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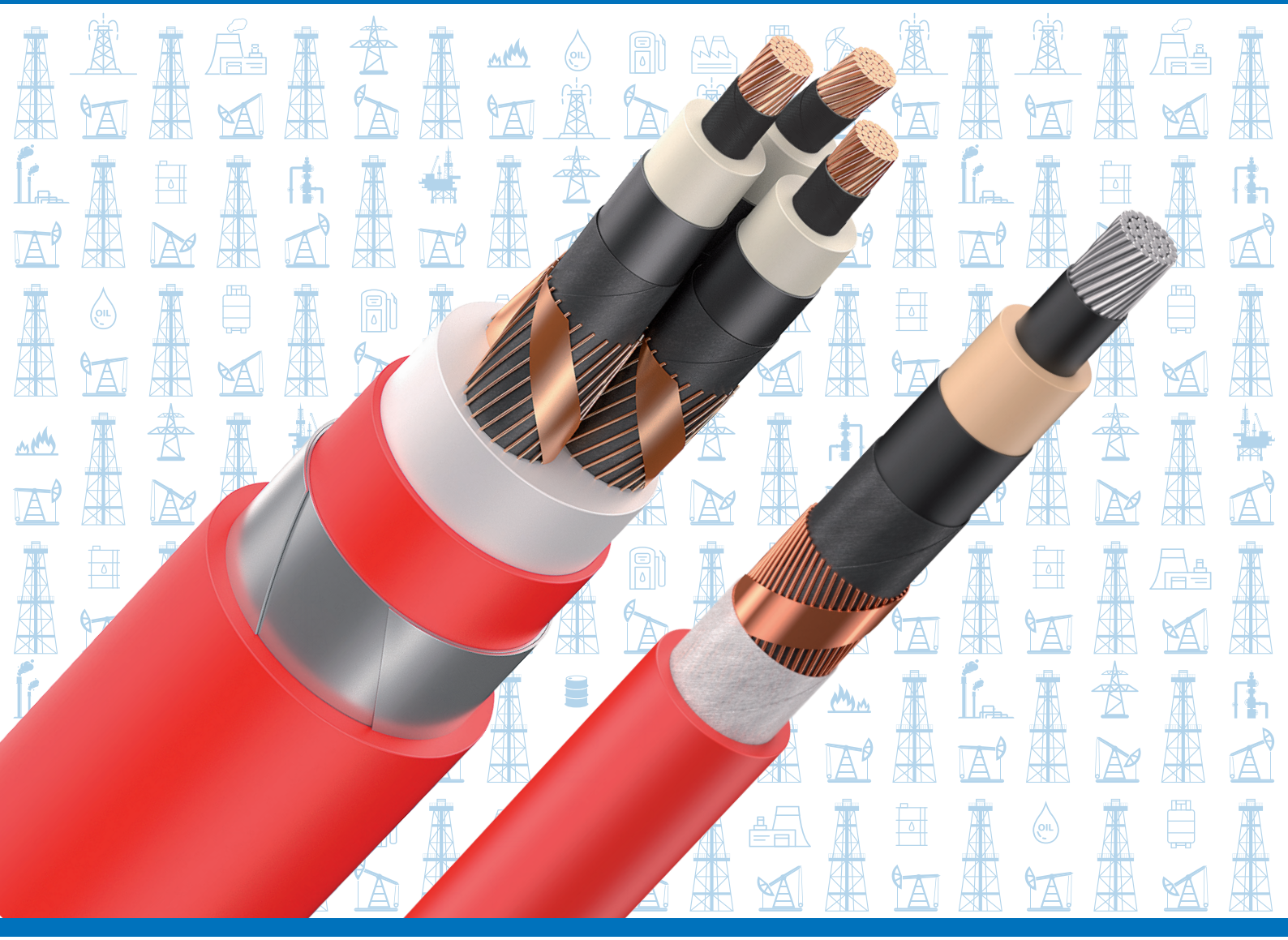


POWER CABLES
WITH ETHYLENE PROPYLENE RUBBER INSULATION
with a voltage of 6, 10, 15, 20 and 35 kV

POWER CABLES WITH ETHYLENE PROPYLENE RUBBER INSULATION WITH A VOLTAGE OF 6, 10, 15, 20 AND 35 KV

TU 27.32.14-074-05742781-2023

SCOPE OF APPLICATION

Power cables with ethylene propylene rubber insulation are intended for transmission and distribution of electric power in stationary installations with a rated AC voltage of 6, 10, 15, 20 and 35 kV and a rated frequency of 50 Hz for networks with grounded or insulated neutral.

The cables are intended for fixed laying in air, indoors, in dry soils, in utility vaults as single cables and groups of cables under conditions of exposure to drilling fluids, oils, gasoline, diesel fuel, sea water, ozone and solar radiation as well as in waterlogged and marshy soils with 100% humidity.

The construction, technical characteristics and performance properties of the cables comply with international standard IEC 60502-2.2014.

The climatic version is UKhL, location categories are 1, 2 and 5 according to GOST 15150-69 including in explosion hazardous areas indoors and in outdoor installations in accordance with the Regulations for Electrical Installations (PUE) (Chapter 7.3) and GOST 30852.13-2002.

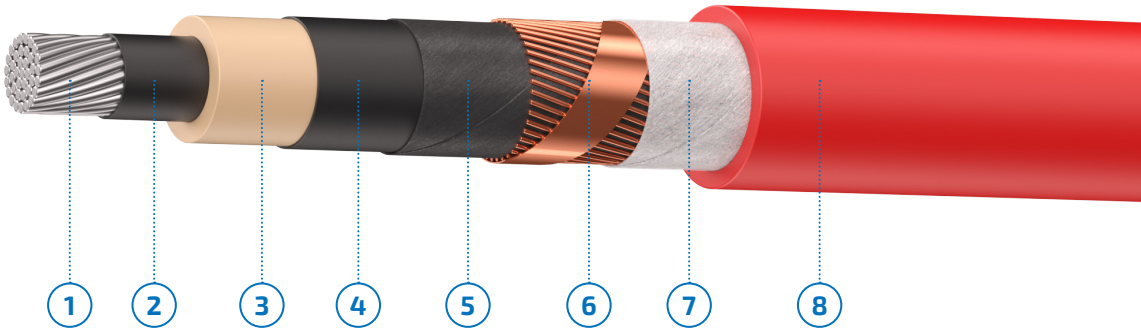
EXAMPLES OF TYPE DESIGNATION

AReBaV 1x150mk/25-35 TU 27.32.14-074-05742781-2023
– cable of AReBaV type, UKhL climatic version, with one aluminum multiwire round conductor of a nominal cross-section of 150 mm^2, ethylene propylene rubber insulation, copper screen of copper wires fastened with a copper tape of a nominal cross-section of 25 mm^2, aluminum tape armoring and PVC plastic jacket, with a rated AC voltage of 35 kV

AReV-KhL 3x150mk/35as-10 TU 27.32.14-074-05742781-2023
– cable of AReV type, KhL climatic version, with three aluminum multiwire round conductors of a nominal cross-section of 150 mm^2, ethylene propylene rubber insulation, aluminum alloy wire screen of a nominal cross-section of 25 mm^2, PVC plastic jacket, with a rated AC voltage of 10 kV

ReBPng(A)-HF-T 3x150mk/25-10 TU 27.32.14-074-05742781-2023
– cable of ReBPng(A)-HF type, T climatic version, with three copper multiwire round conductors of a nominal cross-section of 150 mm^2, ethylene propylene rubber insulation, copper screen of copper wires fastened with a copper tape of a nominal cross-section of 25 mm^2, halogen-free polymer compound jacket, with a rated AC voltage of 10 kV

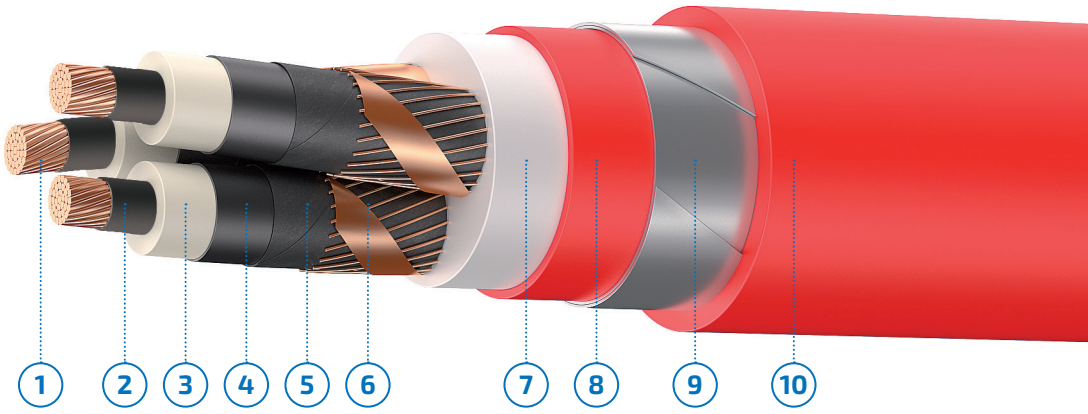
Example of single core cable construction



