

CABLE PRODUCTS

Installation wires and cables КУИИ-Пы (wire), КУИИ-Кы (cable) under TU 3551-023-76960731-2012 – flame-retardent «нг(А)», «нг(А)-LS», «нг(А)-HF»; flame-resistant «нг(А)-FR», «нг(А)-FRLS», «нг(А)-FRHF»; low-toxic «нг(А)-HFLTx», «нг(А)-LSLTx»; of increased heat resistance, oil-and-petrol resistant, ultraviolet resistant, shielded-type and unshielded-type cables, armored and unarmored cables

«Doncabel» ООО - a quality management system is certified to ISO 9001.

КУИИ-Пы wires and cables conform fully to the new GOST R 53768-2010 "Wires and cables for electrical equipment of rated voltages up to and including 450/750 V. General specifications" which has replaced the GOST 6323-79 on 01.01.2011 wherefore wires ПВ1, ПВ2, ПВ3, ПВ4, ППВ, АПВ and АППВ under GOST 6323-79 can no longer be used on the territory of the Russian Federation.

Area of operations

- lighting mains;
- electric equipment installation, machines mounting, machinery and machine tools of rated voltages up to and including 450/750 V with frequency up to 400 Hz or steady voltage up to 1000 V mounting.

Cables and wires are designed for fixed cabling inside and outside premises, for wires installation under plaster, into concrete, brick laying, building constructions air void as well as for surface on-walls, on-ceiling wiring and wiring in other constructions some of which require extra-flexibility.

Cables and wires can be used in all classes and all explosion danger areas (under GOST R IEC 60079-14-2008).

Fire-resistant cables and wires can be used in all electric plants requiring fire resistance under FL №123 "Technical regulations on fire safety requirements" and GOST R 53315-2009 "Cable products. Requirements of fire safety". Primary wires and cables application fields with a glance to their form factor and fire class are listed in table 5.

Cable construction

Cables have circular form and stranded conductors have plate form. Electric conductors are made from copper tin-coated «Л» and untinned wire. Extra-flexible wires and cables «Г» have a 5 class conductor under GOST 22483. Electrical conductors' classes are specified в in table 1.

Main conductors, wires and cables earthing conductor and equal cross-section area cables neutral conductor. 3-, 4- and 5-conductor cables earthing conductor can have cross-section area 16mm² with main conductors of 25 and 35mm², and earthing conductor of cross-section area 25mm² with main conductors of cross-section area 50mm². Quantity and nominal cross-section areas of electrical conductors are listed in table 2. Insulated conductors colouring circuit is specified in table 3. Yellow green color is used for earthing conductor «PE» sign, and blue color is used for neutral conductor «N» sign.

Fire proof wires and cables «FR» have winding under an conductor insulation made from glass sludiniated bands – this is the safest fire hardening method at the moment.

Wires and cables can have shield made from "Эм" copper wire, tinned copper wire "Эл" or aluminium foil film with copper tinned conductor.

Stranded conductors and cables shield fills gaps between conductors giving flat form to it and circular form to a cable. Wires and cables can have a waterblocking element "В" preventing unguided propagation of water under a wire shield. Solid wires can be made without a shield (in such a case shield material is not necessary to be specified). Wires and cables can have armor from zinc-coated steel wires "К". Over armor there is a cable shield overlayed. Conductors' insulation and shield can be made from non-rigid PVC "В", halogen free polymer compound "П" or elastoplastic rubber "Т". Insulation and shield matters are listed in table 4 as well as corresponding fire safety indexes. Cables can be produced with combined conductor cross-section under custom order.

КУИИ-Пы wire

with one earthing conductor

КУИИ-Пы
with a tinned conductor in a screen from tinned copper wires

КУИИ-Кы cable

КУИИ-Кы
with one main conductor, earthing conductor and neutral conductor

КУИИ-Кы
with three main conductors, earthing conductor and neutral conductor

Performance specifications



Extra-flexible wires and cables conductors – copper stranded 5 class conductors under GOST 22483, flexible conductors – 1 or 2 class



Wide temperature application range

- from –60° to +70°C with indication «ХЛ»
- from –60° to +125°C with «Т» matter
- from –50° to +200°C with «Т-Т» matter
- from –50° to +70°C for other types

The lowest temperature limit for installation, not lower than:

- –30°C for «ХЛ» or «Т» material
- –15°C for other types of wires and cables



version B, placement category 1-5 (under GOST 15150). Wires use is possible in all macroclimatic areas including tropics.



