

GLOSSARY

Ampère

The unit expressing the rate of flow of an electric current. It is part of the basic units of the International System of Units. It is the intensity of a constant electric current that, maintained in two parallel rectilinear conductors, of infinite length and negligible circular cross-section, located at a distance of one meter from each other in a vacuum, produces between these conductors a force equal to 2×10^{-7} newton per meter of length.

It is represented with the symbol **(A)**. Name in honor of André-Marie Ampère.

Armour (cables)

A metallic or not element for the purpose of mechanical protection.

- Metallic wire armour

Mechanical protection formed by helical application of wires of: steel, aluminum/alloys or copper/alloys.

- Metallic interlocked tape armour

Mechanical protection formed by the helical application of steel or aluminum tape, shaped and interlocked. Also known as Armaflex.

- Metallic flat tapes armour

Mechanical protection formed by the helical superposition of flat tapes of: steel, aluminum/alloys or copper/alloys.

- Non-metallic armour

Mechanical protection formed by an extruded layer of ductile and resilient polymer.

Armoured cable

Cable that has a metallic or polymeric layer with function of protection insulated conductors from external mechanical damages (rodents, accidental impacts, etc.) or to prevent that any internal anomaly causing the emanation out of dangerous energy levels for applications in explosive atmospheres.

Tray

Cable support consisting of a continuous base, with edges and without cover, which can be perforated or not.

Shield (metallic)

The metallic shield is normally constituted by tape(s), wire braid, concentric layer of wires or extruded metallic sheath or even a combination of some of these.

In medium and high voltage cables, if grounded, the metallic shield has the function of making the electric field radial and confined in the insulation, as well as being a low impedance path for short-circuit currents.

In other types of cables, its function is to prevent electromagnetic interference from outside or to outside.

Honeycomb block

Building block with one or more holes that, by juxtaposition, form one or more ducts.

Cable

A set of stranded wires isolated or not isolated from each other, with or without overall insulation.

Shielded cable

Cable that has metallic layer(s) formed by helically applied tapes, longitudinal tapes and/or helically applied wires and/or extruded metallic

sheath. This layer(s) involves one or more conductors to avoid electromagnetic interference from outside or to outside.

Covered cable

Not insulated cable, it has only a covering, an element for mechanical protection and to avoid sporadic accidental contacts, is not able to electrically isolate the cable's voltage level.

Cable with concentric conductor

Cable that has a concentric conductor to the central axis, to be used as shield and/or ground conductor or neutral conductor.

Insulated cable

Cable consisting of one or more insulated conductors, can also have one or more non-insulated conductors and, if present, shields, fillers, the covering of the assembly (inner covering) armour and protection of the cable (oversheath).

Halogen-free cable

Cable that does not contain halogens in its composition. Usually free of chlorine, which is an element present in PVC cables.

Multiplexed cable

Cable with two or more insulated conductors or unipolar cables, helically arranged, without covering.

Self-supporting multiplexed cable

Cable with two or more insulated conductors or unipolar cables and a support conductor isolated or not, helically arranged, without covering. It is also known as “pre-assembled cable”.

Multipolar cable

Two or more insulated conductors assembled with a common oversheath.

Unipolar cable

Insulated conductor with an oversheath.

Junction box

Box used for passage and/or connections of conductors between themselves and/or devices installed in it.

Cable Channel

Electric line element installed or built in the ground or in the floor, or above the ground or the floor, open, ventilated or closed, with insufficient dimensions for the entry of people, but allow access to the conductors or conduits installed, throughout extension, during and after installation. A cable channel can be part, or not, of the construction of the building. Also known as: flush cable trunking, cable ducting, troughs.

Current rating (of a conductor)

Maximum current that can be conducted continuously by a conductor, under specified conditions, without its temperature in steady state exceeding a specified value.

Circuit (electric)

Set of components (conductors, equipment, etc.) of the installation fed from the same source and protected against over currents by the same protection devices.

Distribution circuit

Circuit that feeds one or more switchboards.

Terminal circuit

Circuit directly connected to user equipment and/or power sockets.

