



A

A

Common abbreviation for ampere.

Abrasion Resistance

Ability of material or cable to resist surface wear.

AC

Alternating current.

AC Cable (Armored Cable)

Type AC cable consists of 2 to 4 copper conductors in sizes 14 gauge to 1 AWG inside an interlocked metal armor of steel or aluminum construction. A 16 AWG aluminum bonding wire is inside of, and in physical contact with, the metal armor providing a low-impedance fault-return path required for the operation of over current protection devices. The bonding wire is unique to Type AC cable and allows the outer metal armor, in conjunction with the bonding wire, to be used as the equipment ground.

Accelerated Aging

A test performed on material or cable meant to duplicate longtime environment conditions in a relatively short amount of time.

Accelerated Life Test

A test in which certain factors such as voltage, temperatures, 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, temperatures, etc.

Acceptance Test

Made to demonstrate the degree of compliance with specific requirements.

A.C. Resistance

The total resistance offered by a device in an alternating current circuit due to inductive and capacitive effects, as well as the direct current resistance.

Active Current

In an alternating current, a component in phase with the voltage: the working component as distinguished from the idle or watt-less component.

Active Pressure

In an A.C. circuit, the pressure, which produces a current, is distinguished from the idle or watt-less component.

Adhesion

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

Adjacent Conductor

Any conductor next to another conductor either in the same multiconductor cable layer or in adjacent layers.

Administrative Authority

An organization exercising jurisdiction over the National Electrical Safety Code.

Admittance

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

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 various conditions).

AL

The chemical symbol for aluminum.

Alloy

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

Alternating Current (AC)

Electrical current that continually reverses its direction. It is expressed in cycles per second (hertz or Hz).

Alternating Current Resistance

The resistance offered by any circuit to the flow of alternating current.

Alternating Voltage

The voltage developed across a resistance or impedance through which an alternating current is flowing.

Ambient Temperature

Any all-encompassing temperature within a given area.

American Wire Gauge

A standard used to describe the physical size of a conductor.

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

Ampere's Law states that for any closed loop path, the sum of the length elements times the magnetic field in the direction of the length element is equal to the permeability times the electric current enclosed in the loop.

Anneal

The process of controlled heating and cooling of a metal to achieve predetermined characteristics as to tensile strength and elongation. Annealing copper renders it less brittle.

ANSI

The American National Standards Institute.

Appliance Wire

Appliance wiring material is a classification of Underwriters Laboratories, Inc., covering insulated wire and cable intended for internal wiring of appliances and equipment.

Approved

(1) Acceptable to the authority having legal enforcement. (2) Per OSHA: a product that has been tested to standards and found suitable for general application, subject to limitations outlined in the nationally recognized testing lab's listing.

Area of Conductor

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

ARRA 2009

American Recovery and Reinvestment Act of 2009.

ASA

The American Standards Association: former name ANSI.

ASME

The American Society of Mechanical Engineers.

ASTM

The American Society for Testing and Materials.

AWG

Abbreviation for American Wire Gauge. A standard system used in the United States for designing the size of an electrical conductor based on geometric progression between two conductor sizes. Based on a circular mil system. 1 mil equals .001 inch.

AWM

Designation for appliance wiring material.

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.

Bare Conductor

A conductor having no covering. A conductor with no coating or cladding on the copper.

Bending Radius

A term used to denote the minimum radius that an insulated cable or cables may be safely bent during installation.

Binder

A helically-applied tape or thread used for holding assembled cable components in place awaiting subsequent manufacturing operations.

Branch Joint

A cable joint used for connecting one or more cables to a main cable.

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.

Breaking Strength

The maximum load that a conductor attains when tested in tension to rupture.

Breakdown Voltage

The voltage at which the insulation between two conductors break down.

Breakout

The point at which a conductor or group of conductors breaks out from a multi-conductor cable to complete circuits at various points along the main cable.

Brake Wire

Wires used in the manufacturing of trailers to supply current to the electrical brake system.

B&S

Abbreviation for "Brown and Sharp Wire Gauge" same as American Wire Gauge.

BSC

Bare soft copper, uncoated annealed copper.

Building Wire

Wire used for light and power, 600 volts or less.

Bunch Stranding

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

Bunch-stranded Conductor

A conductor composed of wires twisted together with a given length and the direction of lay in such manner that the respective wires at successive cross sections along the length of the conductor do not necessarily form a symmetrical geometric pattern, nor necessarily occupy the same positions relative to each other.

Buried Cable

A cable installed directly into the earth without use of underground conduit. Also called "direct-burial 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 in which two wires from opposite ends butt against each other, or against a stop, in the center of a splice.

