

Designation codes

According to CEI 20-27

Designation groups	Designation	Symbol
Reference to standards	Harmonised cable	H
	Authorised national cable	A
	Other national cable types	N
Rated voltage U ₀ /U	100/100 V	01
	300/300 V	03
	300/500 V	05
	450/750 V	07
	0,6/1 kV	1
Insulation material	ordinary PVC	V
	PVC for temperature of 90°C	V2
	Synthetic rubber for temperature of 60°C	R
	Ethylene propylene rubber	B
	Polychloroprene for welding cables	N2
	Polyolefin-based cross-linked compound with low smoke, toxic and corrosive gases emissions	Z
	Polyolefin-based thermoplastic with low smoke, toxic and corrosive gases emissions	Z1
Metallic coatings (shielding and armouring)	Copper braid shield applied around assembled cores	C4
	Copper braid shield applied around single cores	C5
	Copper wire, tape, or strip screen over assembled cores	C7
	Concentric copper conductor	C
	Steel wire armour	Z 2
	Flat steel wire armour	Z 3
	Steel tape armour	Z 4
	Steel wire braid armour	Z 5
Cable shape	Flat non separable cables	H2
	Flat cables with three or more cores	H6
	Cables with double layer insulation applied by extrusion	H7
Jacket material	ordinary PVC	V
	PVC for operating temperature of 90°C	V2
	Oil resistant PVC	V5
	Synthetic rubber	R
	Ethylene propylene rubber	B

	Polychloroprene	N
	Water resistant polychloroprene	N8
	Polyurethane	Q
	Chlorosulfonated polyethylene or chlorinated polyethylene	N4
	Polyolefin-based cross-linked compound with low smoke, toxic and corrosive gases emissions	Z
	Polyolefin-based thermoplastic with low smoke, toxic and corrosive gases emissions	Z1
Conductor material	Copper	None
	Aluminium	A
Conductor form	Rigid round, solid	U
	Rigid round stranded	R
	Flexible for dynamic laying	F
	Flexible for fixed laying	K
	Flexible for welding cables	D
	Highly flexible for welding cables	E

Secondo tabella CEI UNEL 35011-36011 (ove applicabile)

Designation groups	Designation	Symbol
Conductor type	Copper	None
	Aluminium	A
Conductor form	Rigid round, solid	U
	Rigid round stranded	R
	Flexible round stranded	F
	Highly flexible round stranded	FF
	Extra flexible round stranded or special construction	EF
Insulation material	PVC for operating temperature of 70°C	R
	PVC for operating temperature of 70°C of superior quality (anti-aging)	R2
	PVC for operating temperature of 90°C	R7
	PVC-based insulation compound with a characteristic temperature of 70° C (CPR)	S17
	Synthetic rubber for temperature of 60°C	G
	High modulus ethylene propylene rubber	G7
	Elastomeric compound with low smoke, toxic and corrosive gas emission	G9
	Elastomeric compound with low smoke, toxic and corrosive gas emission	G10
High modulus ethylene propylene rubber-based compound with low development of fumes and acidity with a characteristic	G16	

	temperature of 90°C (CPR)	
	Crosslinked elastomeric compound with low development of fumes and acidity, suitable for cables without protective coating, with a characteristic temperature of 90°C (CPR)	G17
	Crosslinked elastomeric compound with low development of fumes and acidity, with a characteristic temperature of 90°C (CPR)	G18
	Thermoplastic compound with low smoke, toxic and corrosive gas emission	M9
	Plastic material with low toxic and corrosive gas emission (36011)	M
	Cross-linked compound with low smoke, toxic and corrosive gas emission	G21
	Thermoplastic polyethylene	E
	Cross-linked polyethylene for temperatures of 85°C	E4
	One or more mica tape strips or closed glass braid	T
Cable shape	Cores arranged for round cable	O
	Cores laid parallel for flat cable	D
	Helically wound cores	X
Metallic coatings (shielding and armouring)	Shield made of aluminium or metallised paper tape	H
	Copper tape, flat strip, or wire shield	H1
	Stranded or braided copper shield	H2
	Double-strand or braided copper shield	H3
	Concentric copper conductor	C
	Concentric aluminium conductor	AC
	Stranded or braided metallic armouring	A
	Steel wire armour	F
	Flat steel wire armour	Z
	Steel tape armour	N
Jacket material	TM1, TM2, RZ type PVC	R
	PVC-based thermoplastic compound (CPR)	R16
	Ez type linear polyethylene	E
	Cross-linked polyethylene, quality E4M	E4
	Synthetic rubber, quality Gy	G
	Polychloroprene, quality Ky, Kn or Kz	K
	Plastic material with low toxic and corrosive gas emission (36011)	M
	Thermoplastic compound with low smoke, toxic and corrosive gas emission	M1
	Elastomeric compound with low smoke, toxic and corrosive gas emission	M2
Elastomeric compound with low smoke, toxic and corrosive gas emission	M3	