Conductor class (cables)

Indicates the greater or lesser flexibility of a conductor, depending on the diameter/number of wires that form it. Class 1 conductors are rigid and have a single wire, Class 2 is semi-rigid with a few wires, Class 4 is flexible with many wires, Class 5 is extra-flexible with more wires than the previous one and Class 6 is extremely flexible with very many wires.

Oversheath

Is a non-metallic and continuous external enclosure, with no electrical insulation function, designed to protect the wire or cable against external influences.

Conductivity (electrical)

The inverse of electrical resistivity. Facility that presents a conductive material to conduct electric current. It is usually measured in $(\text{m}/\Omega \cdot \text{mm}^2)$.

Protective conductor (PE)

Conductor prescribed against electric shocks and intended to electrically interconnect conductive elements foreign to the installation, ground terminal (or bar) an/or grounded points.

Electrical Conductor

Metallic product generally of cylindrical shape and of much greater length than its largest transversal dimension, used to transport electrical energy or transmit electrical signals.

Insulated conductor

The wire or cable provided only with insulation (without oversheath), which may consist of one or more layers.

PEN conductor

Grounded conductor that combines the functions of protective conductor and neutral conductor.

Short-circuit current

Overcurrent that results of an electrical fault of negligible impedance between live conductors that have a potential difference in normal operation.

Design current (of a circuit)

Current expected to be carried by a circuit during normal operation.

Overload current

Overcurrent in a circuit, without an electrical fault (short circuit).

Cable trunking

Closed and apparent electrical line element, constituted by a base with detachable cover, destined to completely involve electrical conductors provided with insulation, also allowing the accommodation of certain electrical equipment. Can be metallic (steel, aluminum) or insulating material (plastic); the walls can be smooth or perforated and the cover (lid) simply fitted or fixed with the aid of a tool.

Conduit

Closed electrical line element, circular or not, designed to contain insulated electrical conductors, allowing both their insertion and removal. Can be metallic (steel, aluminum) or insulating material (PVC, polyethylene, fiber cement, etc.). They are used in embedded masonry, underground or in apparent electric lines.

Test

Product evaluation to verify some of its properties.

Routine tests (cables)

Routine tests are normally carried out on each manufactured length of cable, with the purpose of demonstrating the integrity of the cable and meeting its respective standards / construction specifications.

Type tests (cables)

The type tests must be carried out only once for each cable project, to demonstrate the satisfactory behavior of the project to meet the intended application.

Sample tests (cables)

They are made in samples taken at random from each manufactured length, to check if the cable meets the project specifications.

Ladder

Cable support consisting of a discontinuous base, formed by crossbars rigidly connected to two longitudinal side rails, without cover.

Construction void

Space existing in the structure or components of a building, accessible only at certain points.

Correction factor (of current rating)

Value by which the current rating obtained under certain conditions, must be multiplied when the installation presents deviations from these conditions.

Power factor

In an electrical circuit, the relationship between active power and reactive power. For sinusoidal waveforms, it is equal to the cosine of the phase difference angle between voltage and current.

Wire

A metallic product, solid and flexible, with an invariable cross section and the length much longer than its cross section. The wires, usually cylindrical, can be used directly as electrical conductors (with or without insulation) or for the manufacture of stranded conductors.

Gallery

Corridor whose dimensions allow people to move freely through it along its entire length, containing support structures for conductors and their junctions and/or other elements of electrical lines.

Impedance

Relationship between the voltage at the terminals of a circuit and the current flowing through them. This definition is applicable only to sinusoidal currents.

Inductance

The property of a circuit in which a magnetic field or flux is generated as a function of the pulsating current flowing through it. The self-induction coefficient L is the measure of this property, which is quantified as the ratio of the electromotive force due to self-induction in relation to the variation of the current over time. The inductance unit in the International System is Henry (**H**).

Electrical installation

Set of devices and associated circuits, with a specific purpose: production, conversion, transformation, transmission, distribution or the use of electricity.

Insulation (cables)

Material of high dielectric strength around conductors, avoiding electrical discharges between them and/or against parts that are, conventionally, with zero grounded potential (devices, installations and people).

Insulation (types of)

- HEPR

High modulus ethylene propylene rubber, thermosetting insulation used in cables such as Gsette Easy and Afumex Flex, and others. Conductor temperature up to 90 °C in steady state and 250 °C in short circuit.

