

Glossary

<p>Abrasion Resistance Ability of a wire, cable, or material to resist surface wear.</p> <p>Alloy A metal formed by combining two or more different metals to form desirable properties.</p> <p>Alternating Current (AC) Electric current that continually reverses its direction. It is expressed in cycles per second (Hertz or Hz).</p> <p>Ambient Temperature The temperature of the medium surrounding an object.</p> <p>American Wire Gauge (AWG) A standard system for designating wire diameter. Primarily used in the United States.</p> <p>ANSI Abbr: American National Standards Institute</p> <p>Armor A braid or wrapping of metal, usually steel or aluminum, used for mechanical protection</p> <p>ASME Abbr: American Society of Mechanical Engineers</p> <p>Braid A fibrous or metallic group of filaments interwoven cylindrically to form a covering over one or more wires.</p> <p>Braid Ends The number of strands used to make up one carrier. The strands are wound side by side on the carrier bobbin and lie parallel in the finished braid.</p>	<p>Breakdown Voltage The voltage at which the insulation between two conductors is destroyed.</p> <p>Bunch Stranding A group of wires of the same diameter twisted together without a predetermined pattern.</p> <p>Cable A group of individually insulated conductors in twisted or parallel configuration under a common sheath.</p> <p>Cabling The twisting together of two or more insulated conductors to form an element.</p> <p>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 and material between them.</p> <p>Cold Flow Deformation of the insulation due to mechanical force or pressure (not due to heat softening).</p> <p>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.</p> <p>Concentric Stranding A central wire surrounded by six or more layers of helically wound strands in a fixed round geometric arrangement.</p> <p>Conductor An uninsulated wire suitable for carrying electrical current.</p> <p>Conduit A tube or trough in which insulated wires and cables are passed.</p>	<p>Connector A device used to physically and electrically join two or more conductors.</p> <p>Control Cable A multi-conductor cable made for operation in control or signal circuits.</p> <p>Cord A small, flexible insulated cable.</p> <p>Core In cables, a component or assembly of components over which additional components (shield, sheath, etc.) are applied.</p> <p>Cut-Through Resistance The ability of a material to withstand mechanical pressure, (usually a sharp edge or small radius) without separation.</p> <p>Dielectric Any insulating material between two conductors which permits electrostatic attraction and repulsion to take place across it.</p> <p>Dielectric Constant (ϵ) The ratio of the capacitance using the material in question as the dielectric, to the capacitance resulting when the material is replaced by air.</p> <p>Dielectric Strength The voltage which an insulation can withstand before breakdown occurs. Usually expressed as a voltage gradient (such as volts per mil).</p> <p>Double Foot Combined length of one linear foot of paired materials; i.e., One double foot is equal to one foot of negative material plus one foot of positive material. Usually used in determining thermocouple wire loop resistance.</p>
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Technical Data

Glossary

Drain Wire

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

Duct

An underground or overhead tube for carrying electrical cables.

Electromagnetic

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

Electromotive Force (emf)

The force which causes current to flow in a circuit.

Elongation

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

EMI

Abbr: Electromagnetic interference.

External Interference

The effects of electrical waves or fields which cause spurious signals other than the desired intelligence, e.g., noise.

FEP

Fluorinated Ethylene Propylene is a melt-extrudable fluorocarbon resin. "Teflon FEP" is a registered trademark of the DuPont Company.

Filler

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

Flame-Resistant

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

Flammability

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

Gauge

A term used to denote the physical size of wire. Also spelled gage.

Ground

The connection between an electrical circuit and the earth or other large conducting body.

Heat Distortion

Distortion of a material due to the effects of heat.

Hi-Pot

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

Hook-Up Wire

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

Hygroscopic

Readily absorbing and retaining moisture.

Impedance

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

Inductance

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

Inductive Coupling

Crosstalk resulting from the action of the electromagnetic field of one conductor on the other.

Insulation

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

Insulation Resistance (I.R.)

That resistance offered by an insulation to an impressed dc voltage, tending to produce a leakage current through the insulation.

IEC

Abbr: International Electrotechnical Commission.

IEEE

Abbr: Institute of Electrical and Electronics Engineers.

Insulation Thickness

The wall thickness of the applied insulation.

Interference

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

ISA

Abbr: Instrument Society of America.

ISO

Abbr: International Organization for Standardization.

Jacket

An outer covering mainly used for protection against the environment.

Lacquer

A liquid resin or compound applied to textile braid to prevent fraying.