Thermoplastic compound with low development of fumes and acidity (CPR)	M16
Elastomeric compound with low development of fumes and acidity (CPR)	M18
Cross-linked compound with low smoke, toxic and corrosive gas emission	M21

Key reference standards

CEI and EN Standards

Standard	Description
CEI 11-17	Specifies generation, transmission, and public distribution systems of electric energy. Underground lines from 1 to 45 kV.
CEI 20-13 (IEC 60502-1 as applicable) (IEC 60502-2 as applicable)	Specifies the construction requirements, testing methods and requirements for type R, R16, E, M1, M2, M16, M18, G7, G16, K insulated cables, for operating voltages from 1kV up to 3 kV.
CEI 20-16	Specifies the test procedure for the determination of partial discharge for medium voltage cables.
CEI 20-20/5	Specifies the construction requirements, testing methods and requirements for PVC insulated cables sheathed PVC, for mobile service, with operating voltages up to 450/750 V.
CEI 20-21	Specifies the calculation of the current rating of power cables in steady condition.
CEI 20-22/2 (CEI 20-22 II)	Specifies the test procedure and requirements for assessment of flame spread of bundled cables, with non-metallic material of 5 or 10 kg/m.
(CEI 20-22 III) IEC 60332-3-24 Cat. C	Specifies the test procedure for the assessment of flame spread of bundled cables, with non-metallic material of 1.5 l/m.
CEI 20-27	Specifies the designation system for harmonized cables.
CEI 20-37/4-0	Specifies the test equipment and method for the determination of the toxicity index of gases released during combustion of materials from cables.
CEI 20-38	Specifies the construction requirements, test methods of G10 insulated cables which do not propagate fire and generate low levels of toxic and corrosive gases (halogen-free), for operating voltages up to 1kV.
CEI 20-45	Specifies the construction requirements, testing methods and requirements for fire resistant cables, for operating voltages from 1kV up to 3 kV.
CEI 20-48	Specifies the general requirements for high modulus EPR insulated cables for distribution, with operating voltage of 0.6/1 kV.
CEI 20-67	Provides guidance on using electric cables with an operating voltage up to 0.6/1 V.
CEI 64-8	Electrical systems at a rated voltage not exceeding 1,000 V AC and 1,500 V DC.
CEI 64-15	Electrical systems in buildings of historic and/or artistic importance.
EN 50200	Specifies the equipment and method of test for the resistance to fire of cables having a diameter of up to 20 mm. Method with mechanical shock.

EN 50267-2-1 (IEC 60754-1 as applicable)	Specifies the test method for the determination of corrosive gases (HCl) released during combustion of materials from cables.
EN 50267-2-2	Specifies the test procedure for the determination of degree of acidity (corrosivity) of gases, released during combustion of materials from cables, by measuring Ph and conductivity.
EN 50334	Specifies the methods for marking by inscription for the identification of cores of electric cables.
EN 50336	Specifies the technical characteristics and test requirements for insulation and sheath compounds of power and signalling cables.
EN 50362	Specifies the equipment and method of test for the resistance to fire of cables having a diameter greater than 20 mm. Method with mechanical shock.
EN 50395 EN 50396	Specifies the test methods and requirements of harmonised cables insulated in PVC and rubber with operating voltage up to 450/750 V.
EN 50399	Describes the test methods for the evaluation of the vertical propagation of the flame, thermal release, smoke production, and the presence of inflamed particles/droplets on the cables or wires. The method allows for classification according to the Construction Products Regulation (CPR).
EN 50414 (CEI 20-85)	Describes the procedure for the analysis of lead in the PVC.
EN 50525-1 (CEI 20-107)	Describes the general requirements for electric cables with operating voltage up to 450/750 V.
EN 50525-2-11	It is applied to flexible cables with thermoplastic PVC insulation and PVC sheathing. These are cables with a nominal voltage U_0/U no greater than 300/500 V. The cables are for connecting domestic appliances to the fixed power supply. Circular and flat cables are included.
EN 50525-2-21	It is in regards to the particular specifications for flexible cables insulated with crosslinked elastomeric compound and undersheathing with reticulated elastomeric compound or thermoplastic polyurethane (TPU), with a nominal voltage of up to 450/750 V.
EN 50525-2-31	Describes the construction requirements, methods, and the test requirements for single-core cables without sheathing, with PVC thermoplastic insulation with maximum temperature in continuous service of 70 and 90° C, for fixed wiring, with operating voltage up to 450/750 V.
EN 50525-2-51	Applies to oil-resistant flexible cables with insulation and PVC sheathing. Shielded and unshielded types are included. These cables have a nominal voltage U_0/U no greater than 300/500 V. The cables are intended for interconnection of the production machines. The maximum temperature in continuous service for cables in this standard is 70° C.
EN 50525-3-31	It applies to single-core cables without sheathing, insulated with halogen-free thermoplastic compound and low emission of fumes and corrosive gases when exposed to fire, for fixed wiring and at a maximum service temperature of 70° C. These cables have a nominal voltage U_0/U not higher than 450/750 V. For cables with rated voltage 450/750 V there are two types: Type 1 and Type 2
EN 50525-3-41	Concerns the construction and testing requirements for single-core electric cables without sheathing and with halogen-free crosslinked insulation, suitable for fixed installations with particular fire behaviour characteristics. Nominal voltage up to 450/750 V.
EN 50565-1 (CEI 20-40/1)	Vides guidance on using electric cables with an operating voltage up to 450/750 V.
EN 50618	Describes the construction requirements, methods and test requirements for insulated and sheathed cables in the LS0H crosslinked compound. Indicated for photovoltaic systems with a nominal operating voltage no greater than 1000 V in ac and 1500 V in dc.