Type of cable AReVng(A)-LS

1. Multiwire compacted aluminum current-carrying conductor
2. Conductor current-conducting screen of cross-linked polymer compound
3. Ethylene propylene rubber insulation
4. Insulation current-conducting screen of cross-linked polymer compound
5. Separation layer of current-conducting tapes
6. Screen of copper wires fastened with a copper tape
7. Separation layer of current-conducting tapes
8. Jacket of low fire hazard plastic

Example of three core cable construction



Type of cable ReBPng(A)-HF

1. Multiwire compacted copper current-carrying conductors
2. Conductor current-conducting screen of cross-linked polymer compound;
3. Ethylene propylene rubber insulation
4. Insulation current-conducting screen of cross-linked polymer compound
5. Separation layer of current-conducting tapes
6. Screen of copper wires fastened with a copper tape
7. Filler
8. Inner sheath of halogen-free polymer compound
9. Armor of zinc-coated steel tapes
10. Halogen-free polymer compound jacket

Types, main parameters and sizes

Table 1. Cable types, construction elements and fire hazard designations

Type of cable*	Cable construction elements	Fire hazard designation
AReP ReP	One or three current-carrying conductors, ethylene propylene rubber insulation, polyethylene jacket	02.8.2.5.4
AReEoP ReEoP	The same but with a screen of braided copper wires	
AReEolP ReEolP	The same but with a screen of braided tinned copper wires	
AReV ReV	One or three current-carrying conductors, ethylene propylene rubber insulation, PVC plastic jacket	02.8.2.5.4
AReV-KhL ReV-KhL		
AReEoV ReEoV	The same but with a screen of braided copper wires	01.8.2.5.4
AReEoV-KhL ReEoV-KhL		
AReEolV ReEolV	The same but with a screen of braided tinned copper wires	
AReEolV-KhL ReEolV-KhL		
AReVng(A) ReVng(A)	One or three current-carrying conductors, ethylene propylene rubber insulation, fire-resistant PVC plastic jacket	P1b.8.2.5.4
AReVng(A)-KhL ReVng(A)-KhL		
AReEoVng(A) ReEoVng(A)	The same but with a screen of braided copper wires	P1b.8.2.5.4
AReEoVng(A)-KhL ReEoVng(A)-KhL		
AReEolVng(A) ReEolVng(A)	The same but with a screen of braided tinned copper wires	P1b.8.2.5.4
AReEolVng(A)-KhL ReEolVng(A)-KhL		
AReVng(A)-LS ReVng(A)-LS	One or three current-carrying conductors, ethylene propylene rubber insulation, low fire hazard PVC plastic jacket	P1b.8.2.2.2
AReVng(A)-LS-KhL ReVng(A)-LS-KhL		
AReVng(A)-LSm-KhL ReVng(A)-LSm-KhL		
AReEoVng(A)-LS ReEoVng(A)-LS	The same but with a screen of braided copper wires	
AReEoVng(A)-LS-KhL ReEoVng(A)-LS-KhL		
AReEoVng(A)-LSm-KhL ReEoVng(A)-LSm-KhL		
AReEolVng(A)-LS ReEolVng(A)-LS	The same but with a screen of braided tinned copper wires	
AReEolVng(A)-LS-KhL ReEolVng(A)-LS-KhL		
AReEolVng(A)-LSm-KhL ReEolVng(A)-LSm-KhL		

Type of cable*	Cable construction elements	Fire hazard designation
ARePng(A)-HF RePng(A)-HF	One or three current-carrying conductors, ethylene propylene rubber insulation, halogen-free polymer compound jacket	P1b.8.1.2.1
ARePng(A)-HF-KhL RePng(A)-HF-KhL		
ARePng(A)-HFm-KhL RePng(A)-HFm-KhL		
AReEoPng(A)-HF ReEoPng(A)-HF	The same but with a screen of braided copper wires	
AReEoPng(A)-HF-KhL ReEoPng(A)-HF-KhL		
AReEoPng(A)-HFm-KhL ReEoPng(A)-HFm-KhL		
AReEolPng(A)-HF ReEolPng(A)-HF	The same but with a screen of braided tinned copper wires	
AReEolPng(A)-HF-KhL ReEolPng(A)-HF-KhL		
AReEolPng(A)-HFm-KhL ReEolPng(A)-HFm-KhL		
ARePvm RePvm	One or three current-carrying conductors, ethylene propylene rubber insulation, polymer compound jacket	01.8.2.5.4
AReEoPvm ReEoPvm	The same but with a screen of braided copper wires	
AReEolPvm ReEolPvm	The same but with a screen of braided tinned copper wires	
AReTPu ReTPu	One or three current-carrying conductors, ethylene propylene rubber insulation, polyurethane jacket	02.8.2.5.4
AReEoTPu ReEoTPu	The same but with a screen of braided copper wires	
AReEolTPu ReEolTPu	The same but with a screen of braided tinned copper wires	
AReBaP ReBaP	One current-carrying conductor, ethylene propylene rubber insulation, aluminum tape armoring, polyethylene jacket	02.8.2.5.4
AReEoBaP ReEoBaP	The same but with a screen of braided copper wires	
AReEolBaP ReEolBaP	The same but with a screen of braided tinned copper wires	
AReBaV ReBaV	One current-carrying conductor, ethylene propylene rubber insulation, aluminum tape armoring, PVC plastic jacket	01.8.2.5.4
AReBaV-KhL ReBaV-KhL		
AReEoBaV ReEoBaV	The same but with a screen of braided copper wires	
AReEoBaV-KhL ReEoBaV-KhL		
AReEolBaV ReEolBaV	The same but with a screen of braided tinned copper wires	
AReEolBaV-KhL ReEolBaV-KhL		
AReBaVng(A) ReBaVng(A)	One current-carrying conductor, ethylene propylene rubber insulation, aluminum tape armoring, fire-resistant PVC plastic jacket	P1b.8.2.5.4
AReBaVng(A)-KhL ReBaVng(A)-KhL		
AReEoBaVng(A) ReEoBaVng(A)	The same but with a screen of braided copper wires	
AReEoBaVng(A)-KhL ReEoBaVng(A)-KhL		
AReEolBaVng(A) ReEolBaVng(A)	The same but with a screen of braided tinned copper wires	
AReEolBaVng(A)-KhL ReEolBaVng(A)-KhL		

Type of cable*	Cable construction elements	Fire hazard designation
AReBaVng(A)-LS ReBaVng(A)-LS	One current-carrying conductor, ethylene propylene rubber insulation, aluminum tape armoring, low fire hazard PVC plastic jacket	P1b.8.2.2.2
AReBaVng(A)-LS-KhL ReBaVng(A)-LS-KhL		
AReBaVng(A)-LSm-KhL ReBaVng(A)-LSm-KhL		
AReEoBaVng(A)-LS ReEoBaVng(A)-LS	The same but with a screen of braided copper wires	P1b.8.2.2.2
AReEoBaVng(A)-LS-KhL ReEoBaVng(A)-LS-KhL		
AReEoBaVng(A)-LSm-KhL ReEoBaVng(A)-LSm-KhL		
AReEolBaVng(A)-LS ReEolBaVng(A)-LS	The same but with a screen of braided tinned copper wires	
AReEolBaVng(A)-LS-KhL ReEolBaVng(A)-LS-KhL		
AReEolBaVng(A)-LSm-KhL ReEolBaVng(A)-LSm-KhL		
AReBaPng(A)-HF ReBaPng(A)-HF	One current-carrying conductor, ethylene propylene rubber insulation, aluminum tape armoring, halogen-free polymer compound jacket	P1b.8.1.2.1
AReBaPng(A)-HF-KhL ReBaPng(A)-HF-KhL		
AReBaPng(A)-HFm-KhL ReBaPng(A)-HFm-KhL		
AReEoBaPng(A)-HF ReEoBaPng(A)-HF	The same but with a screen of braided copper wires	P1b.8.1.2.1
AReEoBaPng(A)-HF-KhL ReEoBaPng(A)-HF-KhL		
AReEoBaPng(A)-HFm-KhL ReEoBaPng(A)-HFm-KhL		
AReEolBaPng(A)-HF ReEolBaPng(A)-HF	The same but with a screen of braided tinned copper wires	
AReEolBaPng(A)-HF-KhL ReEolBaPng(A)-HF-KhL		
AReEolBaPng(A)-HFm-KhL ReEolBaPng(A)-HFm-KhL		
AReBaPvm ReBaPvm	One current-carrying conductor, ethylene propylene rubber insulation, aluminum tape armoring, polymer compound jacket	01.8.2.5.4
AReEoBaPvm ReEoBaPvm	The same but with a screen of braided copper wires	
AReEolBaPvm ReEolBaPvm	The same but with a screen of braided tinned copper wires	
AReBaTPu ReBaTPu	One current-carrying conductor, ethylene propylene rubber insulation, aluminum tape armoring, polyurethane jacket	02.8.2.5.4
AReEoBaTPu ReEoBaTPu	The same but with a screen of braided copper wires	
AReEolBaTPu ReEolBaTPu	The same but with a screen of braided tinned copper wires	
AReKaP ReKaP	One current-carrying conductor, ethylene propylene rubber insulation, aluminum wire armoring, polyethylene jacket	02.8.2.5.4
AReEoKaP ReEoKaP	The same but with a screen of braided copper wires	
AReEolKaP ReEolKaP	The same but with a screen of braided tinned copper wires	
AReKaV ReKaV	One current-carrying conductor, ethylene propylene rubber insulation, aluminum wire armoring, PVC plastic jacket	01.8.2.5.4
AReKaV-KhL ReKaV-KhL		
AReEoKaV ReEoKaV	The same but with a screen of braided copper wires	
AReEoKaV-KhL ReEoKaV-KhL		

