

A/B/C/D/E/F/G/H/I/J/K/L/M/N/O/P/Q/R/S/T/U/V/W/X/Y/Z

[A]

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

**AB Switch** – a coaxial cable switch capable of switching one cable to one of two branch cable, A or B

**AC** – 1) alternating current, 2) a UL cable type with flexible metal tape armor

**ACAR** – aluminum conductor, aluminum-reinforced cable

**Accelerated Life Test** - An accelerated life test is a test in which certain factors such as voltage, temperature, etc. to which a cable is subjected are increased in magnitude above normal operating values to obtain observable deterioration in a reasonable period of time and thereby afford some measure of the probable cable life under operating voltage, temperature, etc.

**Accelerator** - A chemical additive which hastens a chemical reaction under specific conditions. A.C.

**Resistance** - The total resistance offered by a device in an alternating resistance

**ACCR** – aluminum conductor, composite reinforced aerial cable. Contains ceramic strength member to reduce sag at high temperatures (up to 210°C)

**ACSR** – aluminum conductor, steel reinforced. A bare composite of aluminum and steel wires, usually aluminum around steel

**Acceptance Testing** – after installation and before the cable is placed in regular service the specified test voltage is applied for 15 consecutive minutes

**Activator** - A chemical additive used to initiate the chemical reaction in a specific current circuit due to inductive and capacitive effects, as well as the direct current chemical mixture.

**Active Current** - In an alternating current, a component in phase with the voltage; the working component as distinguished from the idle or wattless component.

**Active Pressure** - In an A.C. circuit, the pressure which produces a current, as distinguished from the voltage impressed upon the circuit.

**Address** – the location of a terminal, a peripheral device, a node, or any other unit or component in a network, or process control system

**Adhesive-bonded** – cables bonded by adding an adhesive coating to the surface of the cable components, then joining and curing the adhesive to form a cable. See Bonded Cables.

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

**Adhesion** - The state in which two surfaces are held together by interfacial forces which may be chemical or mechanical in nature.

**Aerial Cable** – a cable suspended in the air on poles or other overhead structure

**AF** – audio frequency

**AFCI** – Arc Fault Circuit Interrupter; A protective device that detects arcing and then turns the circuit off.

**AGC** – Automatic Gain Control

**Aging** - The irreversible change in properties or appearance of a material with time and under specific conditions (usually accelerated representations of environmental states, such as high temperature, oxygen or other carious conditions).

**AIA** – Aluminum Interlocked Armor; a type of cable sheath

**Air Core Cable** – a cable in which the interstices in the cable are not filled with a moisture barrier

**Aircraft Wire** – an electrical wire primarily designed for the extreme conditions (temp, altitude, solvents, fuels, etc) of airborne equipment

**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 tube

**Alternating Current (AC)** - Electric current that continually reverses its direction; it is expressed in cycles per second (hertz or Hz).

**Alternating Voltage** - The voltage developed across a resistance or impedance through which alternating current is flowing.

**Ambient Temperature** - Any all encompassing temperature within a given area.

**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 Ampacity).

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

**Ampere's Law** - The magnetic intensity at any point near a current carrying conductor can be computed on the assumption that each infinitesimal length of the conductor produces at the point of an infinitesimal magnetic density. The resulting magnetic intensity at the point is the vector sum of the contributions of all the elements of the conductor.

**Amplifier** – a device used to boost the strength of an electronic signal

**Amplitude** – the maximum value of a varying wave form

**Anneal** - Relief of mechanical stress through heat and gradual cooling Annealing copper renders it less brittle.

**Annular Conductor** - A number of wires stranded in three reversed concentric layers around a core.

**Annunciator Wire** – usually single solid copper, sometimes twisted pair or triplexed for open wiring of bell circuits and other low-voltage systems

**Anode** - The electrode through which a direct current enters the liquid gas or other discrete part of an electrical circuit the positively charged pole of an electrochemical cell.

**ANSI** - The American National Standards Institute

**Antenna Lead-in Wire** - (not coaxial) parallel twin lead construction, plastic jacketed with fixed 300 ohm impedance for connecting a remote antenna to a receiver

**Antenna Rotor Cable** – multiconductor flat or round cable used to supply power to a motorized antenna and control wires for changing direction of rotation

**Anti-Oxidant** - A substance which prevents or slows down oxygen decomposition (oxidation) or a material exposed to air.

**Anti Ozonant** - A substance which prevents or slows down material degeneration due to ozone reaction.

**Arc** - 1.) A Luminous glow formed by the flow of electric current through ionized air, gas or vapor between separated electrodes or contacts. 2) A portion of the circumference of a circle.

**Arc Over Voltage** - The minimum voltage required to create an arc between electrodes separated by gas or liquid insulation under specified conditions.

**Area of conductor** - The size of a conductor cross-section, measured in circular mils square inches, etc.

**Armor** - A braid or wrapping of metal, usually steel, used for mechanical protection. Generally placed over the other sheath.

**ASA** - The American Standards Association.

**ASME** - The American Society of Mechanical Engineers.

**ASP** - Aluminum Steel Polyethylene. Provides mechanical and electrical protection.

**ASTM** - The American Society for Testing and Materials.

**Attenuation** - Power loss in an electrical system. In cables, generally expressed on DT per unit length, usually 1000ft.

**Audio Frequency** - Frequencies within the range of human hearing (approximately 20 Hz to 20 kHz).

**AWG** - American Wire Gage. A wire diameter specification. The smaller the AWG number, the larger the wire diameter.

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[ B ]

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

**Balanced Line** – a cable having two identical conductors with the same electromagnetic characteristics in relation to other conductors and to ground

**Balium** - A device for matching an unbalanced coaxial transmission line to a balanced two-view system.

**Band Marking** - A continuous circumferential band applied to a conductor at regular intervals for identification.

**Band Width** - The difference between the upper and lower limits of a given band of frequencies. It is expressed in hertz. The range of frequencies that a transmitted communications signal occupies or that a receiving system can accept. For example, it takes more bandwidth to download a photograph in a second than to download a page of text. Virtual reality and three-dimensional audio/visual presentations require even more.

**Bare Conductor** - A conductor having no covering. A conductor with no coating or insulation on the copper.

**Baseband** – a signaling technique in which the signal is transmitted in its original form and not changed by modulation

**Basket-weave Armor** – constructed of metal wires forming a braided outer covering

**Beldfoil** – Belden trademark for a highly effective electrostatic shield using reinforced metallic foil

**Belt** – layer of insulation on a conductor or layers, or layers of jacket on a cable

**Belted-type Cable** – multiple conductor cable having a layer of insulation over the assembled insulated conductors

**Binder** - A tape or thread used for holding assembled cable components in place.

**Blown jacket** - Outer cable covering applied by controlled inflation of the cured jacket tube then pulling the cable through it.

**BNC connectors** – most common miniature cable, easy connection/disconnection offered by their bayonet coupling.

**Bond** - An attachment at and interface between an adhesive and an adherent or between materials attached together.

**Bond Strength** - Amount of adhesion between surfaces, e.g., in bonded ribbon cable.

**Booster** - An amplifier inserted into a cable to increase the signal amplitude in order to compensate for signal loss due to attenuation. This extends the transmission range of the cable. Transformers may be employed to boost ac voltages. The term booster is also applied to amplifiers used in television receiving antenna systems.

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

**Braid** - A group of textile or metallic filaments interwoven to form a tubular flexible structure which may be applied over one or more wires, or flattened to form a strap.

**Braid Angle** - The angle between a strand of wire in a braid shield and the longitudinal axis (i.e. axis along the length of the center) of the cable it is wound around.

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

**Brand 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.

**Branch Joint** – a cable joint used for connecting one or more cables to a main cable

**Brazing** - The joining of ends of two wires, rods or groups of wires with a nonferrous filler metal at temperature above 800F (427C).

**Breakdown** - A disruptive discharge through the insulation.

**Breakdown of Insulation** - Failure of an insulation resulting in a flow of current through the insulation. It may be caused by the application of too high voltage or by defects or decay.

