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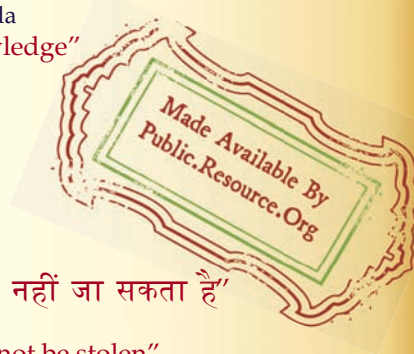
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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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(पहला पुनरीक्षण)

Indian Standard

ELECTROTECHNICAL VOCABULARY

PART 32 ELECTRIC CABLES

(First Revision)

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NATIONAL FOREWORD

This Indian Standard (Part 32) (First Revision) which is identical with IEC Pub 50 (461) (1984) 'International electrotechnical vocabulary — Chapter 461 : Electric cables', issued by the International Electrotechnical Commission (IEC), was adopted by the Bureau of Indian Standards on the recommendation of Basic Electrotechnical Standards Sectional Committee and approval of the Electrotechnical Division Council.

This Indian Standard (Part 32) was first published in 1977. The first revision has been undertaken to align it with the international practice.

Only the English text given in the IEC publication has been retained while adopting as Indian Standard, and as such the page numbers given here are not same as in IEC Publication.

Indian Standard
ELECTROTECHNICAL VOCABULARY
PART 32 ELECTRIC CABLES
(First Revision)

SECTION 461-01 TO 461-05 — COMPONENT PARTS OF CABLES

SECTION 461-01 — CONDUCTORS

461-01-01

conductor (of a cable)

A part of a cable which has the specific function of carrying current.

461-01-02

plain conductor

A metal conductor in which the wire or wires are not coated with an additional metal.

461-01-03

metal-coated conductor

A conductor in which each individual wire is covered with a thin layer of a different metal or metal alloy.

461-01-04

tinned conductor

A metal-coated conductor in which the metal coating is of tin.

461-01-05

metal-clad conductor

A conductor in which each wire consists of an inner part of one metal and a metallurgically bonded outer shell of another metal.

461-01-06

solid conductor

A conductor consisting of a single wire.

Note. — The solid conductor may be circular or shaped.

461-01-07

standard conductor

A conductor consisting of a number of individual wires, all or some of which generally have a helical form.

Note. — The stranded conductor may be circular or shaped.

461-01-08

concentrically stranded circular conductor

A stranded conductor in which the individual wires are assembled together in helical formation, in one or more separate concentric layers and generally with an alternating direction of lay.

461-01-09

bunched conductor

A stranded conductor in which the wires are assembled

together in helical formation in a random manner, all in the same direction and with the same length of lay.

461-01-10

multiple stranded conductor

A stranded conductor consisting of a number of groups of wires assembled together in one or more helical layers, the wires in each group being either bunched or stranded.

461-01-11

flexible conductor

A stranded conductor having wires of diameters small enough and so assembled that the conductor is suitable for use in a flexible cable.

461-01-12

shaped conductor

A conductor the cross-section of which is other than circular.

461-01-13

sector-shaped conductor

A shaped conductor the cross-section of which approximates to a sector of a circle.

461-01-14

compacted conductor

A stranded conductor in which the interstices between the component wires have been reduced by mechanical compression or by drawing or by suitable choice of the shape and disposition of wires.

461-01-15

Milliken conductor

A stranded conductor comprising an assembly of shaped stranded conductors, lightly insulated from each other.

461-01-16

hollow conductor

A conductor so constructed as to provide a central channel.

461-01-17

concentric conductor

A conductor so constructed as to surround one or more insulated conductors.

461-01-18

tinsel conductor

A conductor comprising one or more elements stranded together, each element consisting of one or more thin metal tapes helically wound and supported by a textile thread.

SECTION 461-02 — INSULATIONS

461-02-01

insulation (of a cable)

Insulating materials incorporated in a cable with the specific function of withstanding voltage.

461-02-02

conductor insulation

Insulation applied on a conductor or a conductor screen.

461-02-03

lapped insulation

Insulation consisting of tapes applied helically in concentric layers.

461-02-04

impregnated paper insulation

Lapped insulation consisting of paper impregnated with an insulating material.

461-02-05

pre-impregnated (paper) insulation

Impregnated paper insulation in which the paper tapes are impregnated before lapping.

461-02-06

mass-impregnated (paper) insulation

Impregnated paper insulation in which the paper tapes are impregnated after lapping.