Type of cable*	Cable construction elements	Fire hazard designation
AReEolKaV ReEolKaV	The same but with a screen of braided tinned copper wires	O1.8.2.5.4
AReEolKaV-KhL ReEolKaV-KhL		
AReKaVng(A) ReKaVng(A)	One current-carrying conductor, ethylene propylene rubber insulation, aluminum wire armoring, fire-resistant PVC plastic jacket	P1b.8.2.5.4
AReKaVng(A)-KhL ReKaVng(A)-KhL		
AReEoKaVng(A) ReEoKaVng(A)	The same but with a screen of braided copper wires	
AReEoKaVng(A)-KhL ReEoKaVng(A)-KhL		
AReEolKaVng(A) ReEolKaVng(A)	The same but with a screen of braided tinned copper wires	
AReEolKaVng(A)-KhL ReEolKaVng(A)-KhL		
AReKaVng(A)-LS ReKaVng(A)-LS	One current-carrying conductor, ethylene propylene rubber insulation, aluminum wire armoring, low fire hazard PVC plastic jacket	P1b.8.2.2.2
AReKaVng(A)-LS-KhL ReKaVng(A)-LS-KhL		
AReKaVng(A)-LSm-KhL ReKaVng(A)-LSm-KhL		
AReEoKaVng(A)-LS ReEoKaVng(A)-LS	The same but with a screen of braided copper wires	
AReEoKaVng(A)-LS-KhL ReEoKaVng(A)-LS-KhL		
AReEoKaVng(A)-LSm-KhL ReEoKaVng(A)-LSm-KhL		
AReEolKaVng(A)-LS ReEolKaVng(A)-LS	The same but with a screen of braided tinned copper wires	
AReEolKaVng(A)-LS-KhL ReEolKaVng(A)-LS-KhL		
AReEolKaVng(A)-LSm-KhL ReEolKaVng(A)-LSm-KhL		
AReKaPng(A)-HF ReKaPng(A)-HF	One current-carrying conductor, ethylene propylene rubber insulation, aluminum wire armoring, halogen-free polymer compound jacket	P1b.8.1.2.1
AReKaPng(A)-HF-KhL ReKaPng(A)-HF-KhL		
AReKaPng(A)-HFm-KhL ReKaPng(A)-HFm-KhL		
AReEoKaPng(A)-HF ReEoKaPng(A)-HF	The same but with a screen of braided copper wires	
AReEoKaPng(A)-HF-KhL ReEoKaPng(A)-HF-KhL		
AReEoKaPng(A)-HFm-KhL ReEoKaPng(A)-HFm-KhL		
AReEolKaPng(A)-HF ReEolKaPng(A)-HF	The same but with a screen of braided tinned copper wires	
AReEolKaPng(A)-HF-KhL ReEolKaPng(A)-HF-KhL		
AReEolKaPng(A)-HFm-KhL ReEolKaPng(A)-HFm-KhL		
AReKaPvm ReKaPvm	One current-carrying conductor, ethylene propylene rubber insulation, aluminum wire armoring, polymer compound jacket	O1.8.2.5.4
AReEoKaPvm ReEoKaPvm	The same but with a screen of braided copper wires	
AReEolKaPvm ReEolKaPvm	The same but with a screen of braided tinned copper wires	

Type of cable*	Cable construction elements	Fire hazard designation
AReKaTPu ReKaTPu	One current-carrying conductor, ethylene propylene rubber insulation, aluminum wire armoring, polyurethane jacket	02.8.2.5.4
AReEoKaTPu ReEoKaTPu	The same but with a screen of braided copper wires	
AReEolKaTPu ReEolKaTPu	The same but with a screen of braided tinned copper wires	
AReKasP ReKasP	One current-carrying conductor, ethylene propylene rubber insulation, aluminum alloy wire armoring, polyethylene jacket	02.8.2.5.4
AReEoKasP ReEoKasP	The same but with a screen of braided copper wires	
AReEolKasP ReEolKasP	The same but with a screen of braided tinned copper wires	
AReKasV ReKasV	One current-carrying conductor, ethylene propylene rubber insulation, aluminum alloy wire armoring, PVC plastic jacket	01.8.2.5.4
AReKasV-KhL ReKasV-KhL		
AReEoKasV ReEoKasV	The same but with a screen of braided copper wires	
AReEoKasV-KhL ReEoKasV-KhL		
AReEolKasV ReEolKasV	The same but with a screen of braided tinned copper wires	
AReEolKasV-KhL ReEolKasV-KhL		
AReKasVng(A) ReKasVng(A)	One current-carrying conductor, ethylene propylene rubber insulation, aluminum alloy wire armoring, fire-resistant PVC plastic jacket	P1b.8.2.5.4
AReKasVng(A)-KhL ReKasVng(A)-KhL		
AReEoKasVng(A) ReEoKasVng(A)	The same but with a screen of braided copper wires	
AReEoKasVng(A)-KhL ReEoKasVng(A)-KhL		
AReEolKasVng(A) ReEolKasVng(A)	The same but with a screen of braided tinned copper wires	
AReEolKasVng(A)-KhL ReEolKasVng(A)-KhL		
AReKasVng(A)-LS ReKasVng(A)-LS	One current-carrying conductor, ethylene propylene rubber insulation, aluminum alloy wire armoring, low fire hazard PVC plastic jacket	P1b.8.2.2.2
AReKasVng(A)-LS-KhL ReKasVng(A)-LS-KhL		
AReKasVng(A)-LSm-KhL ReKasVng(A)-LSm-KhL		
AReEoKasVng(A)-LS ReEoKasVng(A)-LS	The same but with a screen of braided copper wires	P1b.8.2.2.2
AReEoKasVng(A)-LS-KhL ReEoKasVng(A)-LS-KhL		
AReEoKasVng(A)-LSm-KhL ReEoKasVng(A)-LSm-KhL		
AReEolKasVng(A)-LS ReEolKasVng(A)-LS	The same but with a screen of braided tinned copper wires	
AReEolKasVng(A)-LS-KhL ReEolKasVng(A)-LS-KhL		
AReEolKasVng(A)-LSm-KhL ReEolKasVng(A)-LSm-KhL		

Type of cable*	Cable construction elements	Fire hazard designation
AReKasPng(A)-HF ReKasPng(A)-HF	One current-carrying conductor, ethylene propylene rubber insulation, aluminum alloy wire armoring, halogen-free polymer compound jacket	P1b.8.1.2.1
AReKasPng(A)-HF-KhL ReKasPng(A)-HF-KhL		
AReKasPng(A)-HFm-KhL ReCasPng(A)-HFm-KhL		
AReEoKasPng(A)-HF ReEoKasPng(A)-HF	The same but with a screen of braided copper wires	
AReEoKasPng(A)-HF-KhL ReEoKasPng(A)-HF-KhL		
AReEoKasPng(A)-HFm-KhL ReEoKasPng(A)-HFm-KhL		
AReEolKasPng(A)-HF ReEolKasPng(A)-HF	The same but with a screen of braided tinned copper wires	
AReEolKasPng(A)-HF-KhL ReEolCasPng(A)-HF-KhL		
AReEolKasPng(A)-HFm-KhL ReEolKasPng(A)-HFm-KhL		
AReKasPvm ReKasPvm	One current-carrying conductor, ethylene propylene rubber insulation, aluminum alloy wire armoring, polymer compound jacket	01.8.2.5.4
AReEoKasPvm ReEoKasPvm	The same but with a screen of braided copper wires	
AReEolKasPvm ReEolKasPvm	The same but with a screen of braided tinned copper wires	
AReKaTPu ReKasTPu	One current-carrying conductor, ethylene propylene rubber insulation, aluminum alloy wire armoring, polyurethane jacket	02.8.2.5.4
AReEoKasTPu ReEoKasTPu	The same but with a screen of braided copper wires	
AReEolKasTPu ReEolKasTPu	The same but with a screen of braided tinned copper wires	02.8.2.5.4
AReBP ReBP	Three current-carrying conductors, ethylene propylene rubber insulation, zinc-coated steel tape armoring, polyethylene jacket	02.8.2.5.4
AReEoBP ReEoBP	The same but with a screen of braided copper wires	
AReEolBP ReEolBP	The same but with a screen of braided tinned copper wires	
AReBV ReBV	Three current-carrying conductors, ethylene propylene rubber insulation, zinc-coated steel tape armoring, PVC plastic jacket	01.8.2.5.4
AReBV-KhL ReBV-KhL		
AReEoBV ReEoBV	The same but with a screen of braided copper wires	
AReEoBV-KhL ReEoBV-KhL		
AReEolBV ReEolBV	The same but with a screen of braided tinned copper wires	
AReEolBV-KhL ReEolBV-KhL		
AReBVng(A) ReBVng(A)	Three current-carrying conductors, ethylene propylene rubber insulation, zinc-coated steel tape armoring, fire-resistant PVC plastic jacket	P1b.8.2.5.4
AReBVng(A)-KhL ReBVng(A)-KhL		
AReEoBVng(A) ReEoBVng(A)	The same but with a screen of braided copper wires	
AReEoBVng(A)-KhL ReEoBVng(A)-KhL		
AReEolBVng(A) ReEolBVng(A)	The same but with a screen of braided tinned copper wires	
AReEolBVng(A)-KhL ReEolBVng(A)-KhL		

