

## WIRE AND CABLE TERMINOLOGY

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**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.

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

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

**ALS:** A type of cable consisting of insulated conductors enclosed in a continuous closely fitting aluminum type.

**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:** A braid or wrapping of sheet metal, usually steel or aluminum, used for mechanical protection.

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

**ASCII:** Abbreviation for American Standard Code for Information Interchange.

**ASME:** Abbreviation for American Society of Mechanical Engineers.

**ASTM:** Abbreviation for 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).

**AWG:** Abbreviation for America Wire Gauge.

**AWM:** Designation for appliance wiring material.

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**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.

**Band Marking:** 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).

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

**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, e.g. in cemented ribbon cable.

**Braid:** A fibrous 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.

**Building Wire:** Wire used for light and power, 600 volts or less, usually not exposed to outdoor environment.

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

**Buried Cable:** A cable installed directly in the earth without use of underground conduit. Also called "direct burial cable".

**Byte:** A group of eight binary digits.

---C---

**Cable:** A group of individually insulated conductors in twisted or parallel configuration under common sheath.

**Cabling:** The twisting together of two or more insulated conductors to form an element.

**CAD/CAM:** Abbreviation for 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.

**Capacitive Coupling:** Electrical interaction between two conductors caused by the potential difference between them.

**CATV:** An acronym for Community Antenna Television.

**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 ration of voltage to current at every point along a transmission line on which there are no standing waves.

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

**Circular Mil:** The area of a circle one mil (.001") in diameter;  $7.845 \times 10^{-7}$  sq.in. Used in expressing wire cross sectional area

**Cladding:** A method of applying a metal over another metal whereby the junction of the two metals is continuously welded.

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

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

**Common Axis Cabling:** In multiple cable constructions, a twisting of all conductors about a "common axis" with two conductor groups then selected as pairs. This practice yields smaller diameter constructions than does a separate axis susceptance to EMI and ESI.

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

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

**Composite Cable:** A cable containing more than one gauge size or a variety of circuit types, e.g. pairs, triples, quads, coaxial, etc.

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

**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 insulated 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 multiconductor cable made for operation in control or signal circuits.

**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.

**Cord:** A small, flexible insulated cable.

**Core:** In cables, a component or assembly of components over which additional components (shield, sheath, etc.) are applied.

**Corona:** A discharge due to ionization of air around a conductor due to a potential gradient exceeding a certain critical value.

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

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

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

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

**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.

**CRT:** Abbreviation for Cathode Ray Tube; common terminology for a video display terminal. Also referred to as VDU or VDT.

**Current Carrying Capacity:** The maximum current an insulated conductor can safely carry without exceeding its insulation and jacket temperature limitations (same as Ampacity).

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

**C.V.:** Abbreviation for continuous vulcanization.

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**DCE:** Abbreviation for Data Communication Equipment such as a modem.

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

**Digital:** Representation of data by discrete characters.

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

**DMUX:** Abbreviation for Demultiplex.

**Double Foot:** Combined length of one linear foot of paired materials; i.e. one double foot is equal to one foot of positive

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

**DTE:** Abbreviation for data terminal equipment such as VDT's or printers.

**Ducts:** An underground or overhead tube for carrying electrical cables.

**Duplex:** Two way simultaneous data transmission - usually on a four-wire facility.

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

----E----

**EIA:** Abbreviation for Electronic Industries Association.

**Elastomer:** A class of long chain polymers capable of being cross linked to produce elastic and magnetic fields associated with movements of electrons through conductors, 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):** Pressure or voltage. The force which causes current to flow in a circuit.

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

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

**EMI:** Abbreviation for electromagnetic interference.

**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, e.g. noise.

----F----

**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.

**FDM:** Abbreviation for Frequency Division Multiplexing - a method of multiplexing or combining many voice data channels for transmission on a single RF carrier. The channels are separated by frequency and carried on sub carriers.

**Filled Cable:** A telephone cable construction in which the cable core is filled with a material that will prevent moisture from entering or passing through the cable.