461-02-07

mass-impregnated non-draining insulation

Mass-impregnated paper insulation in which the impregnant is not fluid at the maximum continuous operating temperature.

461-02-08

extruded insulation

Insulation consisting generally of one layer of a thermoplastic or thermosetting material and applied by an extrusion process.

461-02-09

mineral insulation

Insulation consisting of compressed mineral powder.

SECTION 461-03 — ELECTRICAL SCREENS AND SHIELDS

461-03-01

screen (of a cable)

Conducting layer(s) having the function of control of the electric field within the insulation. It may also provide smooth surfaces at the boundaries of the insulation and assist in the elimination of spaces at these boundaries.

461-03-02

conductor screen

An electrical screen of non-metallic and/or metallic material covering the conductor.

461-03-03

insulation screen ; core screen

An electrical screen of non-metallic and/or metallic material covering the insulation.

461-03-04

shield (of a cable)

A surrounding earthed metallic layer to continue the electric field within the cable and or to protect the cable from external electrical influence.

Note. — Metallic sheaths, armours and earthed concentric conductors may also serve as shields.

SECTION 461-04 — CABLING

461-04-01

length of lay

The axial length of one complete turn of the helix formed by one cable component.

461-04-02

lay ratio

The ratio of the length of lay to diameter of the helix

formed by one cable component.

Note. — Depending on the circumstances, the diameter to consider is either the internal diameter, or the mean diameter, or the external diameter of the layer in which the component is laid in the helix.

461-04-03

direction of lay

The direction of rotation of a component of a cable in

relation to the longitudinal axis of the cable.

Note. — The lay is said to be right-hand when the visible portion of the helix, together with the two cross-sections limiting it, form the shape of a letter Z, and left-hand when they form the shape of a letter S.

461-04-04

core

insulated conductor (North America)

An assembly comprising a conductor with its own

insulation (and screens if any).

Note. — In North American usage : the core of a cable has been defined as the assembly of components of a cable lying under a common covering such as the sheath. Such usage is deprecated.

461-04-05

filler

The material used to fill the interstices between the cores of a multiconductor cable.

SECTION 461-05 — COVERINGS AND VARIOUS COMPONENTS

461-05-01

separator

A thin layer used as a barrier to prevent mutually detrimental effects between different components of a cable, such as between the conductor and insulation or between insulation and sheath.

461-05-02

inner covering

A non-metallic covering which surrounds the assembly of the cores (and fillers if any) of a multiconductor cable and over which the protective covering is applied.

461-05-03

sheath

jacket (North America)

A uniform and continuous tubular covering of metallic or non-metallic material, generally extruded.

Note. — The term sheath is only used for metallic coverings in North America, whereas the term jacket is used for non-metallic coverings.

461-05-04

oversheath

A non-metallic sheath applied over a metallic covering, constituting the outermost sheath of the cable.

461-05-05

reinforcement

Tapes or strips or wires, usually metallic applied over a sheath to enable it to withstand mechanical stresses generally due to internal pressure.

461-05-06

armour

A covering consisting of a metal tape(s) or wires, generally used to protect the cable from external mechanical effects.

461-05-07

spiral binder tape

A metallic tape wound in an open helix on wire armour to keep it in place.

461-05-08

bedding

A cushioning layer or layers applied to a cable immediately beneath a metallic layer such as the armour or the reinforcement.

461-05-09

serving

One or more non-extruded layers applied to the exterior of a cable.

461-05-10

braid

A covering formed from plaited metallic or non-metallic material.

461-05-11

skid wire

Wire(s) usually D-shaped, applied with a long length of lay over the cores of a pipe-type cable, to provide mechanical protection and to facilitate sliding while the cores are being pulled into the pipe.

SECTIONS 461-06 TO 461-09 — CABLES

SECTION 461-06 — CABLES IN GENERAL

461-06-01

insulated cable

An assembly consisting of :

- one or more cores,
- their individual covering(s) (if any),
- assembly protection (if any),
- protective covering(s) (if any),

Additional uninsulated conductor(s) may be included

in the cable.

461-06-02

single-conductor cable

single-core cable

A cable having only one core.

461-06-03

multiconductor cable

A cable having more than one conductor, some of

which may be uninsulated.

461-06-04

multicore cable

A cable having more than one core.

461-06-05

flat (multicore) cable

A multicore cable having cores or groups of cores arranged in parallel flat formation.

461-06-06

collectively shielded cable

A multicore cable having a shield arranged around the cores concentrically with the axis of the cable.