Type of cable*	Cable construction elements	Fire hazard designation
AReBVng(A)-LS ReBVng(A)-LS	Three current-carrying conductors, ethylene propylene rubber insulation, zinc-coated steel tape armoring, low fire hazard PVC plastic jacket	P1b.8.2.2.2
AReBVng(A)-LS-KhL ReBVng(A)-LS-KhL		
AReBVng(A)-LSm-KhL ReBVng(A)-LSm-KhL		
AReEoBVng(A)-LS ReEoBVng(A)-LS	The same but with a screen of braided copper wires	P1b.8.2.2.2
AReEoBVng(A)-LS-KhL ReEoBVng(A)-LS-KhL		
AReEoBVng(A)-LSm-KhL ReEoBVng(A)-LSm-KhL		
AReEolBVng(A)-LS ReEolBVng(A)-LS	The same but with a screen of braided tinned copper wires	
AReEolBVng(A)-LS-KhL ReEolBVng(A)-LS-KhL		
AReEolBVng(A)-LSm-KhL ReEolBVng(A)-LSm-KhL		
AReBPng(A)-HF ReBPng(A)-HF	Three current-carrying conductors, ethylene propylene rubber insulation, zinc-coated steel tape armoring, halogen-free polymer compound jacket	P1b.8.1.2.1
AReBPng(A)-HF-KhL ReBPng(A)-HF-KhL		
AReBPng(A)-HFm-KhL ReBPng(A)-HFm-KhL		
AReEoBPng(A)-HF ReEoBPng(A)-HF	The same but with a screen of braided copper wires	
AReEoBPng(A)-HF-KhL ReEoBPng(A)-HF-KhL		
AReEoBPng(A)-HFm-KhL ReEoBPng(A)-HFm-KhL		
AReEolBPng(A)-HF ReEolBPng(A)-HF	The same but with a screen of braided tinned copper wires	P1b.8.1.2.1
AReEolBPng(A)-HF-KhL ReEolBPng(A)-HF-KhL		
AReEolBPng(A)-HFm-KhL ReEolBPng(A)-HFm-KhL		
AReBPvm ReBPvm	Three current-carrying conductors, ethylene propylene rubber insulation, zinc-coated steel tape armoring, polymer compound jacket	O1.8.2.5.4
AReEoBPvm ReEoBPvm	The same but with a screen of braided copper wires	
AReEolBPvm ReEolBPvm	The same but with a screen of braided tinned copper wires	
AReBTPu ReBTPu	Three current-carrying conductors, ethylene propylene rubber insulation, zinc-coated steel tape armoring, polyurethane jacket	O2.8.2.5.4
AReEoBTPu ReEoBTPu	The same but with a screen of braided copper wires	O2.8.2.5.4
AReEolBTPu ReEolBTPu	The same but with a screen of braided tinned copper wires	
AReKoP ReKoP	Three current-carrying conductors, ethylene propylene rubber insulation, braided zinc-coated steel wire armoring, polyethylene jacket	O2.8.2.5.4
AReEoKoP ReEoKoP	The same but with a screen of braided copper wires	
AReEolKoP ReEolKoP	The same but with a screen of braided tinned copper wires	

Type of cable*	Cable construction elements	Fire hazard designation
AReKoV ReKoV	Three current-carrying conductors, ethylene propylene rubber insulation, braided zinc-coated steel wire armoring, PVC plastic jacket	01.8.2.5.4
AReKoV-KhL ReKoV-KhL		
AReEoKoV ReEoKoV	The same but with a screen of braided copper wires	
AReEoKoV-KhL ReEoKoV-KhL		
AReEolKoV ReEolKoV	The same but with a screen of braided tinned copper wires	
AReEolKoV-KhL ReEolKoV-KhL		
AReKoVng(A) ReKoVng(A)	Three current-carrying conductors, ethylene propylene rubber insulation, braided zinc-coated steel wire armoring, fire-resistant PVC plastic jacket	P1b.8.2.5.4
AReKoVng(A)-KhL ReCoVng(A)-KhL		
AReEoKoVng(A) ReEoKoVng(A)	The same but with a screen of braided copper wires	
AReEoKoVng(A)-KhL ReEoKoVng(A)-KhL		
AReEolKoVng(A) ReEolKoVng(A)	The same but with a screen of braided tinned copper wires	
AReEolKoVng(A)-KhL ReEolKoVng(A)-KhL		
AReKoVng(A)-LS ReKoVng(A)-LS	Three current-carrying conductors, ethylene propylene rubber insulation, braided zinc-coated steel wire armoring, low fire hazard PVC plastic jacket	P1b.8.2.2.2
AReKoVng(A)-LS-KhL ReKoVng(A)-LS-KhL		
AReKoVng(A)-LSm-KhL ReKoVng(A)-LSm-KhL		
AReEoKoVng(A)-LS ReEoKoVng(A)-LS	The same but with a screen of braided copper wires	P1b.8.2.2.2
AReEoKoVng(A)-LS-KhL ReEoKoVng(A)-LS-KhL		
AReEoKovng(A)-LSm-KhL ReEoKoVng(A)-LSm-KhL		
AReEolKoVng(A)-LS ReEolKoVng(A)-LS	The same but with a screen of braided tinned copper wires	
AReEolKovng(A)-LS-KhL ReEolKoVng(A)-LS-KhL		
AReEolKoVng(A)-LSm-KhL ReEolKoVng(A)-LSm-KhL		
AReKoPng(A)-HF ReKoPng(A)-HF	Three current-carrying conductors, ethylene propylene rubber insulation, braided zinc-coated steel wire armoring, halogen-free polymer compound jacket	P1b.8.1.2.1
AReKoPng(A)-HF-KhL ReKoPng(A)-HF-KhL		
AReKoPng(A)-HFm-KhL ReKoPng(A)-HFm-KhL		
AReEoKoPng(A)-HF ReEoKoPng(A)-HF	The same but with a screen of braided copper wires	
AReEoKoPng(A)-HF-KhL ReEoKoPng(A)-HF-KhL		
AReEoKoPng(A)-HFm-KhL ReEoKoPng(A)-HFm-KhL		
AReEolKoPng(A)-Kh ReEolKoPng(A)-HF	The same but with a screen of braided tinned copper wires	
AReEolKoPng(A)-HF-KhL ReEolKoPng(A)-HF-KhL		
AReEolKoPng(A)-HFm-KhL ReEolKoPng(A)-HFm-KhL		
AReKoPvm ReKoPvm	Three current-carrying conductors, ethylene propylene rubber insulation, braided zinc-coated steel wire armoring, polymer compound jacket	01.8.2.5.4

