

NATIONAL
CABLES
INDUSTRY

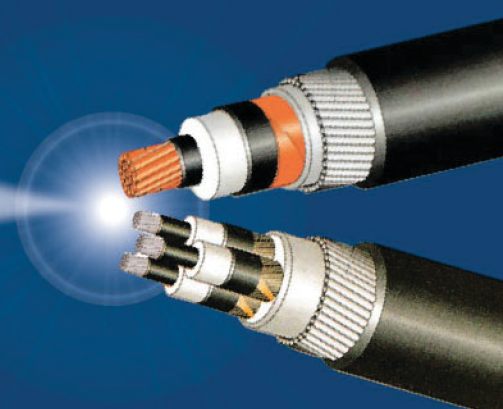
NCI

الوطنية
لصناعة
الكابلات

Committed Quality for our Customers

*XLPE INSULATED
MEDIUM VOLTAGE CABLES*

INNOVATIVE
PROCESSES AND
TECHNOLOGY STRATEGIES



XLPE MATERIAL

The trend of cross-linked polyethylene insulated cables into power cables field is quite prevalent in the world as the substitutes of paper insulated cables, which had played the leading role in electric power transmission stage. Thus, nowadays after making its impact on its use in the medium voltage cable category, the stage seems to be turning in favour of XLPE cables in the high voltage and extra high voltage range. Especially in the higher voltage area, the monopoly of paper insulated cables, such as oil filled cable, gas filled and compressed type of cables, is gradually collapsing into the co-existence with XLPE cables, which have great advantages and economical reasons such as higher permissible temperature level, ease of jointing and maintenance techniques and omission of equivalent inherent to the pressurized cable.

Electrical performance of XLPE is excellent. Di-electric breakdown strength and volume resistivity are high and both Di-electric loss ($\tan \delta$) and dielectric constant (ϵ) are low. Thermal resistivity is low. XLPE insulated cables can operate continuously at a temperature of 90°C, because they have excellent heat ageing characteristics. This leads to large power transmission capacity. XLPE cables are lighter in weight, they are easy to handle and install and jointing and termination is also easy. They are of dry type because no oil impregnation is involved.

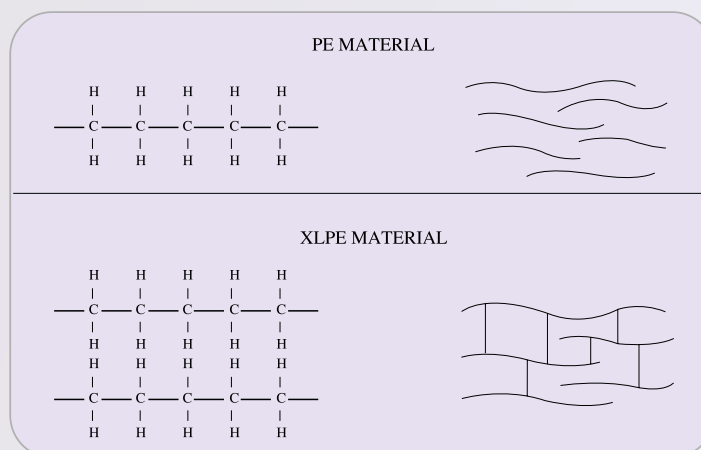
The insulation material for XLPE cables is low-density (LD) polyethylene. PE has for a long time had a wide use as cable insulating and sheath materials owing to its excellent electrical and mechanical properties, its lightness, low temperature flexibility and good resistance to moisture, chemicals, ozone etc. as well as its comparatively low price.

However, Low Density Polyethylene has properties which limit its use as cable insulation. Being a thermoplastic, its softening temperature is 105 - 115°C. Another disadvantage is its tendency to stress cracking when in contact with certain surface-active agents.

By means of a process reminiscent of the vulcanization of rubber, PE molecules can be cross-linked, thus greatly improving the thermal and mechanical properties of the material, while its electrical properties are retained largely unchanged. This product, cross-linked polyethylene (XLPE), is therefore no longer a thermoplastic. It assumes elastic, rubber-like consistency, a property that retains during further rise of temperature. The tendency to stress cracking entirely disappears and the material also acquires very good resistance to ageing in hot air.

CROSS-LINKED POLYETHYLENE

PE is made up of long molecular chains. By cross-linking, these chains a network of strong bonds is created and PE is converted into cross-linked polyethylene, XLPE.



THERMAL PROPERTIES

Owing to the cross-linking, XLPE is a very heat-resistant material. It cannot melt like polyethylene but decomposes and carbonizes if exposed for long periods to temperature above 300°C.

The permissible conductor temperature during short-circuit for 1 second has therefore been put at 250°C and under continuous load, conductors with XLPE insulation may have a temperature of 90°C. These temperature are specified by International standards. In emergency conditions and for limited period, XLPE can withstand 130°C.