EN 60216-1	Specifies the ageing conditions and procedures to be used for deriving thermal endurance characteristics of materials.
EN 60332-1-2 (IEC 60332-1-2)	Specifies the test procedure and requirements for the assessment of the vertical flame propagation on single cables.
EN 60754-2	Describes the procedure for determining the potential corrosivity of the gases emitted during the combustion of materials taken from electric cable constructions by measuring the acidity (pH) and the conductivity of an aqueous solution resulting from the gases emitted during combustion.
EN 61034-2	Describes the testing procedure for determining the smoke density emitted by the cables subjected to combustion. (Optical transmittance)

CEI UNEL Standards

Table	Description
UNEL 00721	Specifies the sheathing colours of electric cables.
UNEL 00722	Specifies the identification of cores in electric cables.
UNEL 35011	Specifies the electric cable designation symbols for energy, signal and control for national cables.
UNEL 35012	Specifies the markings and classification of cables in relation to fire.
UNEL 35016	Describes the requirements of the Classes of reaction to fire of cables in relation to EU Regulation "Construction Products Regulation" (305/2011)
UNEL 35024/1	Specifies the continuous current capacities for open air installation of power cables with operating voltages up to 1,000 V AC and 1,500 V DC
UNEL 35026	Specifies the continuous current capacities for underground installation of power cables with operating voltages up to 1,000 V AC and 1,500 V DC
UNEL 35027	Specifies the continuous current capacity for open air and underground installation of medium voltage power cables.
UNEL 35310	Describes the construction and size requirements of the 450/750 V electric cables insulated in G17 quality elastomeric rubber, with special fire-reaction characteristics and in compliance with the Construction Products Regulation (CPR). Single-core cables without sheathing and with flexible conductors. Reaction to fire class: Cca-s1b,d1,a1. Type FG17
UNEL 35318	Describes the construction and size requirements of the 0.6/1kV electric cables insulated in high quality G16 ethylene propylene rubber with PVC undersheating, with special fire-reaction characteristics and in compliance with the Construction Products Regulation (CPR). Single- or multi-core cables with flexible conductors for fixed wiring, with or without shielding. Reaction to fire class: Cca-s3,d1,a3. Type FG16(O)R16, FG16OH1R16, FG16OH2R16
UNEL 35322	Describes the construction and size requirements of the 0.6/1kV cables for signalling and control, insulated in high quality G16 ethylene propylene rubber with PVC undersheating, with special fire-reaction characteristics and in compliance with the Construction Products Regulation (CPR). Multi-core cables with flexible conductors for fixed wiring, with or without shielding. Reaction to fire class: Cca-s3,d1,a3. Type FG16OR16, FG16OH1R16, FG16OH2R16
UNEL 35324	Describes the construction and size requirements of the 0.6/1kV electric cables insulated in high quality G16 ethylene propylene rubber with M16 quality thermoplastic undersheating, with special fire-reaction characteristics and in compliance with the Construction Products Regulation (CPR). Single-

or multi-core cables with flexible conductors for fixed wiring, with or without shielding. Reaction to fire class: Cca-s1b,d1,a1. Type FG16(O)M16, FG16OH1M16, FG16OH2M16