Type of cable*	Cable construction elements	Fire hazard designation
AReEoKoPvm ReEoKoPvm	The same but with a screen of braided copper wires	01.8.2.5.4
AReEolKoPvm ReEolKoPvm	The same but with a screen of braided tinned copper wires	
AReKoTPu ReKoTPu	Three current-carrying conductors, ethylene propylene rubber insulation, braided zinc-coated steel wire armoring, polyurethane jacket	02.8.2.5.4
AReEoKoTPu ReEoKoTPu	The same but with a screen of braided copper wires	
AReEolKoTPu ReEolKoTPu	The same but with a screen of braided tinned copper wires	
AReKP ReKP	Three current-carrying conductors, ethylene propylene rubber insulation, zinc-coated steel wire armoring, polyethylene jacket	02.8.2.5.4
AReEoKP ReEoKP	The same but with a screen of braided copper wires	
AReEolKP ReEolKP	The same but with a screen of braided tinned copper wires	
AReKV ReKV	Three current-carrying conductors, ethylene propylene rubber insulation, zinc-coated steel wire armoring, PVC plastic jacket	01.8.2.5.4
AReKV-KhL ReKV-KhL		
AReEoKV ReEoKV	The same but with a screen of braided copper wires	
AReEoKV-KhL ReEoKV-KhL		
AReEolKV ReEolKV	The same but with a screen of braided tinned copper wires	
AReEolKV-KhL ReEolKV-KhL		
AReKVng(A) ReKVng(A)	Three current-carrying conductors, ethylene propylene rubber insulation, zinc-coated steel wire armoring, fire-resistant PVC plastic jacket	P1b.8.2.5.4
AReKVng(A)-KhL ReKVng(A)-KhL		
AReEoKVng(A) ReEoKVng(A)	The same but with a screen of braided copper wires	P1b.8.2.5.4
AReEoKVng(A)-KhL ReEoKVng(A)-KhL		
AReEolKVng(A) ReEolKVng(A)	The same but with a screen of braided tinned copper wires	
AReEolKVng(A)-KhL ReEolKVng(A)-KhL		
AReKVng(A)-LS ReKVng(A)-LS	Three current-carrying conductors, ethylene propylene rubber insulation, zinc-coated steel wire armoring, low fire hazard PVC plastic jacket	P1b.8.2.2.2
AReKVng(A)-LS-KhL ReKVng(A)-LS-KhL		
AReKVng(A)-LSm-KhL ReKVng(A)-LSm-KhL		
AReEoKVng(A)-LS ReEoKVng(A)-LS	The same but with a screen of braided copper wires	
AReEoKVng(A)-LS-KhL ReEoKVng(A)-LS-KhL		
AReEoKVng(A)-LSm-KhL ReEoKVng(A)-LSm-KhL		
AReEolKVng(A)-LS ReEolKVng(A)-LS	The same but with a screen of braided tinned copper wires	
AReEolKVng(A)-LS-KhL ReEolKVng(A)-LS-KhL		
AReEolKVng(A)-LSm-KhL ReEolKVng(A)-LSm-KhL		

Type of cable*	Cable construction elements	Fire hazard designation
AReKPng(A)-HF ReKPng(A)-HF	Three current-carrying conductors, ethylene propylene rubber insulation, zinc-coated steel wire armoring, halogen-free polymer compound jacket	P1b.8.1.2.1
AReKPng(A)-HF-KhL ReKPng(A)-HF-KhL		
AReKPng(A)-HFm-KhL ReKPng(A)-HFm-KhL		
AReEoKPng(A)-HF ReEoKPng(A)-HF	The same but with a screen of braided copper wires	
AReEoKPng(A)-HF-KhL ReEoKPng(A)-HF-KhL		
AReEoKPng(A)-HFm-KhL ReEoKPng(A)-HFm-KhL		
AReEolKPng(A)-HF ReEolKPng(A)-HF	The same but with a screen of braided tinned copper wires	P1b.8.1.2.1
AReEolKPng(A)-HF-KhL ReEolKPng(A)-HF-KhL		
AReEolKPng(A)-HFm-KhL ReEolKPng(A)-HFm-KhL		
AReKPvm ReKPvm	Three current-carrying conductors, ethylene propylene rubber insulation, zinc-coated steel wire armoring, polymer compound jacket	01.8.2.5.4
AReEoKPvm ReEoKPvm	The same but with a screen of braided copper wires	
AReEolKPvm ReEolKPvm	The same but with a screen of braided tinned copper wires	
AReKTPu ReKTPu	Three current-carrying conductors, ethylene propylene rubber insulation, zinc-coated steel wire armoring, polyurethane jacket	02.8.2.5.4
AReEoKTPu ReEoKTPu	The same but with a screen of braided copper wires	
AReEolKTPu ReEolKTPu	The same but with a screen of braided tinned copper wires	
AReKkP ReKkP	One or three current-carrying conductors, ethylene propylene rubber insulation, composite bar armor, polyethylene jacket	02.8.2.5.4
AReEoKkP ReEoKkP	The same but with a screen of braided copper wires	
AReEolKkP ReEolKkP	The same but with a screen of braided tinned copper wires	
AReKkV ReKkV	One or three current-carrying conductors, ethylene propylene rubber insulation, composite bar armor, PVC plastic jacket	01.8.2.5.4
AReKkV-KhL ReKkV-KhL		
AREeEoKkV ReEoKkV	The same but with a screen of braided copper wires	
AReEoKkV-KhL ReEoKkV-KhL		
AReEolKkV ReEolKkV	The same but with a screen of braided tinned copper wires	01.8.2.5.4
AReEolKkV-KhL ReEolKkV-KhL		
AReKkVng(A) ReKkVng(A)	One or three current-carrying conductors, ethylene propylene rubber insulation, composite bar armor, fire-resistant PVC plastic jacket	P1b.8.2.5.4
AReKkVng(A)-KhL ReKkVng(A)-KhL		
AReEoKkVng(A) ReEoKkVng(A)	The same but with a screen of braided copper wires	
AReEoKkVng(A)-KhL ReEoKkVng(A)-KhL		
AReEolKkVng(A) ReEolKkVng(A)	The same but with a screen of braided tinned copper wires	
AReEolKkVng(A)-KhL ReEolKkVng(A)-KhL		

Type of cable*	Cable construction elements	Fire hazard designation
AReKkVng(A)-LS ReKkVng(A)-LS	One or three current-carrying conductors, ethylene propylene rubber insulation, composite bar armor, low fire hazard PVC plastic jacket	P1b.8.2.2.2
AReKkVng(A)-LS-KhL ReKkVng(A)-LS-KhL		
AReKkVng(A)-LSm-KhL ReKkVng(A)-LSm-KhL		
AReEoKkVng(A)-LS ReEoKkVng(A)-LS	The same but with a screen of braided copper wires	
AReEoKkVng(A)-LS-KhL ReEoKkVng(A)-LS-KhL		
AReEoKkVng(A)-LSm-KhL ReEoKkVng(A)-LSm-KhL		
AReEolKkVng(A)-LS ReEolKkVng(A)-LS	The same but with a screen of braided tinned copper wires	
AReEolKkVng(A)-LS-KhL ReEolKkVng(A)-LS-KhL		
AeEolKkVng(A)-LSm-KhL ReEolKkVng(A)-LSm-KhL		
AReKkPng(A)-HF ReKkPng(A)-HF	One or three current-carrying conductors, ethylene propylene rubber insulation, composite bar armor, halogen-free polymer compound jacket	P1b.8.1.2.1
AReKkPng(A)-HF-KhL ReKkPng(A)-HF-KhL		
AReKkPng(A)-HFm-KhL ReKkPng(A)-HFm-KhL		
AReEoKkPng(A)-HF ReEoKkPng(A)-HF	The same but with a screen of braided copper wires	
AReEoKkPng(A)-HF-KhL ReEoKkPng(A)-HF-KhL		
AReEoKkPng(A)-HFm-KhL ReEoKkPng(A)-HFm-KhL		
AReEolKkPng(A)-KhL ReEolKkPng(A)-HF	The same but with a screen of braided tinned copper wires	
AReEolKkPng(A)-HF-KhL ReEolKkPng(A)-HF-KhL		
AReEolKkPng(A)-HFm-KhL ReEolKkPng(A)-HFm-KhL		
AReKkPvm ReKkPvm	One or three current-carrying conductors, ethylene propylene rubber insulation, composite bar armor, polymer compound jacket	01.8.2.5.4
AReEoKkPvm ReEoKkPvm	The same but with a screen of braided copper wires	
AReEolKkPvm ReEolKkPvm	The same but with a screen of braided tinned copper wires	
AReKkTPu ReKkTPu	One or three current-carrying conductors, ethylene propylene rubber insulation, composite bar armor, polyurethane jacket	02.8.2.5.4
AReEoKkTPu ReEoKkTPu	The same but with a screen of braided copper wires	
AReEolKkTPu ReEolKkTPu	The same but with a screen of braided tinned copper wires	02.8.2.5.4
* The numerator contains types of cables with aluminum current-carrying conductors, the denominator contains types of cables with copper current-carrying conductors.		

NOTES

1. The use of “m” letter in the cable type designation means that “ng(A)-LSm-KhL” and “ng(A)-HFm-KhL” versions of cables and cables with a polymer compound jacket are resistant to oil and gasoline:

Example 1: ReKPng(A)-HFm-KhL 3x50mk/16-6;
Example 2: ReBVng(A)-LSm-KhL 3x50mk/16-6;
Example 3: RePvm 3x50mk/16-6.