**Breakdown Voltage** - The voltage at which the insulation between two conductors will fail and allow electricity to conduct or 'arc'.

**Breakout** - The point at which a conductor or conductors are separated from a multiconductor cable to complete circuits at various points along the main cable.

**Buffer Tube** - a loose, crush-resistant polymer tube applied over optical fibers to provide mechanical protection

**Building Wire** - wire used for light power 600 Volts or less, usually not exposed to outdoor environment.

**Bunch Stranding** - Conductors twisted together with the same lay and direction without regard to geometric pattern.

**Bundle (fiber optic)** - A number of fibers grouped together, usually carrying a common signal.

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

**Bus** - Wire used to connect two terminals inside of an electrical unit.

**Butt** - joining of two conductors end to end, with no overlap and with the axes in line.

**Butt Splice** - A splice wherein two wires from the opposite ends butt against each other, or against a stop, in the center of a splice.

**Butt Wrap** - Tape wrapped around an object or conductor in an edge-to-edge condition.

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[ C ]

**Cable** - A group of individually insulated conductors or subcomponents twisted helically.

**Cable Assembly** - A completed cable and its associated hardware ready to install.

**Cable, Belted** – a multiconductor cable having a layer of insulation over the assembled insulated conductors

**Cable Clamp** – a device used to give mechanical support to the wire bundle or cable to the rear of a plug or receptacle

**Cable Core** – the portion of an insulated cable lying under a protective covering

**Cable Core Binder** – a wrapping of tapes or cords around the conductors of a multiple-conductor cable used to hold them together

**Cable Filter (Filler)** - The material used in multiple conductor cable to occupy the spaced forced by the assembly of components, thus forming a core of the desired shape (normally cylindrical).

**Cable Joint** – a complete insulated splice, or group of insulated splices, contained within a single protective covering or housing, in some designs, the insulating material may also serve as the protective covering

**Cable Sheath** – the protective covering applied to cables

**Cable Support** – a device to mount a cable on a supporting member

**Cabling** - The grouping or twisting together of two or more insulated conductors or subcomponents to form a cable.

**Cabling Factor** - Used in the formula for calculating the diameter of an unshielded, unjacketed cable.  $D = Kd$ , where D is the cable diameter, K is the factor and d is the diameter of one insulated conductor.

**Caged Armor** - A construction using wires within a jacket to increase mechanical protection and tensile strength. This construction is sometimes used in submarine cables.

**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 Coupling** – electrical interaction between two conductors caused by the potential difference between them

**Capacitance Direct** - The capacitance measured directly from conductor to conductor through a single insulating layer.

12

**Capacitance Mutual** - The capacitance between two conductors with all other conductors including shield, sort circuited to ground.

**Capacitance, Unbalanced to ground** - An inequality of capacitance between the wires of two or more pairs which result in a transfer of unwanted signal from one pair to others.

**Capacitor** – two conducting surfaces separated by a dialect material; the capacitance is determined by the area of the surface, type of dielectric and spacing between the conducting surfaces

**Carrier** - The basic woven grouping of a braided shield consisting of one or several parallel ends.

**Cathode** - Negative pole of an electric source.

**Cathodic Protection** -The control of the electrolytic corrosion of an underground or underwater metallic structure by the application of an electric current through a sacrificial anode in such a way that the structure is made to act as a cathode of an electrolytic cell.

**CATV Cable** – general term for all cable used for community antenna TV service and feeders, distribution and house drops

**Cellular Polyethylene** - Expanded or "foam" polyethylene consisting of individual closed cells suspended in a polyethylene medium.

**Center to Center** - Distance See Pitch

**Certificate of Compliance (C of C)** - A certificate 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 no standing waves.

**Charge** - The quantity of electricity held statically in a condenser or on an insulated conductor.

**Charging Current** - The current produced when a DC voltage is first applied to conductors of an un-terminated cable. It is caused by the capacitive reactance of the cable, and decreases exponentially with time.

**Charging Time** - The time required for the voltage between two conductors of a cable to acquire a value equal to 98.2% of the magnitude of an instantaneously applied DC voltage change.

**Chemical Stripping** – removal of insulation by chemical means

**Chlorosulfonated Polyethylene (CSPE)** - A rubbery polymer made by treating polyethylene with chlorine and sulfur dioxide. It is suitable compounded and cross linked for application as jacket or as insulation. Manufactured by E.I. DuPont under trade name of Hypalon.

**Circuit** - The complete path through which a current flows or part of the complete path such as one conductor.

**Circuit Sizes** - A popular term for building wire sizes 14 through 10 AWG.

**Circular Mil** - The area of a circle one mil (.001") in diameter,  $7.546 \times 10^{-7}$  sq. in. Used in expressing wire cross sectional area.

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

**Coat** - To cover with a continuous layer of compound (such as varnish) for purposes of finishing, protection, or enclosing. Usually comprises variable degrees depending on the nature of the substance and degrees of impregnation.

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

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

**Cold Flow** - Permanent deformation of the insulation due to mechanical force or pressure (not due to heat softening).

**Cold Test** - any test to determine the performance of cables during or after subjection to a specified low temperature for a specified time.

**Color Test / Code**- a system for circuit identification through use of solid colors and contrasting tracers.

**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 that does a separate axis construction, but tends to yield greater susceptance to EMI and ESI.

**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.

**Compact Stranded Conductor** - a unidirectional or conventional conductor manufactured to a specific diameter, approximately 8 to 10% below the nominal diameter of a non-compact conductor of the same cross sectional area.

**Compatibility** - the ability of dissimilar materials to exist in mutual proximity or contact without changing their physical or electrical properties.

**Composite Cable** - a cable consisting of two or more different types or sizes of wires.

**Composite (Clad) Wire** – a wire having a core of one metal with a fused outer shell of a different metal

**Composite Conductor** – a conductor consisting of two or more types of wire, each type of wire being plain, clad, or coated-stranded together to operate mechanically and electrically as a single conductor

**Compound** - an insulating or jacketing materials made by mixing two or more ingredients.

**Compressed Strand Conductor** – intermediate in size between standard concentric conductors and compact conductors

**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 electric current. It is the reciprocal of resistance and is measured in ohms.

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

**Conductor** - an un-insulated wire suitable for carrying electrical current.

**Conductor Shield (Strand Shield)** – provides a smooth, continuous and void-free interface between conductor and insulation.

**Conduit** - a tube or trough in which insulated wires and cable are run.

**Connector** - a device used to physically and electrically connect two or more conductors.

**Contract** - the part of a connector which actually carries the electrical current, and is touched together or separated to control the flow.

**Continuity Check** - a test to determine whether electrical current flows continuously throughout the length of a single wire or individual wires in a cable.

**Continuous Vulcanization** - simultaneous extrusion and vulcanization of rubber-like wires in a cable.

**Control Cable** - a multicolor cable made for operation in control or signal circuits.

**Copolymer** - a polymer formed from two or more types of Monomers.

**Copper Braid Shield** – copper wire ranging from size 32 to 40 AWG braided into a mesh around the cable core.

**Copper-Clad** - steel with a coating of copper welded to it, as distinguished from copper plated. Same as Copperweld.

**Copperweld** - the trade name of Felxo Wire Division (Copperweld Steel Corp.) for their copper-clad steel conductors.

**Copper Tape Shield** – applied over a semiconducting polymer insulation shield, increases insulation life by maintaining uniform electrical stress throughout the cable insulation and provides low end-to-end resistance of the shield system.

**Cord** - a small, flexible insulated cable.

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

**Corona Effect** - in wiring, the effect produced when two wires of other conductors having a great difference of voltage are placed near each other.

**Corona Loss** - A loss or discharge which occurs when two electrodes having a great difference of pressure are placed near each other.

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

**Corona Test** - A test to determine the ability of cable to withstand the formation of the corona under an increasing applied voltage and the extinguish corona when a corona-producing voltage is reduced.