- XLPE

Reticulated polyethylene, thermosetting insulation used in cables such as Voltenax and Voltalene, and others. Conductor temperature up to 90 °C in steady state and 250 °C in short circuit.

- PVC

Polyvinyl chloride, thermoplastic insulation used in Sintenax Flex cables and Superastic Flex insulated conductors, and others. Conductor temperature up to 70 °C in steady state and 160 °C in short circuit.

- LSHF polyolefin of vegetable origin

Thermoplastic insulation (vegetable plastic from sugar cane) used in insulated halogen-free conductors such as Afumex Green. Conductor temperature up to 70 °C in steady state and 160 °C in short circuit.

Line (electrical)

Consisting of one or more conductors with the fixation elements and supports and, when applicable, mechanical protection, designed to transport electrical energy or transmit electrical signals.

Open line

Line in which the conductors are surrounded by unconfined ambient air.

Overhead line

Open line where the conductors are elevated in relation to the ground and away from surfaces other than the respective supports.

Apparent line

Line in which the ducts or conductors are not embedded.

Line on wall or under ceiling

Apparent line in which the conductors are on the wall surface or ceiling, or in their immediate proximity, inside or outside a conduit. The distance between the conduit or cable and the wall or ceiling is less than 0.3 times the outside diameter or the largest external dimension of the conduit or cable.

Embedded line

Line in which the conduits or conductors are embedded in the walls or structure of the building, and accessible only at specified points.

Prefabricated line

Electrical line made up of standard sized parts, containing solid section conductors with mechanical protection, which fit together at the installation site.

Underground line

Line with built with insulated cables, buried directly in the ground or installed in underground ducts buried in the ground.

Moulding

Apparent canalization fixed along surfaces, comprising a fixed base with grooves for placing conductors and a removable cover.

Ohm

Electrical resistance unit in the International System of Units. One Ohm is the value of the resistance that a conductor presents to the passage of an electric current from one Ampère, when the electromotive force between ends is one Volt. It is represented by (Ω). Name in honor of Georg Simon Ohm.

Shaft

Vertical construction void, generally extending over all floors of the building.

Rated motor power

Mechanical power available on motor axis, usually expressed in Watt, represented by **(W)**.

Active Power

Also known as real or useful power, corresponds to the portion of the power that is transformed into work. The active power unit is the Watt **(W)**.

Reactive Power

The reactive power corresponds to the portion of the apparent power that is not converted into useful work. The reactive power unit is the Volt-Ampère **(VA)**.

Apparent Power

The apparent power is the vector sum of the active and reactive power of the circuit. The apparent power unit is the Volt-Ampère **(VA)**.

Voltage drop

Voltage difference between two installation points. It is one of the criteria used to determine the section of the electrical conductors of a circuit. Usually in the longer circuits this is the main criterion used.

Inductive reactance

Inductive reactance is opposition to alternating current (AC) due to the inductance of an electrical circuit. It is measured in Ohm **(Ω)**, designated by the symbol **X_L** and equal to the inductance in Henry **(H)** multiplied by **2π** and multiplied by the frequency in Hertz **(Hz)**.

Electrical resistance

The opposition that a material presents to be crossed by an electric current. The unit of electrical resistance in the International System of Units is Ohm, represented by the Greek letter (Ω).

Thermal resistivity

Property of materials that measures the difficulty in conducting heat through them. It is measured in (**K.m/W**), where K = Kelvin, m = meter and W = Watt.

Dielectric strength (cables)

Maximum stress that the insulation can withstand without breakdown. Usually measured in (**kV/mm**).

Overcurrent

Current whose value exceeds the nominal value. For conductors, the nominal value is the current rating.

Cable supports (horizontal)

Individual supports spaced apart, to which a cable or conduit is mechanically fixed.

Cable insulation voltage

Voltage that must be used for the correct choice of cable, depending on the characteristics of the system. It is expressed as U_0/U , with U_0 the phase-to-ground voltage and U the line voltage (between phases).

Ground

An electrical term meaning to connect to the earth or other large conducting body to serve as an earth in which electrical potential, at any point, is conventionally considered equal to zero.

Volt

The unit (**V**) derived from the International System of Units for electrical potential and electromotive force. Name in honor of Alessandro Volta.