2. The metal screen may have the following construction:
– copper wires, without any letters added to the cable type designation, the nominal screen cross-section is stated in the cable identification marking:
Example: ReBPng(A)-HFm-KhL 3x50mk/16-6.
– copper tapes, without any letters added to the cable type designation, the nominal screen cross-section is not stated in the cable identification marking:
Example: ReBPng(A)-HFm-KhL 3x50mk-6.
– braided copper wires, with “Eo” letters added to the cable type designation, the nominal screen cross-section is not stated in the cable identification marking:
Example: ReEoPng(A)-HF 3x50mk-6.
– braided tinned copper wires, with “Eol” letters added to the cable type designation, the nominal screen cross-section is not stated in the cable identification marking:
Example: ReEolPng(A)-HF 3x50mk-6.
– aluminum wires, without any letters added to the cable type designation, with “a” letter added after the nominal screen cross-section:
Example: ReBPng(A)-HFm-KhL 3x50mk/35a-6.
– aluminum alloy wires, without any letters added to the cable type designation, with “as” letters added after the nominal screen cross-section:
Example: ReBPng(A)-HFm-KhL 3x50mk/35as-6.
– copper clad aluminum wires, without any letters added to the cable type designation, with “am” letters added after the nominal screen cross-section:
Example: ReBPng(A)-HFm-KhL 3x50mk/35am-6.

3. The use of “KhL” suffix in the type designation means that the cable is intended for operation in areas with temperatures down to minus 60 °C.

4. The use of “ng(A)” letters in the type designation means that the cable is flame-retardant when cables are laid in groups and is intended for operation in areas with temperatures down to minus 50 °C, for cables with “ng(A)-KhL” letters in the type designation – down to minus 60 °C.

5. The use of “ng(A)-LS” letters in the type designation means that the cable is flame-retardant when cables are laid in groups, has low smoke and fume emission characteristics and is intended for operation in areas with temperatures down to minus 50 °C, for cables with “ng(A)-LS-KhL” letters in the type designation – down to minus 60 °C.

6. The use of “ng(A)-LSm-KhL” letters in the type designation means that the cable is resistant to oil and gasoline, flame-retardant when cables are laid in groups, has low smoke and fume emission characteristics and is intended for operation in areas with temperatures down to minus 60 °C.

7. The use of “ng(A)-HF” letters in the type designation means that the cable is flame-retardant when cables are laid in groups, does not emit corrosive fumes during combustion and smoldering and is intended for operation in areas with temperatures down to minus 50 °C, for cables with “ng(A)-HF-KhL” letters in the type designation – down to minus 60 °C.

8. The use of “ng(A)-HFm-KhL” letters in the type designation means that the cable is flame-retardant when cables are laid in groups, does not emit corrosive fumes during combustion and smoldering and is intended for operation in areas with temperatures down to minus 60 °C.

9. Cables may be manufactured with a halogen-free cross-linked polymer compound jacket:
Example: RePsng(A)-HF 3x50mk/16-6.

10. Cables may be manufactured with a reinforced polyethylene jacket:
Example: RePu 3x50mk/16-6.

11. If cable construction contains sealing elements, the following characters are added to the cable type designation:
“g” – longitudinal sealing using water-blocking tapes under the metal screen:
Example 1: RePgng(A)-HF 3x50mk/16-6;
Example 2: ReBVgng(A)-LS-KhL 3x50mk/16-10;
“2g” – longitudinal and transverse sealing using water-blocking tapes under the metal screen and polymer coated aluminum tape over the separation layer or inner sheath:
Example 1: ReP2gng(A)-HF 3x50mk/16-6;
Example 2: ReBV2gng(A)-LS-KhL 3x50mk/16-10;
“gzh” – conductor sealing using water-blocking threads and/or tapes and longitudinal sealing using water-blocking tapes under the metal screen:
Example 1: RePgzhng(A)-HF 3x50mk/16-6;
Example 2: ReBVgzhng(A)-LS-KhL 3x50mk/16-10;
“2gzh” – conductor sealing using water-blocking threads and/or tapes and longitudinal and transverse sealing using water-blocking tapes under the metal screen and polymer coated aluminum tape over the separation layer or inner sheath:
Example 1: ReP2gzhng(A)-HF 3x50mk/16-6;
Example 2: ReBV2gzhng(A)-LS-KhL 3x50mk/16-10.

12. The type designation of the cable tropical version contains letter “T”:
Example: ReVng(A)-LS-T 3x120mk/16-10.

13. At the customer’s request, cables of all types can be manufactured under “IKUP” trademark that is added to the cable type designation:
Example: IKUP RePgng(A)-HF 3x50mk/16-6.

The cable type designation contains the following letters indicating the type of current-carrying conductors that are added after the nominal conductor cross-section:

(mk) – copper or aluminum, multiwire, round;
(mkl) – tinned copper, multiwire, round;
(ok) – copper or aluminum, solid, round;
(ms) – copper or aluminum, multiwire, sector-shaped;
(msl) – tinned copper, multiwire, sector-shaped;
(os) – aluminum, solid, sector-shaped.

Table 2. Nominal cross-section and type of current-carrying conductors

Type of the current-carrying conductor		Nominal conductor cross-section, mm²				
		Rated cable voltage, kV				
		6	10	15	20	35
For single core cables						
Copper, tinned copper	Solid, round	35–50		—		
	Multiwire, round	35–800			50–800	
	Multiwire, round, Class 3 and 5 flexibility	35–630*			50–630*	
	For three core cables					
	Solid, round	35–50		—		
	Multiwire, round including Class 3 and 5 flexibility	35–400			50–400	
	Multiwire, sector-shaped	95–400		120–400		—
For single core cables						
Aluminum	Solid, round	35–400		—		
	Multiwire, round	35–800		50–800		
	For three core cables					
	Solid, round	35–400		—		
	Multiwire, round	35–400		50–400		
	Solid, multiwire sector-shaped	95–400		120–400		—

* Class 3 current-carrying conductors are manufactured with a nominal cross-section of up to 500 mm²

OPERATION OF CABLES

The cables are intended for use in AC voltage networks with isolated or grounded neutral of “A”, “B” and “C” categories in accordance with international standard IEC 60183 [4].
The electrical network category is characterized by duration of overvoltage in the network caused by a single-phase ground fault. Category “A” includes networks that remain operational for not longer than 1 minute after a ground fault. Category “B” includes networks that remain operational for not longer than 1 hour after a single-phase ground fault. Category “C” includes all the networks that are not included in either category “A” or category “B”.
The rated voltage of the cables recommended for use in three-phase networks of the corresponding categories is given in the table.

Table 3. Selection of rated voltage of cables depending on the network category, in kilovolts

Maximum network voltage, Um	Rated cable voltage, U_0 / U	
	System category “A” and “B”	System category “C”
7.2	3.6/6	6/10
12	6/10	8.7/15
17.5	8.7/15	12/20
24	12/20	18/30
42	20/35	20/35

Table 4. Main application of cables

Cable type	Fire hazard designation	Main application
Without designation	01.8.2.5.4	For laying a single cable in cable structures and industrial spaces. Laying groups of cables is permitted only in outdoor electrical installations and industrial spaces attended by service personnel only occasionally and requires passive fire protection
ng(A) ng(A)-KhL	P1b.8.2.5.4	For laying in open cable structures (overhead tray systems, galleries) of outdoor electrical installations taking into account cable fire performance
ng(A)-LS ng(A)-LS-KhL ng(A)-LSm-KhL	P1b.8.2.2.2	For laying in indoor electrical installations as well as in buildings, structures and closed cable structures taking into account cable fire performance
ng(A)-HF ng(A)-HF-KhL ng(A)-HFm-KhL	P1b.8.1.2.1	For laying in indoor electrical installations as well as in high occupancy buildings and structures including multifunctional high-rise buildings and building complexes taking into account cable fire performance
Note: The main scope of application of waterproof cables was expanded to include the use in areas where moisture penetration into the cable is possible.		

