overall shield and sheath.

Duct: An underground or overhead tube for carrying electrical cables.

Duplex Insulated: In the thermocouple industry, a combination of dissimilar metal conductors of a thermocouple or thermocouple extension wire.

EIA: Abbreviation for Electrical Industries Association.

Elastomer: A class of long-chain polymers capable of being crosslinked to produce elastic compounds, e.g. polychloroprene and ethylene propylene rubber.

Electromagnetic: Pertaining to the combined electric and magnetic fields associated with movements of electrons through conductors.

Electromotive Force (EMF): That force which determines the flow of current; a difference of electric potential.

Electrostatic: Pertaining to static electricity or electricity at rest. A constant intensity electric charge.

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

EMI: Abbreviation for electromagnetic interference.

Epoxy: An adhesive used in the connector termination process.

Ethylene Propylene Rubber (EPR): An ozone-resistant rubber consisting primarily of ethylene propylene copolymer (EPM) or ethylene propylene diene terpolymer (EDPM).

Expanded Diameter: Diameter of shrink tubing as supplied. When heated, the tubing will shrink to its extruded diameter.

External Interference: The effects of electrical waves or fields which cause spurious signals other than the desired intelligence.

Farad: Unit of capacitance whereby a charge of one coulomb produces a one volt potential difference.

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

FDI: Stands for Fiber Data Distributed Interface.

FEP: Fluorinated Ethylene Propylene is a "Teflon" fluorocarbon resin and is a registered T.M. of the DuPont Company. This is a melt extrudable fluorocarbon resin.

Fiber: A single, separate optical transmission element characterized by a core and a cladding.

Fiber Coating: The protective layer of material above the fiber cladding. Usually 250µm diameter, however, it can be 500µm or 900µm. This layer is applied by the fiber manufacturer.

Fiber Optics: Light transmission through optical fibers for communication, including voice, video and data.

Filler: (1) A material used in multiconductor cables to occupy large interstices formed by the assembled conductors. (2) An inert substance added to a compound to improve properties or decrease cost.

Flat Cable: Multiconductor cable arranged in a parallel type configuration manufactured with controlled tolerance spacing.

Flame Resistance: The ability of a material not to propagate flame once the flame source is removed.

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

Flex Life: The measurement of the ability of a conductor or cable to withstand repeated bending.

Flexibility: That quality of a cable or cable component which allows for bending under the influence of outside force, as opposed to limpness which is bending due to the cable's own weight.

FPL: Power Limited Fire Protection; general use, NEC 760 UL Subject 1424

FPLP: Plenum rated Power Limited Fire Protection; NEC 760 UL Subject 1424

FPLR: For use between floors (Riser) Power Limited Fire Protection; NEC 760 UL Subject 1424

Foamed Plastics: Insulations having a cellular structure.

Frequency: Refers to the number of cycles per second of an AC signal or an RF signal.

FT1: Flammability rating established by Canadian Standards Association for a vertical flame test of wire and cable.

FT4: Flammability rating established by Canadian Standards Association for a vertical flame test of cables in cable trays.

FT6: Flammability rating established by Canadian Standards Association for horizontal flame test and smoke testing of cables.

G: A multiconductor mining cable with a grounding conductor in the valleys between the phase conductors.

G-GC: A multiconductor mining cable with two grounding conductors and an insulated pilot wire.

Gauge: A term used to denote the physical size of a wire.

Gigahertz (Ghz): A unit of frequency equal to one billion hertz.

GPB: Abbreviation for General Purpose Interface Bus Assembly typically used for interconnecting measurement devices.

Ground: The connection between an electrical circuit and the earth or other large conducting body to serve as an earth thus making a complete electrical circuit.

Hackle: Multiple surface defects on the end of a fiber. Increases connector loss possibly to the point of not transmitting light.

Hard Drawn Copper Wire: Copper wire that has been drawn to size and not annealed.

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 electric circuits.

Hash Mark Stripe: A non-continuous helical stripe applied to a conductor for identification.

HDPE: (High Density Polyethylene)

Heat Distortion: Distortion of a material due to the effects of heat.