C

C°

Degrees Celsius.

Cable

A group of individually insulated conductors in twisted or parallel configuration, with or without an overall coating.

Cabling

The twisting together of two or more insulated conductors to form a cable.

Cable Assembly

A completed cable and its associated hardware.

Cable Core

The portion of a cable lying under the outer protective covering.

Cable Filler

The material used in multiple conductor cables to occupy the spaces formed by the assembly of components: thus forming a core of the desired shape (normally cylindrical).

Cable Jacket

The material, usually an extruded plastic or elastomer, applied outermost to a wire or cable to provide mechanical and environmental protection. Very often referred to as a sheath.

Cable Sheath

The material, usually an extruded plastic or metal tape jacket, applied outermost to a wire or cable to provide mechanical and environmental protection. Very often referred to as a jacket.

Capacitance

The ratio of the electrostatic charge on a conductor to the potential difference between the conductors required to maintain that charge.

Capacitive Coupling

Electrical interaction between two conductors caused by the capacitance between them.

Capacitive Reactance

The opposition to alternating current due to the capacitance of a capacitor, cable or circuit. It's measured in ohms and is equal to $1/6.28fC$ where f is the frequency in Hz and C is the capacitance in farads.

Capacitor

Two conducting surfaces separated by a dielectric material. The capacitance is determined by the area of the surface, types of dielectric, and spacing between the conducting surfaces.

Certificate of Compliance (C of C)

A certificate that 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 the Quality Control Department, which shows that the product being shipped conforms to test specifications.

CFR

Code of Federal Regulations, the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal Government.

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.

Circuit

A completed path, over which electrons can flow, from the negative terminal of a voltage source to the positive terminal of the same voltage source.

Circuit Size

A term commonly used for wire sizes 18 AWG thru and including 10 AWG.

Circular Mil

The area of a circle one one-thousandth of an inch in diameter. Used in determining the cross-sectional area of a wire.

CMA

Circular Mil Area.

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 a dielectric.

Cold Bend Test

A test whereby a sample of wire or cable is wound around a mandrel of a specified size within a cold chamber, at a specified temperature for a given number of turns at a given rate of speed. The sample is then removed and examined for deterioration in the materials and construction.

Cold Test

Any test to determine the performance of cables during or after subjection to a specified low temperature for a specified time.

Color Code

A system for circuit identification through use of solid colors and contrasting tracers.

Combination Stranded Conductor (Combination Unilay)

A conventional concentric conductor in which the wires in the outer layer are larger in diameter than the wires in the inner layer or layers and the diameters of the all wires are within plus and minus 5 percent of the nominal wire diameter for the same size non-combination stranded conductor.

Compact Stranded Conductor

A unidirectional or conventional conductor manufactured to a specified diameter, approximately 8 to 10% below the nominal diameter of a non-compact conductor of the same sectional area.

Compatibility

The ability of dissimilar materials to exist in mutual proximity or contact without changing their physical or electrical properties.

Composite (Clad) Wire

A wire having a core of one metal to which is fused an outer layer or shell of one or more different metals.

Compound

A term used to designate an insulating and jacketing material made by mixing two or more ingredients. To compound the mixing together of two or more different materials to make one material.

Compressed Stranded Conductor

A conventional concentric conductor manufactured to a diameter not more than 3% below the nominal diameter of a non-compressed conductor of the same cross-sectional area.

Concentric Lay Cable

A multiple conductor cable composed of a central core surrounded by one or more layers of helically laid insulated conductors. In the most common concentric lay constructions, all conductors are of the same size and the central (core) component is a single conductor. The direction of the lay is reversed for successive layers.

Concentric Stranding

A group of uninsulated wires twisted so as to contain a center core with one or more distinct layers of spirally wrapped, uninsulated wires laid overall to form a single conductor. When more than one layer is present each layer must have a different lay length.

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 circular insulation.

Conductance

A measure of the ability of a conductor configuration to conduct an electrical charge. Conductance is a ratio of the current flow to the potential difference causing the current flow. It is the reciprocal of resistance.

Conductivity

A term used in describing the capability of a material to carry an electrical charge. Usually expressed as a percentage of copper conductivity - copper being one hundred percent (100%). Conductivity is expressed for a standard configuration of conductor.

Conductor

Any material capable of carrying an electrical charge easily. The most common materials for wire and cable applications are aluminum and copper (bare or coated).

Conductor Core

The center strand or member about which one or more layers of wires or members are laid helically to form a concentric-lay or rope-lay conductor.