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

**Flat Cable:** A cable with two smooth or corrugated but essentially flat surfaces.

**Flat Conductor:** A wire having a rectangular cross section as opposed to round or square conductors.

**Flat Conductor Cable:** A planar construction with two or more flat conductors.

**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.

**Foamed Plastics:** Insulation having a cellular structure.

**FR-1:** A flammability rating established by Underwriters Laboratories for wires and cables that pass a specially designed vertical flame test. This designation has been replaced by VW-1.

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

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

**GPIB:** 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 complete electrical circuit.

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

**Harness:** An arrangement of wires and cables, usually with many breakouts, which have been tied together or pulled into a rubber or plastic sheath, used to interconnect electric circuits.

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

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

**Hermetically Sealed:** A gastight enclosure that has been completely sealed by fusion or other comparable means.

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

**High Voltage:** Generally, a wire or cable with an operating voltage of over 25,000 volts.

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

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

**HUM:** A term used to describe 60 or 120 cycle sound present in the sound of some communication equipment, usually the result of either undesired coupling to 60 cycle source or defective filtering of 120 cycle rectifier output.

**Hygroscopic:** Readily absorbing and retaining moisture.

----I----

**IEC:** Abbreviation for International Electrotechnical Commission.

**IEEE:** Abbreviation for Institute of Electrical and Electronics Engineers.

**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.

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

**Inductive Coupling:** Crosstalk resulting from the action of the electromagnetic field of one conductor on the other.

**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.

**Insulation Thickness:** The wall thickness of the applied insulation.

**Interaxial Spacing:** (1) Center to center conductor spacing in paired wire or (2) center to center spacing between conductors in a flat cable.

**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:** Void 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 insulation, the exposure of the material to high energy emissions to alter the molecular structure by cross linking.

**ISA:** Abbreviation for Instrument Society of America

**ISO:** Abbreviation for International Standards Organization.

---J---

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

**Jumper Cable:** A short flat cable interconnecting two wiring boards or devices.

---L---

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

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

**Lay:** The length measured along the axis of a wire or cable required for a single strand (in a stranded wire) or conductor (in cable) to make one complete turn about the axis of the conductor or cable.

**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 thermocouple or thermocouple extension wire from standard emf-temperature to be measured.

**LOCA:** Abbreviation for loss of coolant accident, a system malfunction associated with nuclear generating stations.

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

**Longitudinal Shield:** A tape shield, flat or corrugated, applied 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.

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

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

---M---

**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 melt-able 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.

**MCM:** Abbreviation for one thousand circular mils.

**Megarad:** A unit for measuring radiation dosage. Equal to one million (10<sup>6</sup>) rads.

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

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

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

**Micro:** Prefix of one-millionth.

**Microphonics:** Noise in a system caused by mechanical vibration of components within the system.

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

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

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

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

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

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

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

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

**MTW:** An acronym for thermoplastic insulated machine tool wire.

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

**MUX:** Abbreviation for Multiplexer.

**Mylar:** DuPont trade name for a polyester material.

----N----

**Nanosecond:** One thousandth of one one millionth of a second ( $10^{-9}$  seconds).

**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.

**NEMA:** Abbreviation for National Electrical Manufacturers Association.

**NFPA:** Abbreviation for National Fire Protection Association. That association responsible as the Administrative Sponsor of the National Electrical Code.

----O----

**OFHC:** Abbreviation for oxygen-free, high conductivity copper. It has no residual deoxidant, 99.5% 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.

**Oxygen Index:** Percentage of a gas released during the combustion of insulation or jacketing material.

----P----

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

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

**Pico:** Prefix meaning one millionth of one millionth (10<sup>-12</sup>)

**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 approved by Underwriters Laboratories for installation in plenums without the need for conduit.

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

**Polymer:** A material of high molecular weight formed by the chemical union of monomers.

**Polyolefin:** A family of thermoplastics based upon the unsaturated hydrocarbons known as olefins. When combined with butylenes or styrene polymers they form compounds such as polyethylene and polypropylene.

**Porosity:** Multiple air voids in an insulation or jacket wall.

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

**Power Factor:** The ratio of resistance to impedance. The ration of the actual power of an alternating current to apparent power. Mathematically, the cosine of the angle between the voltage applied and the current resulting.