461-06-07

concentric neutral cable

A cable having a concentric conductor which is intended to be used for the neutral.

461-06-08

single-phase concentric neutral cable

A single-core cable having a concentric conductor which is intended to be used for the neutral.

461-06-09

three-phase concentric neutral cable

A three-core cable having a concentric conductor which is intended to be used for the neutral.

461-06-10

split concentric cable

A cable having two conductors in a single concentric

layer separated from each other by insulating material.

461-06-11

belted cable

A multiconductor cable in which part of the insulation is applied to each conductor individually, and the remainder is applied over the assembled cores.

461-06-12

individually screened cable

radial field cable

A cable in which each core is covered with an individual screen.

461-06-13

separately lead-sheathed cable

S.L. cable

A three-core cable in which each core is individually sheathed with lead or lead alloy.

461-06-14

flexible cable

A cable which is required to be capable of being flexed while in service and of which the structure and materials are such as to fulfil this requirement.

461-06-15

cord

A flexible cable with a limited number of conductors of small cross-sectional area.

SECTION 461-07 — PRESSURE CABLES

461-07-01

pressure cable

A cable in which the insulation is maintained under pressure by means of a fluid.

461-07-02

self-contained pressure cable

A cable in which the pressurizing fluid is contained within the metallic sheath applied during manufacture.

461-07-03

pipe-type cable

A pressure cable in which the cores are drawn into a pipe, usually of steel and already installed, and which in service contains a fluid under pressure.

461-07-04

oil-filled cable

A self-contained pressure cable in which the pressurizing fluid is the insulating oil and which is designed to facilitate the free movement of the oil within the cable.

461-07-05

oil-filled pipe-type cable

A pipe-type cable in which the pressurizing fluid is the insulating oil.

461-07-06

internal gas pressure cable

A pressure cable in which the pressurizing fluid is a gas in contact with the insulation : it may be self-contained or pipe-type cable.

461-07-07

external gas pressure cable.

A pressure cable usually pipe-type in which the pressurizing fluid is a gas separated from the insulation by a diaphragm.

SECTION 461-08 — AERIAL INSULATED CABLES

461-08-01

aerial (insulated) cable

An insulated cable designed to be suspended overhead and outdoors.

461-08-02

bundle assembled aerial cable

An aerial cable consisting of a group of insulated conductors with or without an insulated conductor, twisted together.

SECTION 461-09 — SPECIAL CABLES

461-09-01

heating cable

A cable, with or without a shield or a metallic sheath, intended to give off heat for heating purposes.

SECTIONS 461-10 TO 461-12 - CABLE ACCESSORIES

SECTION 461-10 - TERMINATIONS

461-10-01

termination

A device fitted to the end of a cable to ensure electrical connection with other parts of the system and to maintain the insulation up to the point of connection.

461-10-02

sealing end; pothead (deprecated)

A termination providing a seal to the end of the cable from the external environment and maintaining the pressure, if any, of the cable system.

461-10-03

terminal box

A box constructed to house cable terminations.

461-10-04

dividing box; splitter box

A box fitted to a multicore cable to enable the individual cores to emerge as single-core cables without disturbing the core insulation.

Note. — The term "dividing box" is usually applied to low voltage cables, whereas "splitter box" is applied to high voltage cables.

461-10-05

trifurcating box; trifurcator

A splitter box mounted on a three core cable.

461-10-06

plug-in termination

A termination of a cable permitting the connection or the disconnection of the cable to other equipment, with or without voltage, generally in the absence of load current.

SECTION 461-11 — JOINTS

461-11-01

straight-joint

An accessory making a connection between two cables to form a continuous circuit.

461-11-02

trifurcating joint

An accessory making a connection between a three-core cable and three single-core cables.

461-11-03

stop joint

An accessory making a connection between two cables where the fluid in one cable is segregated from the fluid or the insulation of the other cable by a pressure resisting barrier.

461-11-04

transition joint

An accessory making a connection between two cables

having different types of insulation.

461-11-05

sectionalising joint

A joint where the metallic sheath, shield and insulation screen of the cable are electrically interrupted.

461-11-06

tee joint

An accessory making a connection of a branch cable to a main cable where the axes of the two cables are approximately at right angles.

461-11-07

breeches joint; Y joint

An accessory making a connection of a branch cable to a main cable where the axes of the two cables are approximately parallel.

SECTION 461-12 — MISCELLANEOUS ACCESSORIES

461-12-01

shielding conductor

A separate conductor or single-core cable laid parallel to a cable or cable circuit and itself forming part of a closed circuit in which induced currents may flow whose magnetic field will oppose the field caused by the current in the cable(s).