Conduit

Typically a tube for protecting electrical wires or cables. It may be solid or flexible, metallic or non-metallic.

Connector

A device used to physically and electrically connect two or more conductors.

Contact

The part of a connector that actually carries the electrical current and that 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 (CV)

Simultaneous extrusion and vulcanization of rubber like wires in a cable.

Continuity Check

A test performed on a length of wire or cable to determine if the electrical current flows continuously throughout the length.

Control Cable

A multiconductor cable made for operation in control or signal circuits.

Cord

A small, flexible, insulated cable.

Core

In cables, a component or assembly of components over which additional components (shields, sheath, etc.) are applied.

Corrosion

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

CPE

Jacketing compound based on chlorinated polyethylene.

CPS

Cycles per second, this is an obsolete designation and is now called Hertz (Hz). The SI unit is the Hertz, one cycle per second.

Cross Sectional Area

The area of the cut surface of an object cut at right angles to the length of the object.

Cross-Linked

Intermolecular bonds produced between long chain molecules in a material to increase molecular size by chemical or electron bombardment means, resulting in a change in physical properties in the material - usually improved properties.

Crosstalk

Signal interference bonds between long-chain thermoplastic polymers by means of chemical or electron bombardment. The properties of the resulting thermosetting material are usually improved.

CSA

Abbreviation for Canadian Standards Association. The Canadian counterpart of the Underwriters Laboratories.

CT

Cable tray frame rating.

CU

Copper.

Current

The rate of transfer of electricity usually expressed in amperes.

Current Carrying Capacity

The current a conductor of a given size is capable of carrying safely without exceeding its own insulation and jacket temperature limitations.

Current Charging

The current needed to bring the cable up to voltage; determined by the capacitance of the cable. The charging current will be 90° out of phase with the voltage.

Current Density

The current per cross sectional area in units of amperes/meters.

Current Penetration

The depth a current of a given frequency will penetrate into the surface of a conductor carrying the current.

Current Rating

The maximum continuous electrical flow of a current recommended for a given wire situation. Expressed in amperes.

Cut-Through Resistance

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

Cycle

The complete sequence of alteration or reversal of the flow of an alternating electric current.

D

Damp Location

An outdoor location that is partially protected from weather or an indoor location, subject to a moderate degree of moisture, such as a barn or basement.

D.C.

Direct current.

DCR

Direct current resistance.

Derating Factor

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

Die

A device used in the drawing of the wire; that element through which the wire is drawn to achieve a predetermined diameter. A mold used to form the plastic compound round a wire or cable.

Dielectric

Any insulating material between two conductors that permits electrostatic attraction and repulsion to take place across it.

Dielectric Absorption

The 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

Any change in the properties of a dielectric that causes it to become conductive. Normally the failure of an insulation because of excessive voltage.

Dielectric Constant

That property (K) of an insulating material which is the ratio of the parallel capacitance (C) of a given configuration of electrodes with the material as the dielectric, to the capacitance of the same electrode configuration with a vacuum as the dielectric.

Dielectric Strength

A term used to describe the limit, without damage of an insulating material, to an applied voltage potential.

Dielectric Strength Testing

A common safety test for electrical products often called hi-pot testing. Voltages many times higher than normal operating voltages are applied across the insulation. This test not only proves the integrity of the insulation system but increases product reliability by detecting faulty workmanship.

Direct-Burial Cable

A cable installed directly in the earth.

Direct Capacitance

The capacitance measured directly from conductor to conductor through a single insulating layer.

Direct Current

An electrical current that flows in one direction only.

Direct Current Resistance (D.C.R.)

The resistance offered by any circuit to the flow of direct current.

Direction of Lay

The lateral direction in which a conductor or group of conductors of a cable run over the top of the cable as the elements recede from the observer looking along the axis of the cable. Direction of lay is expressed as left-hand or right-hand. ASTM symbols used to indicate directions of lay are s for left-hand and z for right-hand.

DOD

Department of Defense, part of the U.S. government executive branch that handles military matters, including data communications; responsible for some LAN associated protocols and standards such as TCP/IP.

Drawing

In the manufacture of wire, pulling the metal through a die or series of dies for reduction of diameter to specified size.

Duct

An underground or overhead tube used for carrying electrical conductors.

E

E

Voltage, electromotive force.

Earth

British terminology for zero-reference ground.

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 center displacement of one circle within the other.

Eddy Current

An electric current induced in a conductor by a varying magnetic field.

EIA

Electronic Industries Association.

Elastomer

An elastic, rubber-like substance.

