

Glossary of Terms

Abrasion Resistance

Ability of wire, cable or material to resist surface wear.

AC Alternating Current

Current in which the charge-flow periodically reverses and is represented by: $I = I_0 \cos(2\pi f + \phi)$ [$I = I_m \cos(\omega t + \phi)$] where I is the current, I_0 is the amplitude, f the frequency, ϕ the phase angle.

Ambient Temperature

The temperature of a medium (gas or liquid) surrounding an object.

Ampere (A)

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

ANSI

Abbreviation for American National Standards Institute.

Armorfast

Cordset with metal clad cable (NEC type MC)

Armored Cable

A cable provided with a wrapping of metal for mechanical protection.

AWG (American Wire Gauge)

The standard system used for designating wire diameter. The lower the AWG number, the larger the diameter. Also called the Brown and Sharpe (B&S) wire gauge.

AWM (Appliance Wiring Material)

A UL designation covering insulated wire and cable for internal wiring of appliances and equipment.

Binder

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

Braid

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

Cable

A stranded conductor with or without insulation and other coverings (single-conductor cable), or a combination of conductors (multiple-conductor cable).

Color Code

Wire or circuit identification by color, utilizing solid colors, tracers, braids, surface printing, etc.

Contact Holder

Insulating device that holds the contacts in their proper position

Conductivity

The ability of a material to allow electrons to flow, measured by the current per unit of voltage applied. It is the reciprocal of resistivity.

Conductor

A wire (or combination of wires not insulated from one another) suitable for carrying electric current.

Conduit

A tube or trough in which insulated wires and cables are run.

Connector

A device used to provide rapid connect / disconnect service for electrical cable and wire terminations.

Contact

The parts of a connector that actually carry the electrical current and that are touched together or separated to control the flow.

Cable

A multiconductor cable made for operation in control circuits.

Cordset

Portable cord fitted with a wiring device at one or both ends.

Cord

A small, flexible insulated cable.

CPE (Chlorinated Polyethylene)

A flexible material with high tear strength and good resistance to most inorganic chemicals. It is inherently difficult to ignite. A Thermoset plastic.

Creepage

The conduction of electricity across the surface of a dielectric.

Crimp Termination

A connection in which a metal sleeve is secured to a conductor by mechanically crimping the sleeve with pliers, presses or automated crimping machines.

Current (I)

The rate of transfer of electricity. Practical unit is the ampere, which represents the transfer of one coulomb per second. In a simple circuit, current (I) produced by a cell or electromotive force (E) when there is an external resistance (R) and internal resistance (r) is: $I = E / (R + r)$

Current Carrying Capacity

The maximum current an insulated conductor can safely carry without exceeding its insulation and jacket temperature limitations.

Cut-Through Resistance

The ability of a material to withstand mechanical pressure, usually a sharp edge or small bending radius, without separation.

Dielectric Strength

The voltage that an insulator can withstand before breakdown occurs. Usually expressed as a voltage gradient (such as volts per mil).

Direct Current (DC)

An electric current that flows in only one direction.

Drain Wire

In a cable, the bare wire laid over the component or components and used as a ground connection.

Earth

British terminology for zero-reference ground.

EPDM

Ethylene-propylene-diene monomer rubber. A material with good electrical insulating properties. A Thermoset plastic.

euofast[®]

M12 threads, single key, 2 - 6, 8, 10, 12 pin

Extruded Cable

Cable with conductors that are uniformly insulated and formed by applying a homogeneous insulation material in a continuous extrusion process.

Fillers

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

firefast[®]

High temperature protective sleeving.

flexlife-10[®]

Unique cable designed for robotic and other continuous motion applications

Ground

An electrical connection to the earth, generally through a ground rod. Also a common return to a point of zero potential, such as the metal chassis of equipment.

Glossary of Terms

Ground Loop

A completed circuit between shielded pairs of a multiple pair created by random contact between shields. An undesirable circuit condition in which interference is created by ground currents when grounds are connected at more than one point.

Ground Potential

The potential of the earth. A circuit, terminal or chassis is said to be at ground potential when it is used as a reference point for other potentials in the system.

Hygroscopic

Capable of absorbing moisture from the air.

IEC

European Standardization agency; International Electrotechnical Commission.

Input

A signal (or power) which is applied to a piece of electrical apparatus or the terminals on the apparatus to which a signal or power is applied.

Insulation

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

ITC

Instrument Tray Cable. NEC classification for cable resistant to the spread offire and suitable for use in cable trays. 150 V rating.

Irradiation

In insulation, the exposure of the material to high-energy emissions for the purpose offavorably altering the molecular structure.

Jacket

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

LED

Light Emitting Diode used to indicate device status.

Line Voltage

The value of the potential existing on a supply or power line.

Load

A device that consumes power from a source and uses that power to perform a function.

MC

Metal Clad Cable. NEC classification for cable resistant to crush and impact based on an outer covering of metal.

microfast °

½"-20UNF threads, dual key, 2-6 pin

minifast °

7/8"-16UN threads, 2 - 6 pin

minifast B size

1"-16UN threads, 6-8 pin

minifast C size

1 1/8"-16UN threads, 9, 10, 12 pin

Moisture Resistance

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

Molded Plug

A connector molded onto either end of a cord or cable.