Laminated Tape

A tape consisting of two or more layers of different materials bonded together.

Technical Data

Glossary

Lay

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

Leakage Current

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

Life Cycle

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

Limits of Error

The maximum deviation (in degrees or percent) of a thermocouple or thermocouple extension wire from standard emf-temperature values.

Loop Resistance

The total resistance of two conductors measured from one end, through a junction, to the other conductor.

Magnetic Field

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

Magnetic Flux

The rate of flow of magnetic energy across or through a surface (real or imaginary)

Magnetic Noise

Caused by change in current level, e.g. AC powerline creates a magnetic field around that cable.

Mho

The unit of conductivity. The reciprocal of an ohm.

MHz

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

Micro

Prefix for one-millionth.

Mil

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

Moisture Absorption

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

Moisture Resistance

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

Monomer

The basic chemical unit used in building a polymer.

Multiplexing

Simultaneous transmission of two or more messages over the same cable medium.

Mylar

DuPont trade name for a polyester material.

National Electric Code (NEC)

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

NBS

Abbr: National Bureau of Standards.

NEMA

Abbr: National Electrical Manufacturers Association.

Noise

Unwanted and/or unintelligible signals picked up on a cable circuit.

OFHC

Abbr: oxygen-free, high conductivity copper. Has no residual deoxidant, 99.95% minimum copper content and an average annealed conductivity of 101%.

Overlap

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

Pairing

The union of two insulated single conductors through twisting.

Pick

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

Pitch

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

Polyester

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

Polymer

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

Polyvinyl Chloride (PVC)

A general purpose family of insulations whose basic constituent is polyvinyl chloride or its copolymer with vinyl acetate. Plasticizers, stabilizers, pigments and fillers are added in lesser quantity to improve mechanical and/or electrical properties of this material.

Porosity

Air voids in an insulation or jacket wall.

Technical Data

Glossary

Primary Insulation

The first layer of nonconductive material applied over a conductor, whose prime function is to act as electrical barrier.

Propagation

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

Pulling Eye

A device fastened to a cable to which a hook may be attached in order to pull the cable.

Reactance

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

Reference Junction

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

Resin

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

Resistance

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

RFI

Abbr: radio frequency interference.

Root Mean Square (RMS)

The effective value of an alternating current or voltage.

Self-Extinguishing

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

Semi-Conducting Tape

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

Serve

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

Served Wire Armor

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

Sheath

The outer covering or jacket of a multiconductor cable.

Shield

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

Shield Covering

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

Shield Effectiveness

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

Signal

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

Signal Cable

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

Sintering

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

Solid Conductor

A conductor consisting of a single wire.

Spark Test

A test designated to locate imperfections (usually pinholes) in the insulation of a wire or cable by application of a voltage for a very short period of time while the wire is being drawn through the electrode field.

Spiral Wrap

The helical wrap of a material over a core.

Stranded Conductor

A conductor composed of single sold wires twisted together, either singly or in groups.

Suggested Working Voltage

A voltage that can be applied between adjacent conductors.

Tape Wrap

A spirally applied tape over an insulated or uninsulated wire.

Tear Strength

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

Teflon

A DuPont Company Trademark for polytetrafluoroethylene.

Tefzel

The DuPont Company Tradename for a fluorocarbon material typically used as the insulation on wirewrap wire.

Glossary

Temperature Rating

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

Tensile Strength

The pull stress required to break a given specimen.

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 placed across a temperature differential will develop an emf output.

Thermocouple Element

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

Thermocouple Extension Cable

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

Thermocouple Extension Wire

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

Thermocouple Wire (Grade)

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

Thermoplastic

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

Thermoset Plastic

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

Tinned Copper

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

Tray

A cable tray system is a unit of assembly of units or sections, and associated fitting, made of non-combustible materials forming a rigid structural system used to support cables. Cable tray systems (previously termed continuous rigid cable supports) include ladders, troughs, channels, solid bottom trays, and similar structures.

Tray Cable

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

Triple (Triad)

A cable consisting of three insulated single conductors twisted together.

Twinning

Synonymous with pairing.

UL

Abbr: Underwriters Laboratories; an independent organization, which operates a listing service for electrical and electronic materials and equipment.

Volt

A unit of electromotive force.

Voltage

The term most often used in place of electromotive force, potential, potential difference, or voltage drop to designate the electric potential that exists between two points and is capable of producing a current when a closed circuit is connected between two points.

Voltage Rating

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

Wire

A slender rod or filament of drawn metal.