Electro Motive Force

That force which determines the flow of electricity; a difference of electric potential.

Electrolytic Tough Pitch

A term describing the method of raw copper preparation to ensure a good physical and electrical grade copper finished product.

Elongation

The amount that a conductor can stretch before breaking when a pulling force is applied.

Embossing

A marker identification by means of thermal identification leaving raised lettering on the sheath of cable.

Emergency Overload

Load that occurs when larger-than-normal currents are carried through a cable or wire over a certain period.

Ends

In braiding, the number of essentially parallel wires or threads on a carrier.

EMT

Electrical Metallic Tubing.

Energize

To apply rated voltage to a circuit or device in order to activate it.

Environment

(1) The universe within which a system must operate, (2) all the elements over which the designer has no control and that affect a system or its inputs and outputs.

EPA

Environmental Protection Agency, the federal regulatory agency responsible for keeping and improving the quality of our living environment - mainly air and water.

Equilay

More than one layer of helically laid wires with the direction of lay reversed for successive layers, both with the length of lay the same for each layer.

ERQ

Economic Run Quantity.

Ethylene Propylene Rubber (EPR)

An ozone-resistant rubber consisting primarily of ethylene propylene copolymer (EPM) or ethylene propylene diene terpolymer (EPDM).

ETL

Electrical Testing Laboratory.

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.

F**F°**

Fahrenheit.

FAA

Federal Aviation Association.

Farad

A unit of electric capacity.

Fault Ground

A fault to ground.

FCC

Federal Communications Commission.

Feeder

The circuit conductor between the service equipment and the final branch circuit over current device.

Fiber

A thread-like structure. Also, a single discrete element used to transmit optical (light wave) information.

Fiber Optics

A light wave or optical communications system in which electrical information is converted to light energy, transmitted to another location through optical fibers, and is then converted back into electrical information.

Field

A region of space characterized by the existence of a force generated by electric charge.

Filled Cable

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

Filler

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

Film

A thin plastic sheet.

Fixture Wire

A conductor used in lighting or similar equipment or used to connect a lighting fixture to branch circuit conductors. Common types include TF, TFN, and TFFN.

Flame Resistance

The ability of a material to restrict the spread of combustion to a low rate of travel, so that the flame will not be conveyed.

Flame Retardant

A chemical added in insulation materials to make them less combustible, such as antimony oxide (to PVC) or alumina trihydrate.

Flammability

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

Flammability Test

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

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.

Flexible

The quality of a cable or cable component that 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 ease with which a wire or cable can be bent.

Flex Life

Ability of a conductor, wire or cable to withstand repeated bending.

FPM

Feet per minute.

FT-1

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

Frequency

Number of times an alternating current reverses itself in one second. Expressed in Hertz (Hz), which is one cycle per second.

G

Galvanized Steel Wire

Steel wire coated with zinc.

Gauge

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

GFI

Ground Fault Interrupter, a protective device that detects abnormal current flowing to ground and then interrupts the circuit.

Ground

An electrical term meaning to connect to the earth or other large conducting body to serve as an earth thus making a complete electrical circuit.

Grounded Conductor

A system of circuit conductor that is intentionally grounded; usually colored white.

Grounded Neutral

Neutral wire that is mechanically connected to ground.

Grounding Conductor

A conductor used to connect equipment or the grounded circuit of a wiring system to a grounding electrode of electrodes; usually colored green.

H

Hard Drawn Copper Wire

Copper wire that has been drawn to size and not annealed.

Harness

An arrangement of wires and cables, usually with many breakouts, which have been together or pulled into a rubber or plastic sheath, used to interconnect an electric circuit.

HCF

Health Care Facility.

Hazardous Location

Ignitable vapors, dust, or fibers that may cause fire or explosion as defined by the NEC.

Heat Distortion

Distortion or flow of a material through or configuration due to the application of heat.

Heat Endurance

The time of heat aging that a material can withstand before failing a specific physical or electrical test.

Heat Shock

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

Helical Stripe

A continuous, colored stripe applied to a conductor for circuit identification.

Hertz (Hz)

Cycles per second. A cycle that occurs once every second has a frequency of 1 hertz. The bandwidth of the average phone line is between 300 and 3000 cycles per second.

Hi Pot

DC high potential testing of medium and high voltage cables.

High Voltage

Generally, a wire or cable with an operating voltage of over 35,000 volts.

Hook-Up Wire

A single insulated conductor used for low current, low voltage (usually under 600 volts) applications within enclosed electronic equipment.