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

Helical Stripe: A continuous, colored, spiral stripe applied to a conductor for circuit identification.

Hertz (Hz): A term replacing cycles-per-second as a unit of frequency.

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

HMWPE: (High Molecular Weight Polyethylene)

Hook-Up Wire: A single insulated conductor used for low current, low voltage (usually under 1000 Volts) applications within enclosed electronic equipment.

Hygroscopic: Readily absorbing and retaining moisture.

Hypalon: DuPont's trade name for their chloro-sulfonated polyethylene, an ozone-resistant synthetic rubber.



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ICEA-P-46-426: Power cable ampacities for copper and aluminum conductor cable.

ICEA-P-53-426: Ampacities 15KV through 35 KV copper and aluminum conductor.

ICEA-S-19-81: Rubber-insulated wire & cable.

ICEA-S-61-402: Thermoplastic-insulated wire & cable.

ICEA-S-66-524: Cross-linked thermosetting polyethylene-insulated wire & cable.

ICEA-S-68-516: Ethylene propylene rubber insulated wire & cable.

IEEE-383: A standard of the Institute of Electrical and Electronic Engineers covering qualification testing of Class IE Electrical Cables for Nuclear Generating Stations. Par. 2.5 of this standard provides criteria for performance of the 70000 BTU/Hr ribbon burner flame test.

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

Index of Refraction: The ratio of the velocity of light in free space to the velocity of light in a given material.

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.

Insulation: A material having high resistance to the flow of electric current.

Insulation Resistance (I.R.): That resistance offered by an insulation to an impressed dc voltage, tending to produce a leakage current through the insulation.

IEC: International Electrotechnical Commission.
IEEE: Abbreviation for Institute of Electrical and Electronics Engineers.

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

Interference: Electrical or electromagnetic disturbances which introduce undesirable responses into other electronic equipment.

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

IPCEA: Abbreviation for Insulated Power Cable Engineers Association.

Irradiation: In insulations, the exposure of the material to high energy emissions to alter the molecular structure by crosslinking.

ISO: International Standards Organization.

Jacket: An outer covering, usually non-metallic, mainly used for protection against the environment.

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

Kevlar: Registered trademark of E.I. DuPont for the aramid fibers used for adding strength to a fiber optic cable.

Kilometer (km): 1000 meters or 3,281 feet (0.621 miles); the standard measurement for fiber optics.

KPSI: Tensile strength in thousands of pounds per square inch.

Kynar: Pennwalt trade name for polyvinylidene fluoride, a fluorocarbon material typically used as insulation for wire wrap wire.

Laser: A light source used in conjunction with an optical 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 about the axis of the conductor or cable.

Lead Covered Cable (lead sheathed cable): A cable provided with a sheath of lead for the purpose of excluding moisture and affording mechanical protection.

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

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

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

Link: An optical cable with connectors attached to a transmitter and receiver (source and detector).

LLDPE: (Linear Low Density Polyethylene)

Local Area Network (LAN): A baseband or broadband interactive bi-directional communication systems for voice, video or data on a common cable medium.

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

Longitudinal Shrinkage: A term generally applied to shrink products denoting the discrete axial length lost through heating in order to obtain the recovered diameter.

Loop Resistance: The total resistance of two conductors measured round trip from one end.

Loose Tube Cable: A cable construction in which optical fiber(s) are loosely contained. Usually used in outdoor applications due to better performance over a broader temperature range than tight buffer constructions.

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

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

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

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

Mastic: A meltable coating used on the inside of some shrink products which, when heated, flows to encapsulate the interstitial air voids.

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

MC (Metal Clad): A UL classification indicating a metal clad cable. An assembly of insulated conductors with a metal cladding applied over the core and with grounding conductor(s) if the cladding is interlocked armor.

MCM: One thousand circular mills.

Messenger: 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: One meter equals 3.28 feet.

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

MHz: Megahertz (one million cycles per second). Formerly Mc.

Micron (µm): Millionth of a meter.

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

GLOSSARY

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

Millimeter: One millimeter equals 0.03937 inches.

Mining Cable: A flame retardant heavy duty portable power cable for use with portable power supply systems and on mobile mining equipment.