MOV

Acronym for Metal Oxide Varistor. A

solid state device used to suppress voltage surges \ spikes

MSHA

Mine Safety and Health Administration

multibox °

Junction boxes, 4, 6, 8 and 16 port

multifast

M23 threads, 12, 16 and 19 pin or M27 threads, 26 and 28 pin

Mylar

DuPont trademark for polyester film.

National Electrical Code (NEC)

A set of regulations governing construction and installation of electrical wiring and apparatus in the United States, established by the American National Board of Fire Underwriters.

NEMA

National Electrical Manufacturers Association.

Neoprene

A synthetic rubber with good resistance to oil, chemical, and flame. Also called polychloroprene. A Thermoset plastic.

Noise

In a cable or circuit, any extraneous signal that tends to interfere with the signal normally present in or passing through the system.

NPN Output

Transistor output that switches the common or negative voltage to the load (current sinking). Load connected between output and positive supply.

Ohm (Ω)

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

Ohm's Law

$E = I \times R$. Voltage (E) is directly proportional to the product of current (I) and resistance (°) of circuit.

Output

The useful power or signal delivered by a circuit or device.

PA (Polyamide, Nylon)

An abrasion-resistant thermoplastic with good chemical resistance, also known as polyamide.

pentafast °

M5 threads, 3 and 4 pin

picofast °

Snap lock or M8 threads, 3, 4 and 6 pin

Plastic

High-polymeric substances, including both natural and synthetic products, but excluding the rubbers, that are capable offlowing under heat and pressure.

Plug

A connector associated with being attached to a cable.

PLTC

Power Limited Tray Cable. NEC classification for cable resistant to the spread offire and suitable for use in cable trays. 300 V rating.

PNP Output

Transistor output that switches the positive voltage to the load (current sourcing). Load connected between output and common.

Glossary of Terms

POM (Polyoxymethylene, Acetal, Delrin)

Polyoxymethylene - a crystalline thermoplastic polymer with a high melting point. It is suitable for mechanical parts or electrical insulators that require structural strength at above normal temperatures.

Potting

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

PUR (Polyurethane)

Broad class of polymers noted for good abrasion and solvent resistance.

PVC (Polyvinyl Chloride)

A general-purpose thermoplastic widely used for wire and cable insulation and jackets.

powerfast[®]

1 3/8"-16 threads, 2, 3 and 4 pin or M23 threads, 6, 7 and 9 pins or M40 threads, 4-pin.

Resistance[®]

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

Retractable Cord

A cord having a specially treated jacket or insulation so that it will retract like a spring. Retractility may be added to all or part of a cord's length.

RoHS

(Restriction of Hazardous Substances) See page S2.

Rubber

A general term used to describe wire insulation made of thermosetting elastomers, such as natural or synthetic rubbers, neoprene, Hypalon, CPE butyl rubber and others.

Serve

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

Shield

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

Signal

Any visible or audible indication that can convey information. Also, the information conveyed through a communication system.

SJOOW

Junior hard service, rubber insulated, portable cord with oil resistant rubber outer jacket. Stranded copper conductors with separator and individual oil and water resistant rubber insulation. Two or more color coded conductors cabled with filler, wrapped with separator and rubber jacketed overall. 300 V.

Solid Conductor

A conductor consisting of a single wire.

Solid State

Pertains to circuits and components using semiconductors without moving parts. Example: transistors, diodes, SCR, etc.

SOOW

Heavy duty, rubber-insulated portable cord with oil resistant rubber outer jacket. Stranded copper conductors with separator and individual oil and rubber insulation. Two or more color-coded conductors cabled with filler, wrapped with separator and rubber jacketed overall. 600 V.

STOW

Heavy duty, PVC insulated, portable cord with oil resistant PVC outer jacket. Stranded copper conductors, PVC insulation. Two or more color coded conductors cabled with filler, wrapped with separator and PVC jacketed overall. Approved for outdoor use. 600 V.

Stranded Conductor

A conductor composed of groups of wires twisted together.

Temperature Rating

The maximum temperature at which a material may be used in continuous operation without loss of its basic properties.

Thermoplastic

A material that will soften, flow or distort appreciably when subjected to heat and pressure.

Thermoset

A material that hardens or sets when heat is applied, and which, once set, cannot be re-softened by heating. The application of heat is called "curing".

TPE

Thermo Plastic Elastomer. Broad class of polymers noted for flexibility and weld slag resistance.

TPR

Thermo Plastic Rubber. Another name for TPE.

Twisted Pairs

A cable composed of two small, insulated conductors twisted together without a common covering.

Versafast[™]

M16 threads, 5, 6, 7, 8, 12, 14 and 19 pin

V*fast[®]

DIN 43650, type A, B, I and C

VDE

German approval agency.

Volt (V)

A unit of electrical pressure. One volt is the electrical pressure that will cause one ampere of current to flow through one ohm of resistance.

Voltage

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

Voltage Rating

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

VW-1

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

Wicking

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