Horizontal Stripe

A colored stripe running horizontally with the axis of a conductor, sometimes called a longitudinal stripe, used as a means of circuit identification.

Hygroscopic

The property of a material to absorb moisture from the air.

IACS

International Annealed Copper Standard.

IAEI

International Association of Electrical Inspectors.

ICEA

Insulated Cable Engineers Association.

ICEA S-95-658-1999

Standard for non-shielded power cables rated 2000 volts or less for the distribution of electrical energy covers THHN/THWN, XHHW and RHH/RHW/USE cables.

ID

Internal Diameter.

IEC

International Electro-technical Commission. Similar to the ISO in structure and scope.

IEEE

Institute of Electrical and Electronic Engineers.

IMC

Intermediate Metal Conduit.

Impedance

The ratio of the effective value of the potential difference between two terminals to the effective value of the current flow produced by that potential difference.

Induced Current

An electric current set up in a circuit by cutting lines of force. A current caused by electromagnetic induction.

Inductance

That property of an electrical circuit by virtue of which a varying current induces an electromotive force in that circuit, or in an adjacent circuit.

Insulation

A non-conductive material usually surrounding or separating two conductive materials.

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 (IR)

That property of an insulating material which resists electrical current flow through the insulating material when a potential difference is applied.

Insulation Thickness

The wall thickness of the applied insulation.

Interstice

In cable construction, the space, valley or void left between or around the cable components.

ISO

International Organization for Standards.

J**Jacket**

A non-metallic covering over a wire insulation or an assembly of components. An overall jacket on a multiconductor cable is also referred to as a sheath.

Jumper Cable

A short length of conductor used to make a connection between terminals or around a break in a circuit, or around an instrument. Usually a temporary connection.

K

K

Constant used to denote insulation resistance.

KCMIL

One thousand circular mils.

Kilo

A numerical prefix denoting 1,000.

Kilocycle

A term denoting 1000 cycles.

Kilohertz

A term denoting one thousand cycles.

Kilovolt (KV)

A term denoting one thousand volts.

Kilowatt

A term denoting one thousand watts.

KVA

Kilovolt amperes (1000 volt x amperes).

KW

Kilowatt-1000 watts power.

KWH

Kilowatt hours (1000 watt hours).

L

Lay

Often referred to as pitch. The position of a helical element (conductor) of a cable in the axial length of a turn of the helix of that element.

Lay Direction

The twist in the cable as indicated by the top strands while looking along the axis of the cable away from the observer. Described as "right hand" or "left hand".

Lay Length

A term used in cable manufacturing to denote the distance of advance of one element (conductor) of a group of spirally twisted elements, in one turn measured axially.

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.

Leakage Current

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

LEED

Leadership in Energy & Environmental Design; program of the U.S. Green Building Council.

Life Cycle

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

Listed

Conductors or other equipment included in a list published by a nationally recognized testing laboratory.

Longitudinal Wrap

Tape applied longitudinally with the axis of the core being shielded.

LS

Low smoke.

Lug

A term commonly used to describe a termination, usually crimped or soldered to the conductor, with provision for screwing down to a terminal.

M

MC Cable (Metal-Clad)

Type MC cables have 2 or more solid or stranded copper conductors in sizes 18AWG and larger. The construction of 600 Volt MC cable consists of copper circuit and grounding conductors covered with thermoplastic insulation, an overall polypropylene cable assembly tape and outer galvanized steel or aluminum interlocked armor.

MCM

Thousand circular mils; e.g. 500 MCM is 500,000 circular mils.

Megaohm

One million ohms.

Megohmmeter

An instrument used to measure insulation resistance (Readings are in megohms).

Member

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

Melt Extrude

To heat a material above its crystalline melt point and extrude it through an orifice.

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.

MFT

Abbreviation for one thousand feet.

MHO

An electrical unit of conductivity, being the conductivity of a body with the resistance of one ohm.

MHz

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

MIL

Abbreviation for military as in military specification for wire or cable products.

Mil

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

Moisture Absorption

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

Moisture Resistance

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

Monomer

The basic chemical unit used in building a polymer.

MTW

Thermoplastic-insulated machine tool wire. 90°C to 105°C, 600V.

Multi-conductor

More than one conductor within a single cable complex.

Mutual Capacitance

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

N

National Electrical 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

National Electrical Code.

NEMA

National Electrical Manufacturers Association.

NFPA

National Fire Protection Association.

NM

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

NM-B

Non-metallic sheathed cable, plastic covered. For dry use, 90°C.

NM-C

Non-metallic sheathed cable, plastic or neoprene covered. Wet or dry use, 60°C, and corrosive applications.