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

Mode: A permitted field pattern within waveguide fiber.

Modulation: The coding of information onto the carrier frequency. Modulation means include (among others) amplitude, frequency, or phase pulse many forms of on-off digital coding.

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

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

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

MP-GC: Mine power cable feeder cable containing an insulated ground check conductor.

MSHA: Miner Safety and Health Administration.

MTW: Thermoplastic-insulated machine tool wire. 90°C Dry 600V.

Multi-Fiber Cable: An optical cable having more than one fiber.

Multi-Mode Fiber: An optical waveguide which allows more than one mode to propagate. Step index and graded index fibers are multi-mode.

Multiplex: Putting two or more signals into a single fiber.

Multiplexing: Simultaneous transmission of two or more messages over the same cable medium. See TDM.

MUX: Multiplexer.

MV-90: A UL listing for single or multi-conductor cables rated 2001-35000 volts complying with Art. 326 of the NEC. The MV designation stands for Medium Voltage and the 90 refers to the conductor temperature rating in wet or dry locations.

MV-90 Dry: A UL medium voltage power cable listing which restricts the cable to dry location use only. Usually pertains to a single conductor 5kV nonshielded power cable.

MV-90 Wet or Dry: UL medium voltage listing for power cable suitable for wet and dry locations with a maximum continuous conductor temperature of 90°C.

Mylar: DuPont trade name for a polyester material.

Nanometer (nm): One billionth of a second, expressed as 10 sec.

National Electrical Code (NEC): A consensus standard published by the National Fire Protection Association (NFPA) and incorporated in OSHA regulations.

NBS: Abbreviation for National Bureau of Standards.

Nanosecond: One thousandth of one millionth of a second (10⁻⁹ seconds).

Navy Shipboard Cable: Cables for use aboard naval vessels and for shore applications. Manufactured in accordance with a Navy specification.

NEMA: Abbreviation for National Electrical Manufacturers Association.

Neoprene: Trade name for polychloroprene, used for jacketing.

NFPA: Abbreviation for National Fire Protection Association. That association responsible as the Administrative Sponsor of the National Electrical Code. Also identified as "ANSI Standards Committee C1".

NM: Non-metallic sheathed cable, plastic covered. For dry use, 60°C.

NMC: Non-metallic sheathed cable, plastic covered. For wet or dry use 60°C.

Non-Contaminating PVC: A polyvinylchloride formulation, which does not produce electrical contamination.

Nylon: A group of polyamide polymers which are used for wire and cable jacketing.

OEM: Original Equipment Manufacturers.

OFHC: Abbreviation for oxygen-free, high conductivity copper. It has no residual deoxidant, 99.95% minimum copper content and an average annealed conductivity of 101%.

Ohm: Unit of resistance such that a constant current of one ampere produces a force of one Volt.

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

Outgassing: Percentage of a gas released during the combustion of insulation or jacketing material.

Overlap: The amount the trailing edge laps over the leading edge of a tape wrap.

Pairing: The union of two insulated single conductors through twisting.

Photodetector (Receiver): Transforms light into electricity. For relatively fast speeds and moderate sensitivity in the 0.75µm to 0.95µm area wavelength, the silicone photodiode is most commonly used.

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

Pigtail: A length of fiber optic cable with connectors on one end.

Pin-Diode: A device used to convert optical signals to electrical signals in a receiver.

Pistoning: The movement of a connectorized fiber axially in and out of a ferrule end, often caused by changes in temperature.

Pitch: In flat cable, the nominal distance between the index edges of two adjacent conductors.

Plastic Deformation: Change in dimensions under load that is not recovered when the load is removed.

Plasticizer: A chemical agent added to plastics to make them softer and more pliable.

Plenum: The air return path of a central air handling system, either ductwork or open space over a dropped ceiling.

Plenum Cable: Cable listed by Underwriters Laboratories for installation in plenums without the need for conduit.

Polyester: Polyethylene terephthalate, which is used extensively in the production of a high-strength moisture-resistant film used as a cable core wrap.