- The cables are intended for use in a stationary state at an ambient temperature of:
  – from minus 65 °C to plus 50 °C for cables with a polymer compound jacket;
  – from minus 60 °C to plus 50 °C for cables with a polyethylene and polyurethane jacket and cables of "KhL", "ng(A)-KhL", "ng(A)-LS-KhL", "ng(A)-LSm-KhL", "ng(A)-HF-KhL", "ng(A)-HFm-KhL" types;
  – from minus 30 °C to plus 50 °C for tropical version of cables;
  – from minus 50 °C to plus 50 °C for other cables;
  and increased relative humidity up to 98% at a temperature up to 35 °C.
- Cables with a PVC plastic, low fire hazard PVC plastic or fire-resistant PVC plastic jacket can be laid in explosion hazardous areas of any category. Cables with a halogen-free polymer compound and polymer compound jacket can be laid in explosion hazardous areas B-1, B-1a.
- The cables are intended for installation on routes with unlimited elevation difference.
- Single core cables with aluminum wire armor ("Ka" letters in the cable type designation) are intended for operation without tensile loads during operation if measures preventing mechanical damage to the cable are adopted.
- Single core cables with aluminum alloy wire armor ("Kas" letters in the cable type designation) and three core cables with zinc-coated steel wire armor ("K" letter in the cable type designation), composite bar armor ("Kk" letters in the cable type designation) and braided zinc-coated steel wire armor ("Ko" letters in the cable type designation) are intended for laying on routes where they may be exposed to tensile forces during operation including laying in seismically active areas, in areas where soil displacement is possible, in permafrost conditions and in earth banked areas. The seismic resistance of cables is ensured when exposed to earthquakes of up to "IX" intensity degree according to MSK-64 [6] scale.
- Three core cables with steel tape armor or single core cables with aluminum tape armor are intended for operation without tensile loads during operation if measures preventing mechanical damage to the cable are adopted.
- Cables, including armored ones, with a PVC plastic or fire-resistant PVC plastic or polymer compound jacket are intended for laying cable lines in dry soils, in air.
- Cables with a polyethylene or polyurethane jacket are intended for operation when laid in ground regardless of the degree of soil corrosion activity. These cables may be laid in air, including in cable structures, provided that additional fire protection measures are taken, for example, application of flame-retardant coatings.
- Cables laid in air should be protected from solar radiation. It is permissible to lay cables without using solar radiation protection measures provided that the current load is reduced and polymer compound jacket resistant to solar radiation is used.
- Cables laid in ground (in trenches) should be protected from mechanical damage along the entire route by concrete slabs, polymer compound plates for covering cables (PZK type) or bricks.
- The main applications of cables depending on the method of protection against penetration and migration of water.

Table 5.

Sealing versions	Main applications
"2g" and "2gzh"	For laying in ground (trenches) regardless of the degree of soil corrosion activity
"g" and "gzh"	For laying in damp, partially inundated structures
Without sealing elements	In all types of dry spaces

- Cables, including armored ones, with a low fire hazard PVC plastic and halogen-free polymer compound jacket, are intended for use in cable power transmission lines and laid in groups in air in cable structures and spaces where higher requirements for smoke density during a fire apply. Cables with "ng(A)-LSm-KhL" and "ng(A)-HFm-KhL" letters in the type designation are resistant to oil, gasoline, chemical solutions and drilling fluids.
- Cables with a halogen-free polymer compound, including cross-linked polymer compound, jacket are intended for use in cable structures where higher requirements for limiting the exposure to corrosive gases apply.
- Cables with a polymer compound jacket are intended for laying in air and in ground. Cables are resistant to oil, gasoline, chemical solutions and drilling fluids as well as environmental factors.

Cable laying conditions

- The permissible bending radius for three core cables during laying should be at least $12D_n$ and for single core cables – at least $15D_n$.
- When laying cables using a special forming board, a minimum cable bending radius of $7.5D_n$ is acceptable.
- Cables with a PVC plastic jacket including cables with "KhL" suffix, with a fire-resistant PVC plastic jacket including cables with "KhL" suffix, with a low fire hazard PVC plastic and halogen-free polymer compound jacket can be laid without preheating at an ambient temperature not lower than minus 15 °C.
- Cables with a polyethylene and polyurethane jacket and cables with "ng(A)-LS-KhL", "ng(A)-LSm-KhL", "ng(A)-HF-KhL", "ng(A)-HFm-KhL" letters in the type designation may be laid without preheating at an ambient temperature not lower than minus 20 °C.
- Cables with a polymer compound jacket can be laid without preheating at an ambient temperature not lower than minus 30 °C.
- At the customer's request, cables with a halogen-free polymer compound jacket of "ng(A)-HF-KhL" and "ng(A)-HFm-KhL" versions can be laid without preheating at an ambient temperature not lower than minus 35 °C.
- In the process of laying the cables should be pulled using a cable stocking or using a wedge grip secured to current-carrying conductors.

The permissible pulling forces of cables F, N, on the laying route should not exceed those calculated using the formula:

$$F = S \cdot \sigma, \quad (10)$$

where S is the total cable conductor cross-section, mm^2;
σ is the permissible tension equal to 30 N/mm^2 for aluminum conductors and 50 N/mm^2 for copper conductors.

It is recommended that cables after their laying and installation of fittings should be tested with AC voltage $2U_0$ with a nominal frequency of 50 Hz for 60 minutes or AC voltage U_0 with a nominal frequency of 50 Hz for 24 hours or AC voltage 3U0 with a nominal frequency of 0.1 Hz for 60 minutes.
The jacket of cables laid in ground should be tested with a fixed voltage of 10 kV for 1 minute. The test voltage should be applied between the metal screen or armor and the grounding electrode.

PERFORMANCE CHARACTERISTICS OF CABLES

- The permissible sustained temperature rise of cable conductors is to 90 °C. The maximum permissible temperature of cable conductors during a short circuit is 250 °C, the maximum permissible temperature rise of a cable copper screen during a short circuit is to 350 °C, the maximum temperature rise of a cable conductor during a short circuit as per the cable non-flammability requirements is to 400 °C for a short circuit duration of up to 5 seconds.
- The permissible temperature rise of cable conductors under overload conditions is to not higher than 130 °C.
- The duration of cable operation under overload conditions should not exceed 8 hours per day and 1000 hours during the service life.

Design values of capacitance of cables with round conductors are given in Table 6 as reference values.

Table 6. Design values of capacitance of cables with round conductors

Nominal conductor cross-section, mm²	Capacitance of 1 km of cable, μF				
	Rated cable voltage, kV				
	6	10	15	20	35
35	0.30	0.24	0.19	0.17	0.13
50	0.33	0.26	0.21	0.18	0.14
70	0.38	0.30	0.24	0.21	0.15
95	0.43	0.33	0.27	0.23	0.17
120	0.47	0.36	0.29	0.25	0.18
150	0.51	0.39	0.31	0.27	0.19
185	0.56	0.43	0.34	0.29	0.21
240	0.61	0.48	0.38	0.32	0.23
300	0.63	0.53	0.41	0.35	0.25
400	0.65	0.58	0.46	0.39	0.27
500	0.69	0.65	0.51	0.43	0.30
630	0.77	0.73	0.57	0.47	0.33
800	0.84	0.80	0.62	0.52	0.36

The permissible sustained currents of cables are calculated at a load factor of K=1.0 for an ambient temperature of 25 °C for laying in air and 15 °C for laying in ground.

Design conditions for laying cables in ground:

– depth of laying is 0.7 m;

– specific thermal resistance of normalized soil is 1.2 K·m/W.

The permissible sustained currents of cables are calculated for the case of grounding wire screens at both ends of the cable.

Permissible sustained currents of single core cables are calculated for cables laid in a tightly close trefoil formation and in a flat formation with the distance between outer surfaces of two adjacent cables equal to the cable diameter. In this case metal screens of the cables are connected and grounded on both sides

The permissible sustained currents of single core cables should correspond to those specified in Tables 7–12.

Table 7. Permissible sustained currents of single core cables with a voltage of 6 kV laid in ground

Nominal conductor cross-section, mm²	Permissible sustained currents of cables with a voltage of 6 kV laid in ground, A			
	with a copper conductor		with an aluminum conductor	
	flat formation	trefoil formation	flat formation	trefoil formation
35	221	193	172	147
50	250	225	195	170
70	310	275	240	210
95	336	326	263	253
120	380	370	298	288
150	416	413	329	322
185	466	466	371	364
240	531	537	426	422
300	590	604	477	476
400	633	677	525	541
500	697	759	587	614
630	792	848	653	695
800	825	933	719	780

Table 8. Permissible sustained currents of single core cables with a voltage of 10 and 15 kV laid in ground

Nominal conductor cross-section, mm²	Permissible sustained currents of cables with a voltage of 10 and 15 kV laid in ground, A			
	with a copper conductor		with an aluminum conductor	
	flat formation	trefoil formation	flat formation	trefoil formation
35	220	193	172	147
50	250	225	195	170
70	310	275	240	210
95	336	326	263	253
120	380	370	298	288
150	416	413	329	322
185	466	466	371	364
240	531	537	426	422
300	590	604	477	476
400	633	677	525	541
500	697	759	587	614
630	762	848	653	695
800	825	933	719	780

Table 9. Permissible sustained currents of single core cables with a voltage of 20 and 35 kV laid in ground

Nominal conductor cross-section, mm²	Permissible sustained currents of cables with a voltage of 20 and 35 kV laid in ground, A			
	with a copper conductor		with an aluminum conductor	
	flat formation	trefoil formation	flat formation	trefoil formation
50	230	225	185	175
70	290	270	225	215
95	336	326	263	253
120	380	371	298	288
150	417	413	330	322
185	466	466	371	365
240	532	538	426	422
300	582	605	477	476
400	635	678	526	541
500	700	762	588	615
630	766	851	655	699
800	830	942	722	782

Table 10. Permissible sustained currents of single core cables with a voltage of 6 kV laid in air