Nylon

A group of polyamide polymers that are used for wire and cable jacket.

O

OD

The overall diameter of a cable, including conductor(s), insulation(s), jacket (if used) and concentric neutral (if used).

OEM

Original Equipment Manufacturers.

Off-Center

Conductor displaced within the cross-section of its insulation.

Ohm

A unit of electrical resistance, the resistance of a circuit in which a potential difference of one volt produces a current of one ampere.

Ohm-pound/mile

A unit of weight resistivity expressing the resistance of a wire one pound in weight and one mile in length.

Oil Aging

Cable aged in an accelerated manner by placement in an oil bath and heated to a pre-set temperature for a slated time.

Oil Resistance

The ability of a conductor or cable insulation to resist physical degradation caused by exposure to oil.

OSHA

Occupational Health and Safety Administration.

OSHA Occupational Safety and Health Act 1970

Administered by U.S. Dept. of Labor which establishes Standards and safety requirements which all businesses must meet.

Overall Diameter

The finished diameter of a wire or cable.

Overcurrent

The current which causes an excessive temperature rise in a conductor.

Overlap

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

Oxidation

The process of uniting a compound with oxygen, usually resulting in an unwanted surface degradation of the material or compound.

P

Pair

Two insulated wires of a 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.

Pay-Off

The process of feeding a cable of wire from a bobbin, reel, or other package. In addition, a device used for paying out wire or cable into a piece of equipment or machinery.

Peak Voltage

The maximum instantaneous voltage.

Percent Conductivity

The conductivity of a material expressed as a percentage of that of copper.

Phase

A particular stage or point of advancement in an electrical cycle. The fractional part of the period through which the time has advanced measured from some arbitrary point usually expressed in electrical degrees where 360° represents one cycle.

Phase Shift

A change in phase of a voltage or current after passing through a circuit or cable.

Pigment

A chemical added to the insulation compounds to impart color for circuit identification.

Pitch Diameter

The diameter of a circle passing through the center of the conductors in any layer of a multi-conductor cable.

Plastic Deformation

Change in dimensions under load that is removed.

Plasticizer

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

Polyester

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

Polyethylene

A thermoplastic material having the chemical identity of polymerized ethylene.

Polymer

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

Polypropylene

A thermoplastic polymer of propylene.

Polyvinyl Chloride (PVC)

A thermoplastic material composed of polymers of vinyl chloride, which may be rigid or elastomeric, depending on specific formulation.

Power Cables

Cables of various sizes, construction, and insulation, single or multi-conductor, designed to distribute primary power to various types of equipment.

Power Factor

The ratio of the power to the effective values of the electromotive force multiplied by the effective value of current in volts and amperes respectively. The cosine of the angle between voltage applied and the current resulting.

PPE

Portable Power Elastomer. Same as type W, except that it is a thermoplastic elastomer insulation and jacket, whereas type W is all thermoset.

Primary Insulation

The first layer of non-conductive material applied over a conductor, whose prime function is to act as electrical insulation.

PSI

Pound per square inch.

Pulling Eye

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

Pulse Cable

A type of coaxial cable constructed to transmit repeated high-voltage pulses without degradation.

Put-Up

Refers to packaging of wire and cable. The term itself refers to the packaged product that is ready to be stored or shipped.

PVC

See Polyvinyl Chloride.

Q

Quad

A four-conductor cable.

R

Rated Temperature

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

Rated Voltage

The maximum voltage at which an electrical component can be operated for extended periods without undue degradation or safety hazard.

Reactance

That part of the impedance of an alternating current circuit which is due to capacitance or inductance.

Registration

Alignment of one object with relation to another. Also called register.

Reinforcement

A material used to reinforce, strengthen, or give dimensional stability to, another material.

Resin

An organic substance of natural or synthetic origin characterized by being polymeric in structure and predominantly amorphous. Most resins, though not all, are of high molecular weight and consist of a long chain or network molecular structure.

Resistance

The property of an electric circuit which determines for a given current the rate at which electric energy is converted into heat and has a value such that the current squared multiplied by the resistance gives the power converted.

RH

Type RH. A rubber or XLPE-insulated conductor for use at 75°C in dry locations.

RHH

Rubber-insulated, heat-resistant building wire, 90°C dry locations, now allowed to be cross-linked polyethylene insulated.

RHW

Rubber-insulated building wire, heat and moisture-resistant, 75°C wet or dry locations, now allowed to be cross-linked polyethylene insulated.