XLPE, like PE, retains its low temperature flexibility down to -40°C which implies great advantages during laying of cables.

ELECTRICAL PROPERTIES

The good electrical properties of PE remain largely unchanged during cross-linking process. XLPE therefore, like PE, has a very small and insignificant temperature dependant loss factor ($\tan \delta$) and dielectric constant (ϵ) As a result the dielectric loss of XLPE cables are small in comparison with those of PVC and paper insulated cables. XLPE cables are specially adapted for long cable routes and high voltages, in both cases where dielectric losses are of great significant.

MECHANICAL PROPERTIES

Polyethylene has good mechanical properties. It is interesting that at normal temperature PE can resist local stress better than PVC. In this respect XLPE has the same advantageous properties as PE and certain grades, such as filled XLPE insulation also resist abrasion much better than polyethylene.

CHEMICAL PROPERTIES

Owing to the cross-linking of molecules XLPE better resistance than PE to most chemical such as ordinary acids, bases and oil.

ENVIRONMENTAL POLLUTION AND CABLES

From the environmental aspect, both PVC and oil-impregnated paper-insulated cables have distinct disadvantages. When PVC cables burn they give off corrosive gases, and a leaking oil filled cable may cause severe damage to environment.

XLPE admittedly burns, but the products of combustion carbon dioxide and water do not cause damage. Filled XLPE used for low voltage cables can also be made resistant to flame propagation and the compound does not produce halogen.



CROSS-LINKING PROCESS

Cross-linking is done by agent Di-Cumyl Peroxide (DCP). Cross-linking takes place in the CCV Tube under heated and pressurized Nitrogen where DCP decomposes into two radicals, which react with Polyethylene, thereby causing cross-linking.

Peroxide is already mixed at the material supplier's plant with proper balance of anti-oxidant and peroxide to ensure the required thermal stability and optimum curing level. Therefore, no mixing is done during production. This prevents problems which might occur due to the unbalance mixing of material during production stage. Un-packing and handling of the material is also done in similar super clean environment.

The mixing ratio is about 1 to 1.5 PHR with very small amount of anti-oxidant. The cross-link residue is gas, which defuses out of the insulation gradually. Other residuals are Acetophone and Cumyl-alcohol which are in very low ratio. Research, in this regard, has proven that these materials have very good effect on insulation such as:

- a) It improves the breaking strength when inclusion occurs in XLPE material.
- b) It slows water tree growth in the XLPE material under service.

National Cables Industry employs in-line dry curing for all its CCV lines along with state-of-the-art Triple Cross-Head extrusion where the Conductor Screen, Insulation and Insulation Screen are extruded simultaneously by means of a Triple Cross Head which has the following advantages:

- Reduce micro voids and moisture content in insulation and ensures enhanced and stable breakdown strength and uniform insulation structure.
- Ensures extremely accurate layer thickness.
- Ensures high purity in the frontier limit between the semi-conductive layers and the insulation.
- Provides optimal fusion of the individual layers without contamination.
- Ensures a firm bond and smooth interface between each layer improving electrical properties.
- Prevents unforeseen damage to the conductor or insulation screen during manufacturing process.

The above are optimized by the use of an X-Ray unit located immediately after the cross-head which provides a transparent view of all three layers. This arrangement also facilitates recording the trend every 4 seconds. The unit continuously scans 360° geometry of the cable and displays the maximum, minimum and eccentricity of all three layers separately. Any deviation between the specified values and the measured values are recorded and adjusted automatically.

Also incorporated in the CCV line is the "Twin-Rot" system, one of the latest in manufacturing technology, which ensures superior control of eccentricity and eliminates the possibility of "Pear Drop" since the cable rotates during manufacture.



QUALITY ASPECT

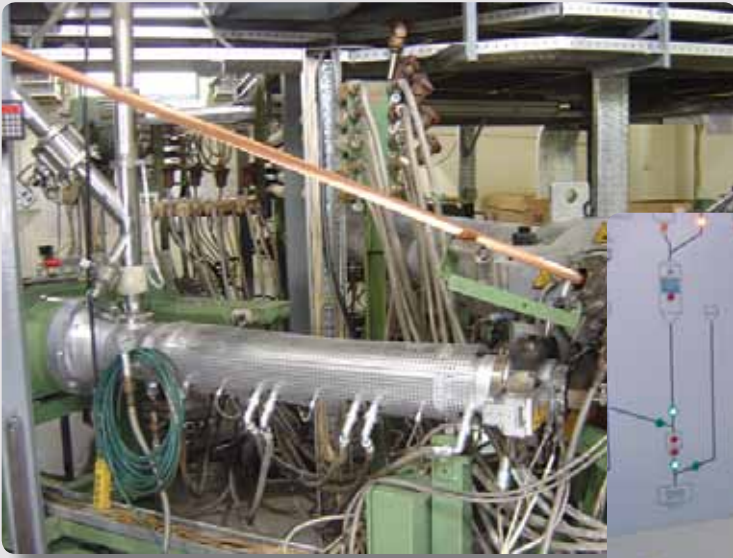
It is the policy of National Cables Industry to supply customers with products meeting fully their stated needs. The products perform their required functions safely, consistently and reliably of their intended use. They fully meet the specifications which they are designed to meet whether Customer, Country or International.