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

**CPE** - jacketing compound based on chlorinated polyethylene.

**Crazing** - the minute crack on the surface of plastic materials.

**CRCS** - an acronym for continuous rigid cable support. Synonymous with tray.

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

**Creepage** - Electrical leakage on a solid dielectric surface.

**Cross-linked** - inter-molecular bonds between long chain thermoplastic polymers by chemical or electron bombardment means. The properties of the resulting thermosetting material are usually improved.

**Crosstalk** - A type of interference caused by signals from one pair or cable being coupled into adjacent pairs or cables. Can occur with audio, data, or RF signals.

**C.S.A** - Abbreviation for Canadian Standards Association, the Canadian version of the Underwriters Laboratories.

**Cure** – to change the properties of a polymeric material into amore stable, usable condition by the use of heat, radiation, or reaction with chemical additives

**Curl** - The degree to which a wire tends to form a circle after removal from a spool. An indication of the ability of the wire to be wrapped around the posts in long runs.

**Current** - the rate of flow of electricity in a circuit, measured in amperes.

**Current-Carrying Capacity** - the maximum current an insulated conductor or cable can continuously carry without exceeding its temperature rating. It is also called ampacity.

**Current Penetration** - the depth a current of a given frequency will penetrate into the surface of a conductor carrying the current.

**Cut-Through** - Resistance of solid material to penetration be an object under conditions of pressure, temperature, etc.

**CV (Continuous Vulcanization)** - simultaneous extrusion and vulcanization of wire coating material.

**Cycle** - The complete sequence of alteration or reversal of the flow of an alternation electric current.

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## [ D ]

**Decibel (dB)** - A unit to express differenced of power level. Used to express power gain in amplifiers or power loss in passive circuits or cables.

**Delay Line** - A transmission line or equivalent device designed to delay a wave or signal for a specific length of time.

**Derating Factor** - A multiplier used to reduce the current carrying capacity of conductors in more adverse environments, such as higher temperature, or where multiple conductors are together in one conduit.

**Dielectric** - An insulating (non-conducting) medium. It is the insulating material between conductors carrying a signal in a cable. In coaxial cables it is between the center conductor and the outer conductor. In twisted pair cables it is conductors plus any surrounding air or other material. The insulation between

**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 Breakdown** - The voltage at which a dielectric material is punctured, which is divisible by thickness to give dielectric strength.

**Dielectric Constant (K)** - Also called relative permittivity. That property of a dielectric which determines the amount of electrostatic energy that can be stored by the material when a given voltage is applied to it. Actually, the ratio of the capacitance of a capacitor using the dielectric to the capacitance of an identical capacitor using a vacuum (which has a dielectric constant of 1) as a dielectric. A number which indicates the quality of a material to resist holding an electrical charge when placed between two conductors.

**Dielectric Strength** - The voltage that insulation can withstand before it breaks down. Usually expressed as "volts per mil".

**Dielectric Test** - a test in which a voltage higher than the rated voltage is applied for a specific time to determine the adequacy of the insulation under normal conditions.

**Direct Burial Cable** - A cable installed directly in the earth.

**Direct Capacitance** - The capacitance measured directly for conductor to conductor through a single insulation layer.

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

**Direct Current Resistance (D.C.R)** - The resistance offered by any circuit to the flow of direct current.

**Directional Coupler** – a passive device used in a cable system to divide or combine unidirectional RF power sources

**Dissipation Factor** - The tangent of the loss angle of the insulating material (Also referred to as loss tangent,  $\tan \delta$  and approximate power factor.

**Disturbed Conductor** – a conductor that receives energy generated by the field of another conductor or an external source such as a transformer

**Double Foot** - Combined length of one linear foot of paired material; i.e., one double foot is equal to one foot of positive material plus one foot of negative material. Usually used in determining thermocouple wire loop resistance.

**Drain Wire** - In a cable, the un-insulated wire in intimate contact with a shield to provide for easier termination of such a shield to a ground point.

**Drawing** - In wire manufacturing, pulling the metal through a die or series of dies to reduce diameter to a specified size.

**Drum Packed** - The method of coiling wire into fiber drums for shipment.

**Duct** - An underground or overhead tube for carrying electrical conductors.

**Duofoil** - Belden trademark for a shield in which metallic foil is applied to both sides of a supporting plastic film

**Duplex Insulated** - In the thermocouple industry, a combination of dissimilar metal conductor of a thermocouple or thermocouple extension wire.

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## [ E ]

**Eccentricity** - Like concentricity a measure of the center of a conductor's location with respect to the circular cross section of the insulation. Expressed as a percentage of displacement of one circle within the other.

**ECTFE** - Ethylene chloro - trifluoroethylene (Halar) is a Solvay Solexis trademark for this material, used as an insulator or jacketing material.



**EIA** - Abbreviation for Electronic Industries Association

**Elastomer** - A rubber like substance, material that will return to its original dimensions after it has been stretched or distorted

**Electricity** - the flow of electric current along a conductor which takes the form of free electrons from one atom to the next.

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

**Electromotive Force (e.m.f.)** - Pressure or voltage. The force which causes current to flow in a circuit.

**Electronic Cable Shield** – provides an efficient way to manage electromagnetic interference (EMI)

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

**Electro-tinned** – electrolytic process of tinning wire using pure tin

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

**Embossing** - a marker identification by means of thermal indentation leaving raised lettering on the sheath material of cable.

**Emergency Overload** - load which occurs when larger than normal currents are carried through a cable or wire over a certain period of time.

**EMI** - abbreviation for Electromagnetic Interference

**Endosmosis** – the penetration of water into a cable by osmosis; aggravated and accelerated by DC voltage on the cable

**Energize** - to apply rated voltage to a circuit or device in order to activate it.

**Equilay** - more than one layer of helically laid wire with the direction of lay reversed for successive layers, both with the length of lay the same for each layer.

**Etched Wire** - a process applied to fluoroelastic wire in which the wire is passed through a sodium bath to create a rough surface to allow epoxy resin to bond the fluoroelastic.

**ETFE** - Ethylene tetrafluoroethylene (Teflon)

**Ethylene Propylene Rubber (EPR)** - an ozone resistance rubber consisting primarily of ethylene propylene copolymer (EPM) or ethylene propylene diene terpolymer (EPDM).

**ETPC** - abbreviation for electrolytic tough pitch copper. It has a minimum conductivity of 99.9%

**External interference** - the effects of electrical waves or fields which cause sounds other than the desired signal (static).

**Extruded Cable** – cable that is insulated by applying insulation material in a continuous extrusion process

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

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## [ F ]

**Fatigue Resistance** - resistance to metal crystallization which leads to conductress or wires breaking from flexing.

**FEP** - fluorinated Ethylene Propylene is a "Teflon" fluorocarbon resin and is a registered trademark of the DuPont Company. This is a melt extrudable fluorocarbon resin.

**Fiber** - A single, separate optical transmission element characterized by core and cladding.

**Fiber Dispersion** - (fiber optic) pulse spreading in a fiber cause by differing transit times of various modes.

**Fiber Optics** - Light transmission through optical fibers for communication and signaling. A technology that transmits information as light pulses along a glass or plastic fiber. Optical fiber carries much more information than conventional copper wire and is generally not subject to interference. Most telephone company long-distance lines are optical fiber.

**Fiber Tubing** – a loose, crush-resistant cylinder applied over individual fibers to provide mechanical protection. Also called buffer tube.

**Fibrous Coverings** – commonly used on high-temperature cables due to their excellent heat resistance.

**Field** - An area through which electric and/or magnetic lines of force pass.

**Field Coil** – a suitable insulated winding mounted on a field pole to magnetize it

**Field Molded Splice** – a joint in which the solid dielectric joint insulation is fused and cured thermally at the job site

**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** - Nonconducting components cabled with the insulated conductors or optical fibers to impart roundness, flexibility, tensile strength, or a combination of all three, to the cable.

**Fine Stranded Wire** – stranded wire with component strands of 36 AWG or smaller

**Flame Resistant** - The ability of a material not to fuel a flame once the source of heat is removed.

**Flammability** - the measure of the material ability to support combustions.

**Flammability Test** - A test to determine the ability of a cable to resist ignition when placed near a source of heat of flame and to self-extinguish when removed from this source.