461-12-02

pressure tank; pressure reservoir

A reservoir intended to accommodate changes in the volume of oil in the oil-filled cable.

461-12-03

compensator

A device used to accommodate oil or compound expansion in the sealing ends.

SECTIONS 461-13 TO 461-15 — CABLE INSTALLATION

SECTION 461-13 — PRACTICES OF LAYING

461-13-01

trefoil formation

The formation of three cables so laid as to be mutually equidistant. Viewed in cross-section, the lines joining the cable centres form an equilateral triangle.

The formation is known as "close trefoil" formation when the cables are touching each other.

461-13-02

flat formation

The formation of a number of cables laid in a plane, usually with equal spacing between adjacent cables.

461-13-03

transposition (of insulated cables)

a) In relation to power cables :

The practice of laying single-core cables so that each phase cable successively occupies, over approximately equal lengths of the route, each geometrical position in the laying formation.

b) In relation to shielding conductors :

The practice of laying a shielding conductor alongside an elementary section of untransposed power cables so that, in relation to the plane of symmetry of the cable laying formation, the conductor over one half of the section length occupies one position and over the other half occupies a symmetrically opposite position.

SECTION 461-14 — SHIELD BONDING *

461-14-01

solidly bonded single-core cable system

A system of shielded single-core cables in which the shields of each phase, are electrically bonded together and to earth at each end of the route and, if necessary, at intermediate positions.

461-14-02

special bonding of shields

Methods of bonding and earthing the shields of single-core cables so as to minimize the longitudinal shield current induced by conductor currents.

461-14-03

insulated shield cable system

A cable system in which the shield of each cable is individually insulated throughout its length except where any necessary earthing or intershield connections are made.

461-14-04

elementary section

The length of cable system between any adjacent pair of the following items: sectionalising joints, terminations and inter-shield bonds.

461-14-05

solid bond

An inter-shield bond of minimum practicable impedance.

461-14-06

single-point bonding

A form of special bonding in which the three cable shields of an elementary section are solidly bonded together and earthed at one point only.

461-14-07

cross-bonding

A form of special bonding in which the cable shields in consecutive elementary sections are cross connected so that each continuous shield circuit surrounds the three phase conductors consecutively.

461-14-08

sectionalised cross-bonding

The form of cross-bonding in which three consecutive elementary sections, termed "minor sections", are taken to form a single unit, termed a "major section". The three shields are solidly bonded at both ends of a major section and may be earthed at these points. At the

* A metallic sheath is a particular form of shield.

two intermediate positions the cables are usually transposed and the shields are so interconnected that each continuous shield circuit through the major section occupies the same geometrical position in the cable formation. For long cable routes there may be a number of major sections.

461-14-09

uniform major section

A major section consisting of three substantially equal elementary sections.

461-14-10

continuous cross-bonding

A form of cross-bonding applicable to circuits consisting of more than three elementary sections in which the cable shields are successively cross bonded and the

cables usually transposed at each junction between adjacent elementary sections throughout the cable route. At each end of the route the shields are solidly bonded and earthed.

461-14-11

shield standing voltage

The voltage to earth appearing on the shield of a specially bonded cable when balanced full load currents are flowing in the cable conductors, normally quoted at the points along the cable length at which it is maximum (i.e. at the unearthed extremity of an elementary section in the case of single point bonding and at a cross-bonding point in the case of cross-bonding). When the voltages differ for cables of the three phases, the highest value is normally taken into account.

SECTION 461-15 — SHIELD BONDING ACCESSORIES

461-15-01

parallel earth continuity conductor

A conductor usually laid along the cable route to provide a continuous low impedance metallic earth connection between the earthing systems at the ends of the cable route.

461-15-02

shield voltage limiter

A device connected to a shield or to the shields of specially bonded cables intended to limit shield voltages during system transients.

461-15-03

link box (for insulated shield system)

A box in which bonding and/or earthing connections are made through removable links and which may also contain shield voltage limiters.

461-15-04

shield bonding lead

An insulated conductor forming the connection between the shield of the cable or the joint sleeve and a link in the link box.

461-15-05

joint-sleeve insulation

An external insulation applied to the metallic joint-sleeve of a specially bonded cable.

SECTION 461-16 – MISCELLANEOUS TERMS

461-16-01

thermal resistance (of an element of a cable)

The temperature different between the interior and the exterior surfaces of that element, divided by the heat flux which traverses it.

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