NCI sources its raw materials from reputed suppliers from all over the world. The most important cable constituents such as XLPE material, conductor and insulation shielding material are procured from the world's leading suppliers of cable components. Right from the beginning, all incoming material and cable constituents are analyzed and tested to ensure their quality and compliance with specifications before being used. During manufacture, again complete tests are performed on physical, mechanical and electrical properties of insulation and sheath material.

NCI products are also type tested at International agencies. Several of the products are type tested and certified from KEMA, Netherlands, IPE, Berlin, Germany and CPRI, India. Type tests are also performed in-house on a pre-defined regular basis to ensure and guarantee the quality of the manufactured products.

Testing facilities are equipped with up-to-date most modern and advanced laboratories. The laboratories are equipped with facilities for complete testing of its products both for incoming raw materials as well as finished goods as per International Standards. Test fields include routine test field with large shielded enclosures for carrying out the routine high voltage tests, Partial discharge measurement up to 250kV at a noise level of below 2 pC, measurement of $(\tan \delta)$, capacitance and 900kV impulse generator.





CCV Line



MV Test Field



Material Testing Laboratory



The table below shows some typical properties of XLPE material, PVC, EP Rubber and Impregnated Paper

	XLPE		PVC	EP Rubber	Impregnated Paper
	Unfilled	Filled			
Dielectric constant @ 20°C	2.30	4	5	3	3.5
Loss factor, @ 50-60Hz, 20°C	0.0005	0.0005	0.07	0.003	0.003
Volume resistivity @ 20°C, Ω.cm	10 ¹⁶	10 ¹⁴	10 ¹²	10 ¹⁶	10 ¹³
Max. Continuous operating Temperature, °C	90	90	70	85	65
Max. conductor temperature at Short-circuit current °C	250	250	160	250	150
Tensile Strength N/mm ²	15	15	15	5	-
Elongation at rupture, %	500	300	250	300	-
Flexibility					
20 °C	Good	Good	Excellent	Excellent	-
-10 °C	Good	Good	Poor	Excellent	-
Abrasion resistance	Good	Excellent	Good	Poor	-
Deformation resistance @ 150 °C	Good	Excellent	Poor	Excellent	Good
Oil resistance at 70 °C	Good	Good	Good	Poor	-
Fire resistance	Poor	Moderate	Excellent	Poor	Poor
Ageing resistance at					
100 °C	Excellent	Excellent	Moderate	Good	Good
120 °C	Good	Good	Poor	Moderate	Moderate
150 °C	Moderate	Moderate	-	Poor	Poor

*Filled XLPE is used for 0.6/1kV cables.



CONDUCTORS

Conductors shall be stranded class 2 of plain annealed copper or aluminium and in accordance with IEC 60228 and BS EN 60228 (earlier BS 6360).

CONDUCTOR SCREEN

Conductor screen shall be non-metallic and shall consist of an extruded semi-conductive compound which may be applied on top of a semi-conductive tape at the manufacturer's discretion. The extruded semi-conducting compound shall be firmly bonded to the insulation.

XLPE INSULATION

Insulation shall be XLPE (cross-linked polyethylene). Thickness and test requirements shall comply with IEC 60502-2 and IEC 60811 series.

INSULATION SCREEN

The insulation screen shall consist of a non-metallic semi-conducting layer in combination with a metallic layer.

Non-metallic part: The non-metallic layer shall be extruded directly upon the insulation of each core and shall consist of either a strippable or bonded semi-conducting compound.

Metallic part: Metallic layer shall consist of one or more tapes or a concentric layer of wires or a combination of wire and tapes.

INNER COVERING/SEPARATION SHEATH

Inner covering may be extruded or lapped. When the underlying metallic layer and the armour are of different materials, they shall be separated by an extruded sheath of PVC or Polyethylene or LSF as applicable.

METALLIC ARMOUR

Armour shall be as per IEC 60502-2 of the following types:

- a) Round Wire Armour
- b) Double Tape Armour

Armour material shall be Galvanized Steel for three core cables and Aluminium for single core cables.