**Flat braid** - a woven braid of tinned copper strands rolled flat at time of manufacture to a specified time.

**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 cable with a plurality of flat conductors.

**Flex Life** - the measurement of the ability of a conductor or cable to withstand repeated bending.

**Flexible** - the 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.

**Flexibility** - The ability of a cable to bend in a short radius. The ability of a cable to lay flat or conform to a surface as with microphone cables.

**Floating** - Referring to a circuit which has no connection to ground.

**Fluoropolymers** – extrudable thermoplastics used in a variety of low-voltage insulating situations. Teflon is most common type used.

**Foamed Plastic** - insulations having a cellular structure.

**Foil** – a thin, continuous sheet of metal

**Foil Shield** – usually constructed of aluminum foil, provide excellent protection from electromagnetic interference.

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

**Frequency** - The number of times a periodic action occurs in one second. Measured in Hertz.

**Fuse Wire** - Wire made from alloy that melts at a relatively low temperature.

**Fused Conductors** – individual strands of heavily tinned copper wire stranded together and then bonded together by induction heating

**Fused Spiral Tape** - a PTFE Insulated hookup wire. The spiral wrapped conductor is passed through a sintering oven where overlaps are fused together.

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[ G ]

**Galvanized Steel Wire** – steel wire coated with zinc

**Galvanometer** - an instrument used for detecting or measuring small electrical current.

**Gang Strip** – stripping all or several conductors simultaneously

**Gas Filled Cable** - a self-contained pressure cable in which the pressure medium is an inert gas having access to the insulation.

**Gauge** - a term used to denote the physical size of a wire

**Giga** - a numerical prefix denoting one billion.

**Ground** - a conducting connection between an electrical circuit and the earth or other large conduction body to serve as an earth thus makes a complete electrical circuit.

**Ground Conductor** – a conductor in a transmission cable or line that is grounded

**Ground Plane** – expanded copper mesh which is laminated into some flat cable constructions as a shield

**Guy** – a tension wire connected to a tall structure and another fixed object to add strength to the structure

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## [ H ]

**Halar** - a trade name of Allied Chemical for their copolymer of ethylene and chlorotrifluoroethylene.  
Abbreviation ECTFE

**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 pulled together or pulled into a rubber or plastic sheath, used to interconnect an electric circuit.

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

**Heat Distortion** - Distortion or flow of a material of configuration due to application of heat.

**Heat Endurance** - the time of heat aging that a material can withstand before failing a specific physical or electrical test

**Heat Resistance** - ability of a substance to maintain physical and chemical identity and electrical integrity under specified temperature conditions.

**Heat Seal** - a method for sealing by thermal fusion.

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

**Heat Sink** – a device that absorbs heat

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

**Helix** – spiral winding

**Henry** - Unit of inductance such that the induced voltage in volts is numerical equal to the rate of change in current in amperes per second.

**Hermetically Sealed** - a gaslight enclosure that has been completely sealed by fusion or other comparable means.

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

**High Bond Insulation** – insulation exhibiting great bond strength to the conductors.

**High Temperature** – refers to wire or cable with a temperature rating of 125°C or higher.

**High-Voltage Power** - generally, a wire or cable with an operating voltage of over 35,000 volts.

**Hinge Cable** – a cable connected between a hinged or swinging device and a stationary object

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

**Holding Strength** – ability of a connector to remain assembled to a cable when under tension

**Hook-up Wire** - a single insulated conductor used for low current, low voltage (usually under 600 volts) applications within enclosed electronic equipment.

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

**Housing** – a metallic or other enclosure for an insulated splice

**Hybrid Cable** – multiconductor cable containing two or more types of components

**Hygroscopic** - capable of absorbing and retaining moisture.

**Hypalon** - DuPont's trade name for their chlorosulfonated polyethylene, an ozone resistant synthetic rubber.

**Hz** - Abbreviation for Hertz; a measure of frequency or bandwidth equal to one cycle per second.

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[ 1 ]

**IEC** - International Electrotechnical Commission, similar to the ISO in structure and scope.

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

**Impedance** - The total opposition that a circuit offers to the flow of alternating current or any other varying current at a particular frequency.

**Impedance Match** – a condition whereby the impedance of a particular cable or component is the same as the impedance of the circuit, cable or device to which it is connected.

**Impedance Matching Stub** - a section of transmission line or a pair of conductors cut to match the impedance of a load

**Impedance Matching Transformer** – a transformer designed to match the impedance of one circuit to that of another

**IMSA** - International Municipal Signal Association Specifications for Fire Alarm Cable.

**Induced Current** - an electrical current set up in a circuit by butting line of force; a current caused by electromagnetic induction.

**Inductance** - The property of wire which stores electrical current in a magnetic field around the wire. By coiling wire, the effect can be intensified. It is measured in Henrys

**Inductive Coupling** - crosstalk resulting form the action of the electromagnetic field of one conductor on the other.

**Instrumentation Cable** – generally used to transmit a low-power signal from a transducer to a PLC or DCS process control computer or to a manually operated control panel.

**Insulated Splice** – a splice with dielectric medium applied over the connected conductors and adjacent cable insulation

**Insulating (Isolating) Joint** – a cable joint which mechanically couples and electrically separates the sheath, shield and armor on contiguous lengths of cable.

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

**Insulation Level 100%** - Cable for use on grounded systems or where the system is provided with relay protection such that ground faults will be cleared as rapidly as possible but in any case within one minute.

**Insulation Level 133%** - Cable for use on grounded systems or where the faulted section will be de-energized in a time not exceeding one hour.

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

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

**Interlocked Armor** – interlocking construction protects the cable from damage during and after installation; may be applied directly over the insulation or over an inner jacket.

**Interconnecting Cable** - the wiring between modules, between units, or the larger portions of a system.



**Interference** - and undesired electrical signal induced into a conductor by electrical or electromagnetic means.

**Interstices** - voids or valleys between individual strands in a conductor by electrical or electromagnetic means.

**Ionization** - The formation of ions. Ions are produced when polar compounds are dissolved in a solvent and when a liquid, gas, or solid is caused to lose or gain electrons due to the passage of an electric current.

**ISA** - Instrument Society of America

**ISO** - International Standards Organization

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## [ J ]

**Jacket** - Pertaining to wire and cable, the outer protective covering that may also provide additional insulation.

**JAN Specification** - Joint Army-Navy specifications (forerunner of present Military Specification).

**Jitter** – the slight movement of a transmission signal in time or phase that can introduce errors and loss of synchronization in high-speed synchronous communications

**Joint** – that portion of the conductor where the ends of two wires, rods or groups of wires are joined by brazing, soldering, welding or by mechanical means

**Jumper Cable** - a short flat cable interconnecting two wiring boards or devices

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## [ K ]

**Kapton** – DuPont's trademark for polyimide

**Kevlar** – a high-strength DuPont polymer used as a cable messenger or strength member

**K-Fiber** – a polymaramid-based material used for jacketing high temperature cables

**Kilo** - A numerical prefix denoting 1000.

**KV** - Kilovolt (1000 volts)

**KVA** - Kilovolt ampere.

**KW** - Kilowatt.

**Kynar** - Penwalt trade name for polyvinylidene flouoride. Typically used as insulation for wire wrap wire.

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## [ 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.

**LANCE** - Local Area Network for Controller Ethernet

**LANS** - Local Area Networks System (integration of computer and communication).

System that wires together all computers and peripherals in an office so they can talk to each other.

**Large Pair Count Cables** – in cables having more than 25 pairs, the pairs are arranged in groups, each containing a max of 25 pairs and wrapped with distinctively colored binder threads to permit distinction between groups.

**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. In a twisted pair cable, the lay length is the distance it takes for the two wires to completely twist around each other.

**Lay Direction** - the twist on the cable as indicated by the top strands whole looking along the axis of the cable away from the observer. Described as "right hand" or "left hand".