Polyethylene: A family of insulations derived from the polymerization of ethylene gas and characterized by outstanding electrical properties, including high I.R., low dielectric constant, and low dielectric loss across the frequency spectrum. Mechanically rugged, it resists abrasion and cold flow.

Portable Power Cable: Transmits electrical power from fixed distribution point piece of nonstationary equipment.

Potting: The sealing of a cable termination or other component with a liquid which thermosets into an elastomer.

Power Factor: The ratio or resistance to impedance.



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Primary Insulation: The first layer of nonconductive material applied over a conductor, whose prime function is to act as electrical barrier (sic...insulation).

Propagation: Delay time required for an electrical wave to travel between two points on transmission line.

Pulling Eye: A device fastened to a cable to which a hook may be attached in order to pull the cable into or from a duct.

PVC (Polyvinyl Chloride): A thermoplastic material composed of polymers of vinyl chlorides or its copolymer vinyl acetate in combination with certain plasticizers, stabilizers, fillers and pigments. Widely used for primary insulation or jacketing on a wide variety of cables.

Quad: A four conductor cable.

Quad Shield: 2 Foil 2 Braid

Raceway: An enclosed channel designed expressly for holding wire or cables. A conduit is a raceway, so is a duct.

REA: Abbreviation for Rural Electrification Administration. A branch of the U.S. Department of Agriculture responsible for the standardization of the independent telephone companies throughout the U.S.

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

Recovered Diameter: Diameter of shrinkable products after heating has caused it to return to its extruded diameter.

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

Refractive Index: Ratio of light velocity in a vacuum to its velocity in the transmitting medium.

Reinforced Sheath: The outermost covering of a cable that has a cable sheath constructed in layers with a reinforcing material, usually a braided fiber, molded in place between layers.

Repeatability: The amount of optical power lost due to the number of matings (de-matings) a connector experiences.

Repeater: A transmitter and receiver combination used to regenerate a signal.

Resin: A synthetic organic material formed by the union (polymerization) of one or more monomers with one or more acids.

Resistance: A measure of the difficulty in moving electrical current through a medium when voltage is applied. It is measured in ohms.

Retractable Cable: A cable that returns by its own stored energy from an extended condition to its original contracted form.

Return Loss: The amount of optical power reflected back through the connector due to the different mediums the light travels through stated in dB.

RFI: Abbreviations for Radio Frequency Interference.

RG/U: Abbreviation for Radio Government Universal. RG is the military designation for coaxial cable in MIL-C-17 and U stands for "general utility".

RHH: Designation for rubber-insulated, heat-resistant building wire rated 90°C in dry locations.

RHW: Designation for rubber-insulated building wire. Heat and moisture resistant. 75°C wet or dry.

Ribbon Cable: A flat cable of individually insulated conductors lying parallel and held together by means of adhesive film laminate.

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

Root Mean Square (RMS): The effective value of an alternating current or voltage.

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

Rupture: In the breaking strength or tensile strength tests, the point at which the material physically comes apart, as opposed to elongation yield strength, etc.

RW: Rubber-insulated building wire. Moisture resistant 60°C.

RW90: Canadian Standards Association (CSA) designation for a wire or cable with rubber or rubber like insulation suitable for use in wet or dry locations at a maximum temperature of 90°C.

SAE: Abbreviation for Society of Automotive Engineers.

Self Extinguishing: The characteristic of a material whose flame is extinguished after the igniting flame is removed.

Semiconductor: A material that has a resistance characteristic between that of insulators and conductors.

Semi-Rigid PVC: A hard semi-flexible polyvinylchloride compound with low plasticizer content.

Separator: A layer of insulating material such as textile, paper, polyester, etc. Used to improve stripping qualities, flexibility, mechanical or electrical protection to the components.

SER: Designation for a round Service Entrance cable.

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

SEU: Designation for a Flat Service Entrance cable with spirally applied copper neutral wires and thermoplastic jacket.

Sheath: The outer covering or jacket of a multiconductor cable.

SHD: Designation for a mining cable with three shielded power conductors and a ground in each interstice.

SHD-GC: Designation for a mining cable with three shielded power conductors, one ground in each of two interstices and an insulated ground check conductor in the other interstice.