"УФ" - resistant to solar irradiation



"В" - protection against damp expansion under cover «М» – oil-and-petrol resistant cover



Wires and cables can have:

- screen from copper wires or alumaflex
- shield from zinc-coated steel wires



Conductors resistance to direct current conforms GOST 22483



Nominal voltage

for wires: ~From 450/750 V to 400 Hz or –1000 V

for cables: ~300/500 V frequency up to 400 Hz



Electrical insulation resistance at a temperature of t = +20°C not less than 5 MOhm·km



Voltage test under GOST 23286-78:

- insulated conductors for transmission under category ЭИ-2
- wires ~2500 V 50 Hz within 5 min under ЭИ-1
- cables ~2000 V 50 Hz within 5 min under ЭИ-1



Fire-resistant wires and cables remain functional under fire conditions at least 90 minutes (ПО4 under GOST R 53315-2009)



Wires and cables with combustion products low toxicity «LTX» – are the best fire safety factor

Table 1 Copper electrical conductor class

Electrical conductor nominal cross-section area, mm²	Copper conductor class under GOST 22483-77			
	for wires		for cables	
	common conductors	flexible conductors	common conductors	flexible conductors
0.5	1 or 2	5	-	-
0,75 - 10			1 or 2	5
16 - 50	2		2	
70 - 400			-	-

Table 2 Quantity and nominal cross-section area of conductors

Conductors quantity	Conductors nominal cross-section area, mm ²	
	for wires	for cables
1	0,5; 0,75; 1,0; 1,5; 2,5; 4; 6; 10; 16; 25; 35; 50; 70; 95; 120; 150; 185; 240; 300; 400	-
2, 3	0,5; 0,75; 1,0; 1,5; 2,5; 4	0,75; 1,0; 1,5; 2,5; 4; 6; 10; 16; 25; 35; 50
4, 5	-	

Table 3 Insulating conductors colouring

Conductors quantity	Insulating conductors colouring	
3	brown, black, gray	
	brown, blue, yellow green	
4	brown, black, gray, blue	
	brown, black, gray, yellow green	
5	brown, black, gray, blue, black	
	brown, black, gray, blue, yellow green	

Table 4 Fire safety index according to matter and insulation

Shield and insulation matter	Fire safety index	Shield and insulation matter (if any) of installation wires and cables
B	(no index)	insulation and shield from non-rigid PVC
	hr(A)	insulation from non-rigid PVC, shield from low flammability non-rigid PVC
	hr(A)-LS	insulation and shield from low fire hazard non-rigid PVCs
	hr(A)-LSLTx	insulation and shield from low fire hazard non-rigid PVCs with low toxicity of combustion products.
	hr(A)-FRLS	fire-resistant; insulation and shield from low fire hazard non-rigid PVCs
	hr(A)-FRLSLTx	fire-resistant; insulation and shield from low fire hazard non-rigid PVCs with low toxicity of combustion products.
П	hr(A)-HF	insulation and shield from halogen-free polymer compounds
	hr(A)-HFLT _x	insulation and shield from halogen-free polymer compounds with low toxicity of combustion products.
	hr(A)-FRHF	fire-resistant; insulation and shield from halogen-free polymer compounds
	hr(A)-FRHFLT _x	fire-resistant; insulation and shield from halogen-free polymer compounds with low toxicity of combustion products.
T	hr(A)	insulation and shield from elastoplastic rubbers
	hr(A)-FR	fire-resistant; insulation and shield from elastoplastic rubbers

Table 5 Primary designated areas of installation wires and cables with account of their form factors and fire danger classes under GOST R 53315-2009 and GOST R 53768-2010