**Leaching and Non-Leaching** - in a leaching wire the plasticizer will migrate when exposed to heat. A non-leaching wire will retain its plasticizer under extreme temperature conditions and remain flexible after baking.

**Lead Sheath** – used to protect insulated cable from moisture in locations such as conduits, ducts and raceways

**Leakage Current** - the undesirable flow of current through or over the surfaces 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 percents) of a 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 generation stations.

**Local Area Network** - a baseband or broadband interactive bi-directional communication system for information exchange on a common transmission line.

**Longitudinal Shield** - a tape shield, flat or corrugated, applied longitudinally with the axis of the core being shielded.

**Longitudinal Wrap** - tape applied longitudinally with the axis of the core being shielded.

**Loop Resistance** - the total resistance of two conductors measured round trip from one end.

**Loose Buffer** – provides a high level of isolation for the fiber from external mechanical forces that might be present on the cable; a loose buffer tube is constructed where the fiber is contained in a water-blocked polymer tube that has an inner diameter considerably larger than the fiber itself.

**Loss Factor** - the product of the dissipation and dielectric constant of an insulation material.

**Low Noise Cable** - cable configuration specifically constructed to eliminate spurious

electrical disturbances caused by capacitance changes of self-generated noise induced by either physical abuse or adjacent circuitry.

**Low Loss Dielectric** - an insulation material that has a relatively low dielectric loss, such as polyethylene or Teflon.

**Low Tension** - low voltage, as applied to ignition cable.

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## [ M ]

**Magnetic Wire** – insulated wire used in the windings of motors, transformers and other electromagnetic devices.

**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 (created magnetic field around that cable) this magnetic field causes the magnetic noise.

**Marker Tape** – a tape placed parallel to the conductors under the sheath in a cable, imprinted with the manufacturer's name and the specification to which the cable is made

**Marker Thread** – a colored thread placed parallel and adjacent to the strand in an insulated conductor which identifies the manufacturer and sometimes the specification to which the wire is made

**Mastic** – a meltable coating used on the inside of some shrink products which when heated flows to help create a waterproof seal

**MC Metal-Clad Cable** - NEC type designation for power and control cables enclosed in a smooth metallic sheath, welded and corrugated metallic sheath, or an interlocking taper armor.

**MCM** - one thousand circular mils

**Medium Frequency** – the band of frequencies between 300 and 3,000 kilohertz

**Megarad** - a unit for measuring radiation dosage, Equal to one million rads.

**Megger** – a special ohmmeter for measuring very high resistance; primarily used for checking the insulation resistance of cables

**Megohm** - one million ohms.

**Member** - a group of insulated wires to be cabled with other stranded groups into multiple-membered cable.

**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.

**Mining Cable** – generally designed to be used as flexible feeder cables for circuits between the main power source and mine load centers, or as equipment trailing cables.

**Molded Plug** – a connector molded on either end of a cord or cable

**Mono Filament** – a single strand filament as opposed to a braided or twisted filament

**Motor Lead Wire** – wire that connects to the fragile magnet wire found in coils, transformers and stator or field windings

**Multiconductor Cable** - more than one conductor within a single cable complex.

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

**Multiplexer** – equipment that permits simultaneous transmission of multiple signals over one physical circuit

**Mutual Capacitance** - capacitance between two conductors when all other conductors including ground are connected together and then regarded as an ignored ground.

**Mutual Inductance** - the ratio of voltage induced on one conductor to the time rate of current change in the separate conductor causing this induction.

**MW** - radio hookup wire with polyvinyl insulation and plain or nylon jacket, braid, or shield. 1000V.

**Mylar** - DuPont trademark for a polyester material used in the form of a tape.

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## [ N ]

**National Electric Code (NEC)** - a consensus standard published by The National Fire Protection Association (NFPA) and incorporated in OSHA regulations.

**NBFU** - National Bureau of Fire Underwriters. **NBS** - National Bureau of Standards.

**NEC** - See National Electric Codes.

**NEMA** - National Electrical Manufacturers Association.

**Neoprene** - trade name for polychloroprene synthetic rubber, used for jacketing when suitable compounded

**Network** – a series of nodes connected by communications channels

**Nickel Cade Copper Wire** – a wire with a layer of nickel on a copper core where the area of the nickel is approximately 30 percent of the conductor area

**Noise** - in a cable or circuit, any extraneous signal which tends to interfere with the signal normally present in or passing through the system

**Nominal O.D.** - the desired diameter for a cable that is established within a +/- tolerance.

**Non-Contaminating** - type of PVC jacket material whose plasticizer will not migrate into the dielectric of a coaxial cable and thus avoids contaminating and destroying the dielectric.

**Non-Contaminating PVC** - a polyvinylchloride formulation, which does not produce electrical contamination through plasticizer migration.

**N Series** – screw connectors; offer dual-crimp, low-cost commercial and 75-ohm versions in a variety of styles and materials; standard coaxial connector for many coaxial cable based local area networks

**Nylon** - a group of polyamide polymer which is used for wire and cable jacketing.

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## [ O ]

**O.D.** - outside diameter

**Off-center** - conductor displaced within the cross-section of its insulation.

**Off-gassing** - percentage of a specified gas releases during the combustion of insulation or jacketing material.

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

**Ohm** - The unit of electrical resistance. The value of resistance through which a potential difference of one volt will maintain a current of one ampere.

**Oil Aging** - cable aged in an accelerated manner by placement in an oil bath and heated to a pre-set temperature for a stated time.

**Oil-Filled Cable** - a self-contained pressure cable in which the pressure medium is low viscosity oil having access to the insulation.

**Open Circuit** – a break in an electrical circuit so that there can be no current flow

**Optical Cross-Connect** – a cross-connect unit used for circuit administration; provides for the connection of individual optical fibers with optical fiber patch cords.

**Optical Encoder** – a device whose position is determined by a photoelectric device and converted to an electrical output

**Optical Fiber** – any filament or fiber, made of dielectric materials, that is used to transmit light signals; optical fiber usually consists of a core, which carries the signal and cladding, a substance with a higher refractive index than the core, which surrounds the core and serves to reflect the light signal

**Outdoor Termination** – a cable termination intended for use where it is not protected from direct exposure to either solar radiation or precipitation

**Out-gassing** - the dissipation of gas from a dielectric evidencing decomposition.

**Output** – the useful power or signal delivered by a circuit or device

**OVE** - approval agency of West Germany; Oesterreichischer Verband für Electrotechnik.

**Outer Shield (Insulation Shield)** – outside of the cable's insulation, protects the insulation from the damaging effects of corona

**Overall Diameter** - finished diameter over wire and cable

**Overcoat Conductor** - individual strands of tin copper stranded together and then covered with a tin coating.

**Overlap** - the amount the trailing edge laps over the leading edge of a tape wrap.

**Oxygen index** - percentage of oxygen necessary to support combustion of a specified material.

**Ozone** - a highly active form of oxygen produced by the passage of electric discharges or sparks through the air or oxygen.

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[ P ]

**Pair** - two insulated wires of single circuit associated together.



**Pairing** - the union of two insulated single conductors through twisting.

**Parallel Cable** - two insulated conductor's side-by-side in a cable.

**Parallel Stripe** - a stripe applied longitudinally on a wire or cable parallel to the axis of the conductor

**Patch Cable** – a cable with plugs or terminals on each end of the conductors to connect circuits of equipment together

**Payoff** – the process of feeding a cable or wire from a bobbin, reel, or other package

**Peak Voltage** - the maximum instantaneous voltage.

**Percent Conductivity** - conductivity of a material expressed as a percentage of that of copper.

**Periodicity** - The uniformly spaced cable impedance variations that result in addition of the reflections of a signal. The distance between them is the half wavelength most affected. Multiples of that frequency is also affected. Even very slight variations, which appear over and over in a construction or installation, can have major effects on signal integrity because of periodicity.

**Permittivity** - see dielectric constant

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

**Pitch** - Nominal distance from center-to-center of adjacent conductors within a cable. When conductors are flat, pitch is usually measured from the reference edge of a conductor to the reference edge of the adjacent conductor. Spacing.