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

Shield Coverage: The physical area of a cable that is actually covered by the shielding material and is expressed in percent.

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

Shrinkage Ratio: The ratio between the expanded diameter and recovered diameter of shrinkable products.

Shrink Temperature: That temperature which effects complete recovery of a shrinkable product from the expanded state.

Shrink Tubing: Tubing which has been extruded, cross-linked, and mechanically expanded which when reheated will return to its original diameter.

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

Signal Cable: A cable designed to carry current of usually less than one ampere per conductor.

Simplex: Mode of data transmission in one direction only, usually on a two-wire facility.

Single Mode Fiber: A fiber wavelength which only one mode will propagate.



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GLOSSARY

Sintering: Fusion of a spirally applied tape wrap jacket by the use of high heat to a homogenous continuum. Usually employed for fluorocarbon, non-extrudable materials.

SIS: Single conductor with synthetic thermosetting insulation of a heat resistant, moisture resistant, flame retarding grade. Also made with chemically cross-linked polyethylene insulation. Used for switchboard wiring only, 90°C

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

SJO: Same as SJ but with an oil resistant outer jacket.

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

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

Sleeving: A braided, extruded or woven tube.

SO: Hard service cord, same construction as type S except oil-resistant jacket, 600V, 60°C to 90°C.

Solid Conductor: A conductor consisting of a single wire.

Source: The means (usually LED or laser) used to convert an electrical information-carrying signal into a corresponding optical signal for transmission by an optical waveguide.

Span: In flat cables, the distance from the reference edge of the first conductor to the reference edge of the last conductor (in cables having flat conductors), or the distance between the centers of the first and last conductors (in cables having round conductors), expressed in inches or centimeters.

Spark Test: A test designed to locate imperfections (usually pin-holes) in the insulation of a wire or cable by application of a voltage for a very short period of time while the wire is being drawn through the electrode field.

Specific Gravity: The ratio of the density (mass per unit volume) of a material to that of water.

Spiral Wrap: The helical wrap of a material over a core.

Splice: A mechanical device or fusion process that permanently bonds two fibers together without a connector producing extremely low loss.

Stability Factor: The difference between the percentage power factor at 80 volts/mil and at 40 volts/mil measured on wire immersed in water at 75°C for a specified time.

Static Condition: Used to denote the environmental conditions of an installed cable rather than the conditions existing during cable installation.

Step-Index Fiber: A type of fiber where the refractive index of the core is uniformly higher than that of the surrounding cladding.

Stranded Conductor: A conductor composed of single solid wires twisted together, either singly or in groups.

Strip Force: The force required to remove a small section of insulating material from the conductor it covers.

Suggested Working Voltage: AC voltage that can be applied between adjacent conductors.

Sunlight Resistant: An optional UL listing that may be obtained for an insulation or jacket compound involving exposure to direct rays of the sun. An important listing for jackets of armored cables, TC Tray Cables and MV-90 cables which will be used in cables trays.

Surface Resistivity: The resistance of a material between two opposite sides of a unit square of its surface. It is usually expressed in ohms.

Surge: A temporary, large increase in the voltage or current in an electric circuit or cable.

SV: Vacuum cleaner cord, two or three-conductor, rubber insulated, overall rubber jacket. For light duty in damp locations, 300V, 60°C.

SW: Rubber jacketed power supply cable (8AWG to 2AWG) C.S.A. 600 volt.

Sweep Test: 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.

TA: Switchboard wire, thermoplastic and asbestos insulation, 90°C.

Tank Test: A voltage dielectric test where 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 Wrap: A spirally applied tape over an insulated or uninsulated wire.

TC (Tray Cable): A multiconductor flame-retardant cable with an overall nonmetallic jacket rated 600 volts. The cable may or may not have grounding conductors in the assembly.

TDM: Abbreviation for Time Division Multiplexing.

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

TECK90: CSA designation for a single or multiconductor cable with interlocked armor and an inner and outer PVC jacket. Cable has 90°C temperature rating.

Teflon: A DuPont Company trademark for polytetrafluoroethylene.