**Primary Insulation:** The first layer of non-conductive material applied over a conductor, whose prime function is to act as electrical barrier (sec...insulation).

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

**Pulse Cable:** A type of coaxial cable constructed to transmit repeated high voltage pulses without degradation.

---Q---

**Quad:** A four conductor cable.

---R---

**Rad:** The unit of radiation dose which is absorbed, equal to 100 ergs/gram.

**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.

**Reflection Loss:** The part of a signal which is lost due to reflection of power at a line discontinuity.

**Re-flow soldering:** The process of connecting two solder-coated conductive surfaces by re-melting of the solder to cause fusion.

**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 measure in ohms.

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

**RFI:** Abbreviation for radio frequency interference.

**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.

----S----

**SAE:** Abbreviation for Society of Automotive Engineers.

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

**Semi-Conducting Tape:** A tape of such resistance that when applied between two elements of a cable, the adjacent surfaces of the two elements will maintain substantially the same potential. Such tapes are commonly used for conductor shielding and in conjunction with metallic shielding over the insulation.

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

**Semi-Rigid PVC:** A hard semi-flexible polyvinyl chloride compound with low plasticizer content.

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

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

**Served Wire Armor:** Spiral wrap of soft galvanized steel wires wrapped around a cable to afford mechanical protection and increase the cable pulling tension characteristics.

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

**Shield:** In cable, 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.

**Simples:** Mode of data transmission in one direction only. Usually on a two-wire facility.

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

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

**Sleeving:** A braided, extruded or woven tube.

**SNM:** A cable designed for use in hazardous locations consisting of insulated conductors in an extruded non-metallic jacket which is then covered with an overlapping spiral metal tape and

wire shield and jacketed with an extruded moisture, flame, oil corrosion, fungus and sunlight-resistant non-metallic material.

**Soldering Sleeves:** Shrinkable tubing with a solder preform used for highest reliability soldering connections or shield grounding.

**Solid Conductor:** A conductor consisting of a single wire.

**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.

**Specific Inductive Capacity (S.I.C.) :** Same as dielectric constant.

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

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

**Standard Track:** A closure track used on some zipper tubing products which allows such tubing to be readily opened or closed at any point along the installed length.

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

**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:** A.C. voltage that can be applied between adjacent conductors.

**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.

**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.

----T----

**Tank Test:** A voltage dielectric test in which the test sample is submerged in water and voltage is applied between the conductor and water as ground.

**Tape Wrap:** A spirally applied tape over an insulated or un-insulated wire.

**TDM:** Abbreviation for time division multiplexing.

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

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

**Tempest:** A complex measurement of the combined reduction of all electromagnetic emissions from specified equipment used in high data security areas.

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

**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 Element:** A thermocouple designed to be used as part of an assembly, but without associated parts such as the terminal block, connecting head, or protecting tube.

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

**Thermocouple Extension Wire:** A pair of wires of dissimilar alloys having such emf-temperature characteristics complimenting 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 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.

**Thermoset:** A material which hardens or sets by heat, chemical or radiation cross-linking techniques and which, once set, cannot be re-softened by heating.

**THHN:** 90°C, 600 volt, nylon jacketed building wire for dry locations.

**THWN:** 75°C, 600 volt, nylon jacketed building wire for wet or dry locations.

**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.

**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 (previously termed continuous rigid cable supports) include ladders, troughs, channels, solid bottom trays, and similar structures.

**Tray Cable:** A factory-assembled multiconductor or multipair control, signal or power cable specifically approved under the National Electrical Code for installation in trays.

**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.

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

**Twinning:** Synonymous with pairing.

---U---

**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 organizations, 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; e.g. a coaxial cable.

----V-----

**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.

**Video Pair Cable:** A transmission cable containing low-loss pairs with an impedance of 125 ohms. Used for TV pick ups, closed circuit TV, telephone carrier circuits, etc.

**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 a one cm. cube of insulating material, commonly expressed in ohms-centimeter.

**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----

**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.

**Wave Length:** The distance, measured in the direction of propagation, of a repetitive 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 wire is a slender rod or filament of drawn metal.

----Y----

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