RHW-2

Type RHW-2. A rubber or XLPE-insulated conductor for use at 90°C in dry and wet locations.

Ringling Out

The process of locating or identifying specific conductive paths by means of passing current through selected conductors.

RMS or rms

Root Mean Square.

Rockwell Hardness

A test for determining hardness in which a hardened steel ball or diamond point is depressed into a material and measured.

RoHS

European directive for the Restriction of Hazardous Substances.

Round Wire

A wire circular in cross section as opposed to flat, square, etc.

Rupture

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

S

S

Heavy-duty, flexible, rubber-insulated and jacketed portable cord, 600V.

SAE

Society of Automotive Engineers.

SD

Service drop cable. Two codes, rubber insulated conductors, tape, laid parallel with neutral conductor concentric there-over. Tape and braid overall. Also round construction.

SE

Above ground service entrance cable, not protected against mechanical abuse. Flame-retardant, moisture-resistant covering. Overall neoprene sheath, 60°C-75°C.

Secondary Insulation

A high-resistance dielectric material that is placed over primary insulation to protect it from abrasion.

Self-Extinguishing

The characteristic of a material that 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.

Separator

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

SER

Service round entrance cable (Type SE, Style R).

Series Resistance

Any sum of resistances installed in sequential order within one circuit.

Serve

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

Serving

A wrapping applied over the core of a cable. Servings may be in the form of filaments, fibers, yarn, wires, tape, etc.

SEU

Service Entrance Cable (type SE, style U). (Unarmored).

Sheath

The material, usually an extruded plastic or metal, applied outermost to a wire or cable to provide mechanical and environmental protection. Very often referred to as a jacket.

Shield

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

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.

SIC

Specific Inductive Capacitance. Same as Dielectric Constant.

SIS

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

SJE00W

Same as type SJEW, except oil-resistant insulation and oil-resistant jacket.

SJEW

Junior hard service, rubber-insulated pendant, or portable cord. Same construction as type S, but 300V. Jacket thickness is different. Weather, water, and sunlight resistant.

SJT

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

SJTO

Same as SJT, but with an oil-resistant, thermoplastic outer jacket. 60°C.

Skin Effect

The tendency of alternating current, as its frequency increases, to travel only on the surface of a conductor.

Solid Conductor

A conductor consisting of a single wire.

SO-SEO

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

Spacing

Distance between the closest edges to two adjacent conductors.

Spark Test

A test designed to locate pinholes in an insulated wire by application of an electrical potential across the material for a very short period of time while the wire is drawn through an electrode field.

SPC

Submersible pump cable.

Specific Gravity

The ratio of the weight of any volume of substance to a weight of an equal volume of some substance taken as a standard, usually water for liquids and hydrogen for gases.

Spiral Wrap

The helical wrap of a material over a core.

Square Mil

The area of a square one mil by one mil.

ST

Hard-service, jacketed, same as type S, except all plastic construction, 600V, 60°C to 105°C.

Stabilizer

A metallic compound added to PVC to maintain the integrity of the insulation compound during processing and use.

Strand

A single uninsulated wire.

Strand Lay

The distance of advance of one strand of a spirally stranded conductor, in one turn, measured axially.

Stranded Conductor

A conductor composed of a group of wires, or of any combination of groups of wires.

STO

Same as ST, but with oil-resistant, thermoplastic outer jacket, 600V, 60°C.

STOW

Service cord with oil-resistant, thermoplastic jacket and weather resistant. STOW meets CSA approval for outdoor use. Can be water resistant. UI 600V.

STW

Service cord with thermoplastic and weather resistant jacket, but not oil resistant. Can be water resistant. STW meets GSA approval for outdoor use, 600V.

Sunlight Resistance

The ability of a conductor or cable insulation to resist degradation caused by exposure to ultraviolet rays.

T

Take-Up

The process of accumulating wire or cable onto 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 term used to describe a voltage dielectric test where the specimen to be tested is submerged in a liquid (usually water) and a voltage potential applied between the conductor and liquid as ground.

Tape Wrap

A spirally applied tape over an insulated or uninsulated wire.

TC

Tray cable, per Art. 340 of the NEC.

Temperature Coefficient of Resistivity

The amount of resistance change of a material per degree of temperature rise.

Temperature Rating

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

Temperature Stress

The maximum stress which can be applied to a material at a given temperature without physical deformation.

Tensile Strength

A term denoting the greatest longitudinal tensile stress a substance can bear without tearing apart or rupturing.

Tensile Stress

Force per unit cross sectional area applied to elongate a material.

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 clips.

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, 105°C.