Tefzel: A DuPont trade name for a fluorocarbon material typically used as the insulation on wire wrap wire.

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

Tempest: Classified procedure which details the complex measurement of the combined reduction of all electromagnetic emissions from specified equipment

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

TF: Fixture wire, thermoplastic-covered solid or 7 strands, 60°C.

TFE: Teflon (tetrafluoroethylene)

TFF: Fixture wire, thermoplastic-covered, with flexible stranding.

TFFN: Fixture wire, thermoplastic insulation and nylon sheath, with flexible stranding.

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

Thermocouple Extension Cable: A cable comprised of one or more twisted thermocouple extension wires under a common sheath.

Thermocouple Extension Wire: A pair of wires of dissimilar alloys having such emf-temperature characteristics complementing the thermocouple which is intended to be used, such that when properly connected allows the emf to be faithfully transmitted to the reference junction.

Thermocouple Wire (Grade): A pair of wires of dissimilar alloys having emf-temperature characteristics calibrated to higher temperature levels than the extension type of thermocouple wire. Unlike the thermocouple extension wire, this wire may be employed as the thermocouple hot junction in addition to serving as the entire wire connection between hot and cold reference junctions.

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



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GLOSSARY

Thermoset: a material which hardens or sets by heat, chemical or radiation cross-linking techniques and which, once set, cannot be resoftened by heating.

THHN: 90°C 600V nylon jacketed building wire for use in dry locations.

THOF: Navy shipboard cable with three flexible stranded conductors and with heat and oil resistant coverings.

THW: Thermoplastic vinyl insulated building wire. Flame retardant, moisture and heat resistant, 75°C, for use in wet or dry locations.

THWN: Same as THW but with nylon jacket overall.

Tinned Copper: Tin coating added to copper to aid in soldering and inhibit corrosion.

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

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

Transmitter: The electronic unit that converts an optical signal.

Tray: A cable tray system is a unit or assembly of units or sections, and associated fittings, made of non-combustible materials forming a rigid structural system used to support cables. Cable tray systems include ladders, troughs, channels, solid bottom trays, and similar structures.

Triaxial Cable: A cable construction having three coincident axes, such as conductor, first shield and second shield all insulated from one another.

Triple (Triad): A cable consisting of three insulated single conductors twisted together.

Triplex Cable: A triplex cable is a cable composed of three single conductor cables twisted together with no overall covering.

Tubing: A tube of extruded non-supported plastic or metallic material.

TW: Thermoplastic insulated building wire that is flame retardant and moisture resistant, 60°C in wet and dry locations.

UF: Thermoplastic underground feeder and branch circuit cable.

UHF: Abbreviation for Ultra High Frequency, 300 to 3,000 MHz.

UL: Abbreviation for Underwriters Laboratories, a non-profit independent organization, which operates a listing service for electrical and electronic materials and equipment.

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

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

VHF: Abbreviation for Very High Frequency, 30 to 300 MHz.

Viton: DuPont trademark for a series of fluoro-elastomers based on the copolymer of unylidene fluoride and hexafluoropropylene.

Volt: A unit of electromotive force.

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 closed circuit is connected between two points.

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

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

Volume Resistivity: The electrical resistance between opposite faces of one cm. cube of insulating material, commonly expressed in ohms-centimeter.

Vulcanize: To cure a thermoset insulation or jacket.

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

W: Heavy duty portable power cable, one to six conductors, 600V, 90°C.

Water Absorption: Water by percent weight absorbed by a material after a given immersion period.

Watt: A unit of electric power. The watt is the power required to do work at the rate of one joule per second.

Wavelength: The distance, measured in the direction of propagation, of a receptive electrical pulse or waveform between two successive points.

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.

XHHW: A NEC building wire with cross-linked polyethylene insulation rated 600 volts, 90°C dry, 75°C wet.

XLP/XLPE: The terms used for cross-linked polyethylene insulation, a popular polymeric type of insulation with outstanding electrical, moisture and physical properties.

Yield Strength: The minimum stress at which a material will start to physically deform.

Zytel: DuPont's trade name for nylon resins.