Form factor	Fire danger class	Primary designated area
no marks	O1.8.2.3.4	For single cable lines routing and running of feed circuits of bow collectors located in premises.
нг(А)	П16.8.2.5.4	For routing, with account of combustible content loading, in open cable structures (racks, galleries) of external electric installations.
нг(А)-LS	П16.8.2.2.2	For cable lines bunched wiring in indoor electrical installation premises. For electric installations of residential and public buildings.
нг(А)-HF	П16.8.1.2.1	For cable lines and electric installations in case of bunched or single wiring in office premises fitted out with computer equipment and microprocessor engineering as well as in buildings and facilities with mass stay of people including multifunctional high-rise buildings, complexes and sports facilities.
нг(А)-LSLTx	П16.8.2.1.2	For electric installations in public buildings and children preschool institutions and educational institutions, specialized homes for the elderly and disabled, hospitals, boarding educational institutions bedroom blocks and children institutions.
нг(А)-HFLTx	П16.8.1.1.1	
нг(А)-FRLS	П16.7.2.2.2	For wiring in fire protection systems and other systems that must remain functional under fire conditions.
нг(А)-FRHF	П16.7.1.2.1	
нг(А)-FRLSLTx	П16.7.2.1.2	For wiring in fire protection systems and other systems that must remain functional under fire conditions, in children preschool institutions and educational institutions buildings, specialized homes for the elderly and disabled, hospitals, boarding educational institutions bedroom blocks and children institutions.
нг(А)-FRHFLTx	П16.7.1.1.1	

Identification code for order

Flexibility		Collective screen		Shield material		Conductors quantity		Copper conductor tin coating		Water-blocking element under a shield	
-	common flexibility	-	without collective screen	В	non-rigid PVC	1..3	in a wire	-	untinned conductor	-	without water-blocking element
Г	extra flexibility	Э	from alumaflex	П	polymer compounds	2..5	in a cable	л	tinned conductor	В	with water-blocking element
		Эм	from copper untinned wires	Т		Elastoplastic rubber					
		Эл	from copper tinned wires			Fire safety form factor depends on material - see table 4					

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Type of product		Insulation material		Armor under an external shield		Type of fire protection execution		Conductor area, mm ²		Earthing conductor and neutral conductor presence *		Special indexes	
Ку	Installation cable	В	ПВХ пластикат	-	without shield	-		0.5..400	for wire	-	without earthing conductor and neutral conductor	if there are several indexed they should be specified	
Пл	Installation wire	П	polymer compounds	К	shield from zinc-coated steel wires	нр(А)		0.75..50	for cable	(PE)	earthing conductor	-	without special index
		Т	Elastoplastic rubber			нр(А)-LS		Full range of sized is described in table 2.		(N)	neutral conductor (only in cable)	ХЛ	cold-resistant version, exploitation at a temperature from -60°C (only for «нр(А)» version and «В» material)
		Fire safety form factor depends on material - see table 4				нр(А)-HF				(PE,N)	earthing conductor and neutral conductor (only in cable)	УФ	solar radiation resistant (only for «нр(А)-HF» version or «Т» material)
						нр(А)-LSLTx						Т	elastoplastic rubber with increased heat resistance, up to +200°C (only for «Т» material)
						нр(А)-HFLTx						М	oil-and-petrol resistant shield (only for «нр(А)-HF» version or «Т» material)
						нр(А)-FR							
						нр(А)-FRLS							
						нр(А)-FRHF							
						нр(А)-FRLSLTx							
						нр(А)-FRHFLTx							
						Type depends on shield and insulation materials							

Note:

* they add number and earthing conductor nominal cross-section area for cables with smaller earthing conductor nominal cross-section area For instance: КУИИ-КуГВВнр(А) 3x25 + 1x16(PE).

In 3-, 4- and 5-conductors cables a 16mm² earthing conductor is assumed with common conductors' area 25mm² and 35mm², and 25mm² earthing conductor is assumed with common conductors' area 50mm²

Description for order	Description
КУИИ-ПлВ 1x2,5 wire TU 3551-023-76960731-2012	Installation wire with one 2.5mm ² electric conductor, non-rigid PVC insulation, without shield.
КУИИ-КуГВВнр(А) 4x6(N) cable TU 3551-023-76960731-2012	Installation cable with four flexible electric conductors, one of which is 6mm ² neutral one, with non-rigid PVC insulation, with non-rigid lowered flammability PVC shield.