**Pitch Diameter** - diameter of a circle passing through the center of the conductors in any layer of multiconductor cable.

**Planetary Cabler** - a cabler of laying down any number of shielded, over braided or jacketed singles, pairs, called groups or any combination of them in a sequence.

**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 so the wire will not kink as it is twisted.

**Plastic Deformation** - change in dimensions under the 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** - A compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system. A description for a cable that passes the UL 910 CMP flame test requirements.

**Plenum Cable** - cable approved by Underwriters Laboratories for installation in plenums without the need for conduit.

**PLTC** - NEC type designation for Power-Limited Tray Cable for use in class 2 or 3 Power-Limited circuits; instrumentation supervisory control, and thermocouple extension.

**Ply** – the number of individual strands or filaments twisted together to form a single thread

**Polarization** – the orientation of a flat cable or a rectangular connector

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

**Polythylene** - A thermoplastic material having excellent electrical properties. Low dielectric constant, a stable dielectric constant over all frequencies, very high insulation resistance. In terms of flexibility, polyethylene can be rated stiff to very hard, depending on molecular weight and density - low density being the most flexible and the highdensity, high-molecular weight formulation being very hard. Moisture resistance is rated excellent.

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

**Polyolefin** - Any of the polymers and copolymers of the ethylene family of hydrocarbons, such as polyethylene and polypropylene.

**Polypropylene** - A thermoplastic similar to polyethylene but stiffer and having a higher softening point (temperature). This material is primarily used as an insulation material. Typically, it is harder than polyethylene. This makes it suitable for thin wall insulations. The dielectric constant is 2.25 for solid and 1.55 for cellular designs.

**Polyurethane (PUR)** – used primarily as a cable jacket material. Has excellent oxidation, oil and ozone resistance.

**Polyvinyl Chloride (PVC)** - A general purpose thermoplastic used for wire and cable insulation and jackets.

**Porosity** - multiple air voids in an insulation jacket wall.

**Position Coding** – identification of conductors by their location, possible only when conductors are located in assigned positions with relation to each other throughout the entire length of a cable

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

**PPE** - Portable Power Elastomer. Same as Type W except is a thermoplastic elastomer insulation and jacket whereas Type W is all thermoset.

**Pre-Bond** - stranded wire which has been fused, topcoat tinned, or overcoat tinned.

**Primary Insulation** - the first layer of nonconductive material applied over a conductor, whose prime function is to act as electrical insulation.

**Printing Wiring** – a printed circuit intended to provide point-to-point electrical connections.

**Propagation Delay** - Time required for a signal to pass from the input to the output of a device.

**Proof Testing** – at any time during the period of guarantee, the cable circuit may be removed from service and tested at a reduced voltage for five consecutive minutes

**Propagation Time** - time required for a signal to pass from the input to the output of a device.

**Protective Covering** – a field-applied material to provide environmental protection over a splice or housing, or both

**PTFE** - abbreviation for Polytetrafluoroethylene.

**Pulse** - A current or voltage which changes abruptly from one value to another and back to the original value in a finite length of time. Used to describe one particular variation in a series of wave motions.

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

**PVD** - Polyvinylidene fluoride (Kynar).

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## [ Q ]

**Quad** - a four conductor cable.

**Quadders** - three-bay machines which can twist four wires together and cable braided and shielded wires with varying lay lengths.

**QPL** - Qualified parts list.

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## [ R ]

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

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

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

**Reactance** - A measure of the combined effects of capacitance and inductance on an alternating current. The amount of such opposition varies with the frequency of the current. The reactance of a capacitor decreases with an increase in frequency; the opposite occurs with an inductance.

**Reference Junction** - the junction of a thermocouple which is as 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.

**Registration** - Alignment of one object with relation to another. In flat cables it involves aligning conductors with contacts or solder pads. Also called register.

**Resin** - an organic substance of natural or synthetic origin characterized by being polymeric in structure and predominantly amorphous. Most resins, through not all, are of high molecular weight and consist of long chain or network molecular structure.

**Resistance** - In dc circuits, the opposition a material offers to current flow, measured in ohms. In ac circuits, resistance is the real component of impedance, and may be higher than the value measured at dc.

**Retractile Cable** - a cable that returns by its own stored energy from an extended condition to its original contracted form.

**RFI** - Radio Frequency Interference.

**RG/U** - RG is the abbreviation for radio guide, a military designation for a coaxial cable, and U stands for universal.

**Ribbon Cable** - A flat cable made with parallel round conductors in the same plane. Also referred to as planar and/or flat cable. Any cable with two or more parallel conductors in the same plane encapsulated by insulating material.

**Ridge maker** - one or more ridges running laterally along the outer surface of the plastic insulated wire for purposes of identification.

**Ringing Out** - The process of locating or identifying specific conductor paths by means of passing a current through selected conductors.

**Rise Time** - the time required for the initially zero potential existing on a transmission line (which is terminated in its characteristics impedance) to change from 10% to 90% of its full DC value after a DC potential source is instantaneously applied.

**RMS or rms** - Root-mean-square.

**Rockwell Harness** - a test for determining hardness in which a hardened steel ball or diamond point is pressed into the material under test.

**Roentgen** - the amount of radiation that will produce one electrostatic unit of ion per cubic centimeter volume.

**Rope Lay Conductor** - a conductor composed of a central core surrounded by one or more layers of helically laid groups of wire.

**Rope Strand** - A conductor composed of groups of twisted strands.

**Round Conductor** - a conductor whose cross section is substantially circular.

**Rulan** - DuPont's trade name for their flame-retardant polyethylene insulating material.

**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.

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[ S ]

**SAE** - Society of Automotive Engineers.

**SBR** - A copolymer of styrene and butadiene. Also GR-S or Buna-S. Most commonly used type of synthetic rubber.

**SDN** - small diameter multi-conductor control cable with a neoprene jacket and nylon sheath over polyethylene insulation.

**Sector Conductor** – a stranded conductor whose cross-section is approximately the shape of a sector of a circle.

**Secondary insulation** - a high resistance dielectric material which is placed over primary insulation to protect it from absorption.

**Segmental Conductor** – a round, stranded conductor composed of three or four sectors slightly insulated from one another.

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

**Self-Supporting Cable** - any assemblage of conductors which incorporates a steel rope or steel sheath for added tensile strength, thus enabling it to be suspended between widely spaced supports.

**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.

**Semiconductor** - In wire industry terminology, a material possessing electrical conductivity that falls somewhere between that of conductors and insulators. Usually made by adding carbon particles to an insulator. Not the same as semiconductor materials such as silicon, germanium, etc. Used for making transistors and diodes.

**Semiconducting Jacket** – a jacket having a sufficiently low-electrical resistance so that its outer surface can be kept at substantially ground potential

**Semi-Rigid PVC** - a hard semi-flexible polyvinylchloride compound with low plasticizer content.

**Semisolid** – an insulation cross-section having a partially open space between the conductor and the insulation perimeter

**SEMKO** - approval agency for Sweden .

**Separable Insulated Connector** – an insulated device to facilitate cable connections and separations

**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.

**Series Circuit** – a circuit in which the components are arranged end to end to form a single path for current.

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

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

**SEW, SEWF** - Silicone Rubber insulated equipment wire (CSA).

**SF** - Silicone rubber insulated fixture wire, solid or 7 strand conductors, 200C.

**SFF** - same as SF, except flexible stranding, 150C.

**Sheath** - the outer covering or jacket of a multi-conductor cable.

**SHD-GC** - portable mine power cable, three or four individually shielded conductors, with grounding conductors, 500V.

**Shield** - A tape, serve or braid (usually copper, aluminum, or other conductive material) placed around or between electric circuits or cables or their components, to prevent signal leakage or interference.

**Shield Coverage** - The optical percentage of a cable actually covered by shielding Material



**Shielded Insulated Splice** – an insulated splice in which a conducting material is employed over the full length of the insulation for electric stress control

**Shield Effectiveness** - The relative ability of a shield to screen out undesirable interference or prevent signal leakage out of the cable. Frequently confused with the term shield coverage.