TFFN

Fixture wire; thermoplastic covered, stranded with a Nylon sheath. 90°C.

Thermal Aging

Exposure to a thermal condition or programmed series of conditions for pre-described periods.

Thermal Rating

The maximum and /or minimum temperature at which a material will perform its functions without undue degradation.

Thermal Resistance

That change in the electrical resistance of a material when subjected to heat. Resistance to heat flow from conductors to outer surface of insulation or sheath in a wire of cable.

Thermal Resistivity

Thermal resistance of a unit cube of material.

Thermal Shock

The resulting characteristics when a material is subjected to rapid and wide range changes in temperature in an effort to discover its ability to withstand heat and cold.

Thermocouple

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

Thermoplastic

A material that softens when heated and becomes firm on cooling.

Thermosetting

Term describing insulation that will resoften or distort from its formed shape by heating until a destructive temperature is reached.

THHN

Thermoplastic insulated, high heat resistant, nylon jacketed cable, 90°C dry location, 75°C wet location.

THW

PVC insulated building wire. Flame-retardant, moisture and heat-resistant, 75°C. Dry and wet locations.

THWN

75°C, 600V nylon jacketed PVC insulated building wire. For wet and dry locations.

THWN-2

Same as THWN with 90°C dry, 90°C wet location.

Tinned Copper

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

Tinsel

A type of electrical conductor comprised of a number of tiny threads, each thread having a fine, flat ribbon of copper, or other metal closely spiraled about it. Used for small-sized cables requiring limpness and extra-long flex line.

Tray

A cable tray cable 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, multi-conductor or multi-pair control, signal, or power cable specifically approved under the National Electrical Code for installation trays.

Tubing

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

Twisted Pair

A twisted pair is composed of two small separately insulated wires twisted together without a common covering.

U

UF

Underground feeder cable, thermoplastic insulated 60°C wet or dry locations.

UF-B

Underground feeder cable, thermoplastic insulated with conductors rated at 90°C.

UL

Underwriters Laboratory. Standards and tests that wire must meet in order to receive UL approval.

Ultraviolet Degradation

The degradation caused by long time exposure of a material to sunlight or other ultraviolet rays containing radiation.

Unidirectional Concentric Stranding

A unidirectional stranding wire where each successive layer has a different lay length, thereby retaining a circular form without migration of strands from one layer to another.

Unidirectional Stranding

A conductor stranding configuration in which all layers have the same direction of lay.

Unilay Stranding

A bunched construction having 19, 27, 37, or any number of strands which might be found in a concentric stranding.

USE

Underground service entrance cable, insulated with cross-linked polyethylene jacket, 75°C wet location rating.

USE-2

Same as USE except 90°C wet rating.

V

Valley

Any void between the insulated conductors of a cable or between a cable core and its covering.

Volt

A unit of electrical pressure. One volt is the amount of pressure that will cause one ampere of current in one ohm of resistance.

Voltage

The term most often used to designate electric pressure that exists between two points and is capable of producing a flow of current when a closed circuit is connected between the two points.

Voltage Drop

A term expressing the amount of voltage loss from original input in a conductor of given size and length.

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 wire in conformance with standards or specifications.

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 changes in its chemical structure (for example, cross linking) to become thermoset.

VW-1

A flammability rating established by Underwriters Laboratories for wires and cables that pass a specially designated vertical flame test, formerly designated FR-1. Multi-conductor flat or round portable power cables without a grounding conductor.

W

Wall Thickness

A term expressing the thickness of a layer of applied insulation or jacket.

Water Absorption Test

A method to determine the water absorbed through an insulating material after a given water immersion period.

Watt

A unit of electrical power; the power of one ampere of current pushed by one volt of electromotive force.

WC8-1974

Same as ICEA S68-516.

WC 70

Same as ICEA S-95-658-1999.

Wire

Wire can be divided into two areas: 1. A slender rod or filament of drawn metal; 2. A rod of drawn metal filament covered with insulation. These can be classified as drawn metal wire and insulated wire respectively.

Wire Gauge

A measure of the diameter or size of wires. The sizes are expressed by numbers.

Working Voltage

See Voltage Rating.

X

XHHW

600V cross-linked polyethylene (XLP) insulated building wire. 90°C for dry and damp locations, and 75°C for wet locations.

XHHW-2

600V cross-linked polyethylene (XLP) insulated building wire. 90°C dry, 90°C wet.

XLP

Cross-linked polyethylene.

XLPE

Cross-linked polyethylene.

Y

Yield Strength

The minimum stress at which a material will start to physically deform without further increase in load.