Nominal conductor cross-section, mm²	Permissible sustained currents of cables with a voltage of 6 kV laid in air, A			
	with a copper conductor		with an aluminum conductor	
	flat formation	trefoil formation	flat formation	trefoil formation
35	250	203	188	155
50	290	240	225	185
70	360	300	280	230
95	448	387	349	300
120	515	445	403	346
150	574	503	452	392
185	654	577	518	450
240	762	677	607	531
300	865	776	693	609
400	959	891	787	710
500	1,081	1,025	900	822
630	1,213	1,166	1,026	954
800	1,349	1,319	1,161	1,094

Table 11. Permissible sustained currents of single core cables with a voltage of 10 and 15 kV laid in air

Nominal conductor cross-section, mm²	Permissible sustained currents of cables with a voltage of 10 and 15 kV laid in air, A			
	with a copper conductor		with an aluminum conductor	
	flat formation	trefoil formation	flat formation	trefoil formation
35	217	192	189	150
50	290	240	225	185
70	360	300	280	230
95	448	387	349	300
120	515	445	403	346
150	574	503	452	392
185	654	577	518	450
240	762	677	607	531
300	865	776	693	609
400	959	891	787	710
500	1,081	1,025	900	822
630	1,213	1,166	1,026	954
800	1,349	1,319	1,161	1,094

Table 12. Permissible sustained currents of single core cables with a voltage of 20 and 35 kV laid in air

Nominal conductor cross-section, mm²	Permissible sustained currents of cables with a voltage of 20 and 35 kV laid in air, A			
	with a copper conductor		with an aluminum conductor	
	flat formation	trefoil formation	flat formation	trefoil formation
50	290	250	225	190
70	365	310	280	240
95	446	389	348	301
120	513	448	402	348
150	573	507	451	394
185	652	580	516	452
240	760	680	605	533
300	863	779	690	611
400	957	895	783	712
500	1,081	1,027	897	824
630	1,213	1,172	1,023	953
800	1,351	1,325	1,159	1,096

The permissible sustained currents of three core cables, armored and unarmored, should correspond to those specified in Tables 13 and 14.

Table 13. Permissible sustained currents of three core cables, armored and unarmored, with a voltage of 6, 10, 15, 20 and 35 kV laid in ground

Nominal conductor cross-section, mm²	Permissible sustained current when cable is laid in ground, A					
	cable with copper conductors			cable with aluminum conductors		
	6 kV	10 and 15 kV	20 and 35 kV	6 kV	10 and 15 kV	20 and 35 kV
35	164	175	—	126	136	—
50	192	207	207	148	156	161
70	233	253	248	181	193	199
95	279	300	300	216	233	233
120	316	340	341	246	265	265
150	352	384	384	275	300	300
185	396	433	433	311	338	339
240	457	500	500	358	392	392
300	547	563	563	429	456	456
400	580	635	635	470	515	515

Table 14. Permissible sustained currents of three core cables, armored and unarmored, with a voltage of 6, 10, 15, 20 and 35 kV laid in air

Nominal conductor cross-section, mm²	Permissible sustained current when cable is laid in air, A					
	cable with copper conductors			cable with aluminum conductors		
	6 kV	10 and 15 kV	20 and 35 kV	6 kV	10 and 15 kV	20 and 35 kV
35	179	173	—	138	134	—
50	213	206	215	165	159	163
70	263	255	264	204	196	204
95	319	329	331	248	255	256
120	366	374	376	285	291	292
150	413	423	426	321	329	331
185	471	479	481	368	374	375
240	550	562	564	432	441	442
300	617	630	630	480	490	490
400	695	710	710	543	554	554

When determining the permissible currents for cables laid in an environment whose temperature differs from the specified parameters (25 °C for laying in air and 15 °C for laying in ground), the correction factors given in Table 15 should be applied.

Table 15. Correction factors taking into account ambient temperature for calculating current in a cable

Laying conditions	Correction factors at an ambient temperature, °C											
	–5	0	5	10	15	20	25	30	35	40	45	50
Ground	1.13	1.1	1.06	1.03	1.0	0.97	0.93	0.89	0.86	0.82	0.77	0.73
Air	1.21	1.18	1.14	1.11	1.07	1.04	1.0	0.96	0.92	0.88	0.83	0.78

The permissible currents under overload conditions for cables laid in ground and in air can be calculated by multiplying the values specified in Tables 7, 8, 9 and 13 by a factor of 1.17, and those specified in Tables 9, 10, 11 and 14 by a factor of 1.20.

The permissible currents of cables laid in ground in pipes longer than 10 m should be reduced by multiplying the current values listed in Tables 7, 8 and 9 by a factor of 0.94 if single core cables are laid in separate pipes and by a factor of 0.9 if three single core cables are laid in one pipe. The permissible currents of three core cables laid in ground in pipes are given in Table 16.

Table 16. Permissible sustained currents of three core cables laid in ground in pipes

Nominal conductor cross-section, mm^2	Permissible current of cables, A					
	with copper conductors			with aluminum conductors		
	6 kV	10 and 15 kV	20 and 35 kV	6 kV	10 and 15 kV	20 and 35 kV
35	143	152	—	109	118	—
50	168	180	180	129	135	140
70	203	220	215	159	170	175
95	246	264	264	190	205	205
120	280	303	303	217	233	233
150	313	342	342	244	267	267
185	353	385	385	277	300	300
240	411	450	450	321	353	353
300	—	507	507	—	410	410
400	—	578	578	—	468	468

The permissible currents of several cables laid in ground including those laid in pipes should be reduced by multiplying the current values listed in Tables 7, 8 and 9 by the factor given in Table 17.

Table 17. Current reduction factors depending on the number of cables and the distance between them.

Distance between outer surfaces of cables, mm	Factor based on the number of cables					
	1	2	3	4	5	6
100	1.0	0.90	0.85	0.80	0.78	0.75
200	1.0	0.92	0.87	0.84	0.82	0.81
300	1.0	0.93	0.90	0.87	0.86	0.85

Table 18. Permissible one-second short-circuit currents of cables

Nominal conductor cross-section, mm²	Permissible one-second short-circuit current, kA, of a cable	
	with a copper conductor	with an aluminum conductor
35	5.0	3.3
50	7.15	4.7
70	10.0	6.6
95	13.6	8.9
120	17.2	11.3
150	21.5	14.2
185	26.5	17.5
240	34.3	22.7
300	42.9	28.2
400	57.2	37.6
500	71.5	47.0
630	90.1	59.2
800	114.4	75.2

Short-circuit currents are calculated at a conductor temperature of 90 °C before a short circuit and maximum conductor temperature of 250 °C during a short circuit.

Table 19. Permissible one-second short-circuit currents in metal screens

Nominal conductor cross-section, mm²	One-second short-circuit current, kA, not more than, for		
	copper screen	aluminum screen including copper clad aluminum wire screen	aluminum alloy screen
16	3.1	—	—
25	4.8	3.2	3.32
30	—	3.4	4.0
35	6.7	4.4	4.54
45	—	5.3	5.9
50	9.6	5.9	6.09
60	—	7.4	7.8
70	13.4	8.6	8.74
85	—	10.6	11.0
95	18.1	11.8	11.91
120	22.9	13.4	14.74
150	28.7	16.9	17.76
185	35.3	23.3	22.51
240	45.8	27.5	29.35

Short-circuit currents are calculated at a metal screen temperature of 50 °C before a short circuit and maximum screen temperature of 350 °C during a short circuit.

For other values of the metal screen cross-section, the permissible one-second short-circuit current Isc, kA, is calculated using the formula:

$$I_{sc}=k\cdot S_{scr},$$

where k is the factor equal to 0.191 kA/mm^2 for copper and 0.115 kA/mm^2 for aluminum, aluminum alloy and copper clad aluminum;
S_{scr} is the screen nominal cross-section, mm^2.

For a short circuit duration different from 1 second, the short circuit current values specified in Tables 17 and 18 should be multiplied by correction factor K calculated using the formula:

$$K=\frac{1}{\sqrt{\tau}}$$

where τ is the short circuit duration, s.

The current load values given in the tables are recommended to be considered solely as informative data. The company's engineers are always ready to calculate the current loads for each cable application depending on its actual operating conditions

TRANSPORTATION AND STORAGE

Cable transportation and storage should comply with requirements of GOST 18690 including the additions set out in this section.

Cable transportation conditions in terms of exposure to environmental factors should comply with group OZh3 according to GOST 15150 and group OZh2 for cables of T climatic version.

Cable storage conditions should comply with group OZh3 according to GOST 15150 and group OZh2 for cables of T climatic version.

It is permitted to store cables on reels wrapped at outdoor sites.

The storage life of cables at outdoor sites is not more than 2 years, under an overhead roof – not more than 5 years, and indoors – not more than 10 years.

GUARANTEES

The manufacturer guarantees that the cables comply with the requirements of TU 27.32.14-074-05742781-2023 provided that the customer (consumer) observes the transportation, storage, installation and operation conditions.
The warranty period of operation is 5 years.
The warranty period is calculated from the date of putting cables into operation but not later than 6 months from the date of manufacture.

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