**Shielding, Power Cable** – a conducting layer applied to increase safety, control dielectric stresses and prevent partial discharges

**Shield Percentage** - The percentage of physical area of a circuit or cable actually covered by shielding material.

**Shock Test** - a test to determine the ability of a cable to withstand a violent physical concussion such as might occur during handling or use.

**Shore Hardness** - an instrument measure of the surface hardness of an insulating or jacket material.

**Short Circuit Current** – cable must be able to carry current in an emergency, there is no limit to the amount of short-circuit current that a cable can handle without damage

**Shrinking Ratio** – ratio between the expanded diameter and recovered diameter of shrinkable products

**Shrink Temperature** – temperature that affects complete recovery of a heat shrinkable product from the expanded state

**SHV connector** – high-voltage connectors rated to 5,000 volts; have bayonet coupling but do not have constant impedance

**Signal** - Any visible or audible indication which can convey information. Also, the information conveyed through a communication system.

**Signal Cable** - a cable designed to carry current of the usually less than one ampere per conductor.

**Silicone** – soft, rubbery insulation that has a temperature range from 80°C to 200°C

**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.

**SIS** - indicated single conductor having synthetic thermosetting insulation of heatresistant, moisture-resistant, flame retarding grade. Also made with chemically cross linked polyethylene insulation. Used for switchboard wiring only, 90C.

**Skin Effect** - The tendency of alternating current to travel only on the surface of a conductor as its frequency increases.

**SMA connectors** – most popular type for subminiature cable and offer the highest performance in their class

**SNM** - a cable designed for the use in hazardous locations consisting of insulated conductors in an extruded nonmetallic 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 nonmetallic material.

**SO** - hard service cord, same construction as type S except oil-resistant neoprene jacket. 600V, 60C, and 90C.

**Solid Conductor** - a single unit not divided into parts.

**SOW** - water resistant neoprene jacketed portable cord (CSA).

**SOW-A/SOW** - service cord with oil resistant jacket and weather resistant. Also is water resistant. 600V

**Spacer Cable** – a type of overhead power distribution cable; spacing is accomplished by ceramic or plastic hangers suspended from a support messenger

**Span** – in flat conductors, distance between the reference edge of the first and last conductor; in round conductors, distance between centers of the first and last conductors

**Spacing** - The distance between the centers of two adjacent conductors. Pitch.

**Spark Test** - a test that is designed to locate imperfections (usually pin-holes) in the insulating 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 Gravity (S.I.C)** - same as dielectric constant.

**Spiral (Serve) Shield** – constructed with bare or tinned copper wires from 32 to 40 AWG in size that are helically applied in a flat or ribbon configuration.

**Spiral Stripe** – a color coding stripe applied helically to the surface of an insulated wire or cable

**Spiral Wrap** - the helical wrap of a material over a core.

**Splice** – a connection of two or more conductors or cables to provide good mechanical strength as well as good electrical conductivity

**Splitter** – a passive device used in a cable system to divide the power of a single input into two or more outputs of lesser power; can also be used as a combiner when two or more inputs are combined into a single output

**ST** - hard service cord, jacketed, same as type S except all-plastic construction, 600V, 60C to 105C.

**Stability Factor** - the difference between the percentage power factor at 8- volts/mil and at 40 volts/mil measured on wire immersed in water at 75C for a specified time.

**Standing Wave** - the stationary pattern of waves produced by two waves of the same frequency traveling in opposite directions on the same transmission line. The existence of voltage and current maxima and minima along a transmission line is a result of reflected energy for an impedance mismatch

**Standing Wave Ratio** - a ratio of the maximum amplitude to the minimum amplitude of a standing wave stated in current or voltage amplitude

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

**Straight Joint** – a cable splice used for connecting two lengths of cable, each of which consists of one or more conductors

**Strand** - a single un-insulated wire.

**Stranded Conductor** - a conductor composed of individual groups of wires twisted together to form an entire unit.

**Strand Lay** – the distance of advance of one strand of a spirally stranded conductor, in one turn, measured longitudinally

**Stress-Relief Cable** – cable used to relieve stresses in the process of welding pipe joints by including heat in rope sections to be welded, flexible copper strand

**Strength Members** – added to the cable structure to keep the optical fibers free from stress and to minimize elongation and contraction.

**Strip Force** - the force required to remove a small section of insulating materials from the conductor it covers.

**Structural Return Loss** – backward reflected energies from uneven parts of the cable structure.

**Substrate** – insulating material of a printed circuit

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

**Superconductors** – materials whose resistance and magnetic permeability are virtually zero at very low temperatures

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

**Surge** - A temporary and relatively large increase in the voltage or current in an electric circuit or cable. Also called transient

**Surlyn** - DuPont's trade name for their thermoplastic resin with ionic crosslink's

**Sweep Test** - Testing a characteristic of a cable or device across a range of frequencies. In cable, it usually implies return loss or structural return loss (see also).

**Switchboard Cable** - a cable used within and between the central office main frames and the switchboard.

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## [ T ]

**Take-Up** - the process of accumulating wire or cable into a reel, bobbin, or some other type of pack. Also, the device for pulling wire or cable through a piece of equipment or machine

**Tank Test** - a voltage dielectric test in which the test sample is submerged in water and voltage is applied between the conductor and water as ground

**Taped Insulation** – insulation of helically wound tapes applied over a conductor or over an assembled group of insulated conductors

**Taped Splice** – a joint with hand-applied tape insulation

**Tape Wrap** - a spirally applied tape over an insulated or non-insulated wire

**TC** - Tray cable. Article 340 NEC.

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

**Teflon** - DuPont Company trademark for fluorocarbon resins. (FEP - Fluorinated ethylene-propylene. A thermo-plastic material with good electrical insulating properties and chemical and heat resistance.). (TFE - Tetrafluoroethylene. A thermoplastic material with good electrical insulating properties and chemical and heat resistance.). It is not suitable where subjected to

nuclear radiation and does not have good high voltage characteristics. FEP Teflon is extrudable in a manner similar to PVC and polyethylene. This means that long wire and cable lengths are available. TFE Teflon is extrudable in a hydraulic ram type process. Lengths are limited due to amount of material in the ram, thickness of the insulation, and preform size. TFE must be extruded over a silver- or nickel-coated wire. The cost of Teflon is approximately 8 to 10 times more per pound than PVC compounds.

**Tefzel** - Fluorocopolymer thermoplastic material has excellent electrical properties, heat resistance, chemical resistance, toughness, radiation resistance, and flame resistance.

**Telecommunication Color Codes** – individually telecommunication cable conductors are color-coded with solid colors or by applying a colored band to solid colored wires.

**Telemetry Cable** - cable used for transmission of information from instruments to the peripheral recording equipment

**Temperature Rating** - The temperature range in which a material will perform its function without undue degradation.

**Tensile Strength** - the pull stress required to break a given specimen.

**Tension Member** - a member included on a fiber cable to add tensile strength

**Terminals** - metal wire termination devices designed to handle one or more conductors, and to be attached to a board, bus, or block with mechanical fasteners or clipped on.

**Test Lead** - a flexible, insulated lead wire used for making tests, connecting instruments to a circuit temporarily, or for making temporary electrical connections.

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

**Textile Braid** - any braid made from threads of cotton, silk, or synthetic fibers.

**TFFN** - fixture wire, thermoplastic-covered solid or 7 strands with nylon sheath. 60C

**Thermal Aging** - exposure to a thermal condition of programmed series of conditions for pre-described periods of time

**Thermal Rating** - the maximum and/or minimum temperature at which a material will perform its function without undue degradation.

**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 protection 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 complementing the thermocouple which is intended to be used, such that when properly connected allows the emf to be faithfully transmitted to the reference point.

**Thermocouple Wire (Grade)** - a pair of wires of dissimilar alloys having emf temperature characteristics calibrated to high temperature levels than the extension type of thermocouple wires

**Thermoplastic** - A material which will soften, flow, or distort appreciably when subjected to sufficient heat and pressure. Examples are polyvinyl chloride and polyethylene.