UNEL 35328

Describes the construction and size requirements of the 0.6/1kV cables for signalling and control, insulated in high quality G16 ethylene propylene rubber with M16 quality thermoplastic undersheating, with special fire-reaction characteristics and in compliance with the Construction Products Regulation (CPR). Multi-core cables with flexible conductors for fixed wiring, with or without shielding. Reaction to fire class: Cca-s1b,d1,a1. Type FG16M16, FG16OH1M16, FG16OH2M16

UNEL 35368

Describes the construction and size requirements of 450/750 V electric cables insulated with halogen-free fire retardant elastomeric rubber. Single-core cables without sheathing and with flexible conductors. Type N07G9-K

UNEL 35369

Describes the construction and size requirements of 0.6/1 kV electric cables insulated with halogen-free fire retardant elastomeric compound. Cables with flexible conductors for fixed wiring. Type FG10OM1.

UNEL 35370

Describes the construction and size requirements of 0.6/1 kV electric cables insulated with halogen-free fire retardant elastomeric compound. Cables with rigid conductors for fixed wiring. Type RG10OM1.

UNEL 35371

Describes the construction and size requirements of 0.6/1 kV cables for signalling and control, insulated with halogen-free fire retardant elastomeric compound. Multi-core flexible for fixed wiring. Type FG10OM1.

UNEL 35375

Describes the construction and size requirements of 0.6/1 kV electric cables insulated in high quality G7 ethylene propylene rubber, PVC sheathing, fire retardant and with reduced halogen emission. Single- or multi-core with flexible conductors for fixed wiring, with or without shielding. Type FG7(O)R, FG7OH1R, FG7OH2R.

UNEL 35376

Describes the construction and size requirements of 0.6/1 kV electric cables insulated in high quality G7 ethylene propylene rubber, PVC sheathing, fire retardant and with reduced halogen emission. Single and multi-core with rigid conductors for fixed wiring. Type UG7(O)R, RG7(O)R.

UNEL 35377

Describes the construction and size requirements of 0.6/1 kV cables for signalling and control, insulated in high quality G7 ethylene propylene rubber, PVC sheathing, fire retardant and with reduced halogen emission. Multi-core with flexible conductors for fixed wiring, with or without shielding. Type FG7OR, FG7OH1R, FG7OH2R.

UNEL 35379

Describes the construction and size requirements of 0.6/1 kV electric cables insulated in high quality G7 ethylene propylene rubber, PVC sheathing, fire retardant and with reduced halogen emission. Multi-core with rigid conductors, reinforced with steel strips. Type U/RG7ONR

UNEL 35382

Describes the construction and size requirements of 0.6/1 kV electric cables insulated in high quality G7 ethylene propylene rubber, M1 thermoplastic undersheating, fire retardant and halogen-free. Single- or multi-core cables with flexible conductors for fixed wiring, with or without shielding. Type FG7(O)M1, FG7OH1M1, FG7OH2M1.

UNEL 35384

Describes the construction and size requirements of cables for signalling and control, type FG7OM1-0.6/1 kV, FG7OH1M1-0.6/1 kV, FG7OH2M1-0.6/1 kV.

UNEL 35716

Describes the construction and size requirements of the 450/750 V electric cables insulated in S17 PVC, with special fire-reaction characteristics and in compliance with the Construction Products Regulation (CPR). Single-core cables without sheathing and with flexible conductors. Reaction to fire class: Cca-s3,d1,a3. Type FS17

UNEL 35752

Describes the construction and size requirements of electric cables insulated with fire retardant PVC with reduced halogen emissions. Single-core without sheathing and with flexible conductors. Type N07V-K.

UNEL 35755	Describes the construction and size requirements of 0.6/1 kV cables for signalling and control, insulated in PVC, with PVC sheathing, fire retardant and with reduced halogen emission. Multi-core with flexible conductors for fixed wiring, with or without shielding. Type N1VV-K, N1VC7V-K, N1VC4V-K.
UNEL 35756	Describes the construction and size requirements of 0.6/1 kV electric cables insulated in PVC, with PVC sheathing, fire retardant and with reduced halogen emission. Multi-core with flexible conductors for fixed wiring, with or without shielding. Type N1VV-K, N1VC7V-K, N1VC4V-K.
UNEL 35757	Describes the construction and size requirements of 0.6/1 kV electric cables insulated in PVC, with PVC sheathing, fire retardant and with reduced halogen emission. Single-core cables with flexible conductors for fixed wiring. Type N1VV-K
UNEL 36713	Specifies construction and sizing requirements for internal telephone cables type TR/R and TR/HR.