**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** - 90C, 600 volt, nylon jacketed building wire for dry locations.

**Three-Phase Current** – current delivered through three wires, with each wire serving as a return for the other two

**Three-Phase Three-Wire System** – an alternating current supply system comprising three conductors over which three-phase power is sent

**THW** - thermoplastic vinyl insulated building wire. Flame-retardant, moisture and heat resistant. 75C Dry and wet locations.

**THWN** - same as THW but with nylon jacket overall. 75C

**Tin Overcoat (TOC)** - tinned copper wire, stranded, then coated with pure tin.

**Tinned Copper** - tin coating added to copper to aid in soldering and inhibit corrosion.

**Tinsel Wire** – a low voltage stranded wire, with each strand a very thin conductor ribbon spirally wrapped around a textile yarn

**TNC connector** – virtually identical to BNC connector, except it has a threaded rather than a bayonet coupling

**Topcoat** - bare (untinned) copper wire, stranded, then coated with pure tin.

**Transfer Impedance** - for a specified cable length, transfer impedance is defined as the ratio of internal longitudinal voltage to external current flow on the cable shield. Transfer impedance is used to determine shield effectiveness against both the ingress and egress of interfering signals.

**Transition Splice** – a cable splice which connects two different types of cable

**Transmission** - transfer of electric energy from one location to another through conductors or by radiation or induction fields.

**Transmission Line** - An arrangement of two or more conductors, a coaxial cable, or a waveguide used to transfer signal energy from one location to another.

**Transmission Loss** - the decrease or loss in power during transmission of energy from one point to another. Usually expressed in decibels.



**Transposition** – interchanging the relative positions of wires to neutralize the effects of induction to or from other circuits or, to minimize interference pickup by the lead-in during reception

**Tray** - a cable tray is a unit or assembly of units or sections, and associated fittings, made of noncombustible materials forming a rigid structural system used to support cables.

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

**Triaxial Cable** - A cable construction having a conductor, and two isolated braid shields, all insulated from each other. A coaxial cable with a second braid applied over an inner jacket and an outer jacket applied over the outer braid. Commonly used in television camera systems.

**Triboelectric Noise** - Noise generated in a shielded cable due to variations in capacitance between the shield and conductors as the cable is flexed.

**Triple (Triad)** - a cable consisting of three insulated single conductor cables twisted together.

**Triplex** - a cable composed of three insulated single conductor cables twisted together.

**Twinaxial Cable (Twinax)** - pair of insulated conductors encased in a common outer conductor (shield)

**Twin Cable** - a cable composed of two separately insulated stranded conductors laid parallel or twisted together.

**Twin Coaxial Cable** - a single cable consisting of two separate coaxial cables laid adjacent and parallel or twisted together.

**Twin Line** - a transmission line which has a solid insulating material, in which the two conductors are placed in parallel to each other.

**Twiner** - a device for twisting together two conductors.

**Twisted Pair** - Two lengths of insulated conductors twisted together. The traditional

method for connecting home and many business computers to the telephone company. Gets its name because two insulated copper wires are twisted together, both of which are needed for each connection. In commercial environments, performance of data transmission can be improved by adding a composite tape to the wire. This is known as shielded twisted pair.

**Twisted Triad** - any three individually insulated conductors which are twisted together

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## [ U ]

**U-Bend Test** – a cable test in which the insulation is tested for resistance to corona and ozone

**UHF** - abbreviation for ultra high frequency, 300 to 3,000 Mhz.

**UL** - Underwriters Laboratories. A nonprofit organization which tests and verifies construction and performance of electronic parts and equipment, including wire and cable.

**UL Listed** – a product that has been tested and found to comply with applicable standards

**Unbalanced Circuit (Line)** - a transmission line in which voltages on the two conductors are unequal with respect to ground; e.g., a coaxial cable

**Unbalanced-to-Ground** – describing a two-wire circuit, where the impedance-to-ground on one wire is measurably different from that on the other

**Unidirectional Concentric Stranding** - a stranding where each successive layer has a different lay length, thereby retaining a circular form without migration of strands from one layer to another

**Unilay** - more than one layer of helically laid wires with the direction of lay and length of lay the same for all layers.

**UTP** – Unshielded Twisted Pair; two wires, usually twisted around each other to help cancel out induced noise in adjacent circuits.

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## [V]

**Valley** - any void between the insulated conductors of cable or between a cable core and its covering.

See also interstice

**Velocity of Propagation** - The transmission speed of electrical energy in a length of cable compared to speed of light in free space. Usually expressed as a percentage.

**VHF** - Very High Frequency. International Telecommunication Union designation for the 30-300 MHz band of frequencies.

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

**VLF** - very low frequencies, the band extending from 10 to 30 kHz

**Volt** - A unit of electrical "pressure." One volt is the amount of pressure that will cause one ampere of current to flow through the ohm if resistance

**Voltage** - Electrical potential or electromotive force expressed in volts.

**Voltage Breakdown** - a test to determine the maximum voltage insulated wire can withstand before failure

**Voltage, Corona Extinction** - the minimum voltage that sustains corona, determined by applying a corona producing voltage, then decreasing the voltage until corona is extinct

**Voltage Drop** - the voltage developed across a conductor by the current and the resistance or impedance of the conductor

**Voltage, Induced** - a voltage produced in a conductor by a change in magnetic flux from an outside source

**Voltage Levels** - power-limited 0-300 volts, low voltage 600-2000 volts, medium voltage 5000-69000 volts.

**Voltage Rating** - The highest voltage that may be continuously applied to a cable

construction 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 miss-matched radio frequency transmission line.

**Voltage to Ground** – the voltage between an energized source and earth

**Volume Resistivity (Specific Insulation Resistance)** - the electrical resistance between opposite faces of a 1 cm. cube of insulating material, commonly expressed in ohms/centimeter.

**Vulcanization** - an irreversible process during which a rubber or polymeric compound through a change in its chemical structure (for example, crosslinking) become thermoset.

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

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## [ W ]

**Wall Thickness** - The thickness of an insulation or jacket.

**Water Absorption** - water by percent weight absorbed by a material after a given immersion period.

**Water Blocked Cable** - a cable constructed with no internal voids in order to allow no longitudinal water passage under given pressure.

**Water Treeing** – a type of insulation deterioration that can occur after long term immersion in water with an electrical stress applied

**Waterfall** – the point at which cables installed horizontally in a tray transition to a vertical section of tray

**Watt** - A unit of electrical power.

**Wavelength** - The distance between positive peaks of a signal. As the frequency increases, and waves get closer together, the wavelength decreases.

**Weight Resistivity** – the resistance in ohms at a specified temperature of a copper wire of uniform cross section and of unit weight and unit length

**Welding** – joining the ends of two wires, rods, or groups of wires by fusing, using the application of heat or pressure or both, by mean of a flame torch, electric arc, or electric current or by cold pressure

**Wicking** - the longitudinal flow of a liquid in a wire or cable due to capillary action.

**Wire** - a single conductor, typically with a covering of insulating.

**Wire Braid** – flexible wire constructed of small size strands in tubular form; used for shielding or connections where constant flexing is required

**Wire Serve Armor** – consists of 1/8 to ¼ inch diameter solid steel wires, which are laid helically around the circumference of the cable to reduce the effects of corrosion.

**Wire Shields** – metallic wire shields on power cables, applied to copper wires and UniShield

**Wire Gauge** - a measure of the diameter or size of wires. The sizes are expressed by numbers.

**Working Voltage** - see voltage rating

**Wrapper** – an insulating barrier applied as a sheet of tape wrapped around a coil periphery

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[ X ]

X – symbol for reactance

**XHHW** - high temperature (90C) chemically cross-linked polyethylene jacketed small diameter building wire.

**XLP** - Cross-linked polyethylene

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[ Y ]

**Yield Strength** - the minimum stress at which a material will start to physically deform without further increase in load.

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[Z]

**Z** - Symbol for impedance

**ZW** - NEC conductor type designation for conductors with ETFE insulating for use in wet or dry locations