OUTER SHEATH

Outer sheath shall be extruded PVC type ST2 as per IEC 60502-2, Type 9 as per BS 7655. Special type of PVC sheathing materials such as Fire Retardant PVC, anti-termite and anti-rodent PVC, Ultraviolet PVC, Oil Resistant PVC, etc. are available on request. Also, other special sheathing materials such as LLDPE, MDPE, HDPE, LSF etc are available.

PHASE IDENTIFICATION

For 3 core cables, Red, Yellow and Blue coloured strips shall be applied under the metallic screen throughout the length of the cable for phase identification.

For single core cables no phase identification shall be provided.

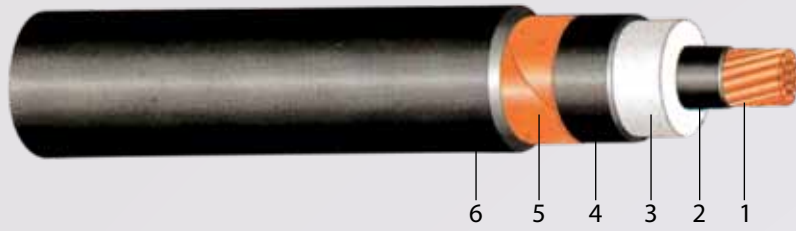


UNARMoured SINGLE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

U₀/U (U_m)=3.6/6(7.2) kV
3.8/6.6(7.2) kV



- 1. Conductor
- 2. Conductor Screen
- 3. XLPE Insulation
- 4. Insulation Screen (Non-metallic)
- 5. Insulation Screen (Metallic)
- 6. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx.)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	2.5	12.5	1.8	1.5	18	20	510	725
35	6.9	2.5	13.5	1.8	1.6	19	21	650	825
50	8.1	2.5	14.7	1.6	1.6	21	22	785	950
70	9.7	2.5	16.3	1.6	1.6	22	24	1010	1175
95	11.4	2.5	18.0	1.7	1.7	24	25	1300	1475
120	12.9	2.5	19.5	1.7	1.8	26	26	1550	1750
150	14.3	2.5	20.9	1.8	1.8	27	28	1825	2100
185	16.0	2.5	22.6	1.8	1.9	29	30	2200	2400
240	18.4	2.6	25.2	1.9	1.9	32	33	2800	3000
300	20.4	2.8	27.6	2.0	2.0	34	36	3400	3600
400	23.2	3.0	30.8	2.1	2.2	38	39	4275	4675
500	26.7	3.2	34.7	2.2	2.3	42	44	5375	5800
630	30.4	3.2	38.4	2.3	2.4	46	48	6800	7075

Size	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase
		Trefoil	Flat			Buried Direct In the ground		In single-way ducts		In air			
						Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching	Flat Spaced	
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A. Km
25	0.727	0.444	0.760	0.26	3.575	140	144	132	133	163	167	196	0.825
35	0.524	0.426	0.745	0.29	5.005	166	172	157	159	198	203	238	0.615
50	0.387	0.408	0.720	0.32	7.150	196	203	186	188	238	243	286	0.472
70	0.268	0.388	0.694	0.37	10.010	239	246	227	229	296	303	356	0.347
95	0.193	0.378	0.679	0.39	13.585	285	293	271	274	361	369	434	0.269
120	0.153	0.364	0.660	0.44	17.160	323	332	308	311	417	426	500	0.225
150	0.124	0.354	0.645	0.48	21.450	361	366	343	347	473	481	559	0.194
185	0.0991	0.343	0.630	0.52	26.455	406	410	387	391	543	550	637	0.167
240	0.0754	0.332	0.611	0.56	34.320	469	470	447	453	641	647	745	0.141
300	0.0601	0.324	0.596	0.58	42.900	526	524	504	510	735	739	846	0.125
400	0.0470	0.313	0.578	0.61	57.200	590	572	564	574	845	837	938	0.110
500	0.0366	0.306	0.564	0.64	71.500	655	625	635	640	956	935	1028	0.099
630	0.0283	0.296	0.548	0.71	90.090	731	690	712	720	1095	1061	1158	0.09

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

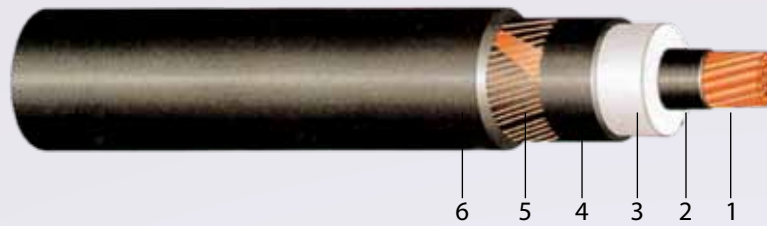
Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

UNARMoured SINGLE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

U₀/U (U_m)=6/10(12) kV
6.35/11(12) kV



1. Conductor
2. Conductor Screen
3. XLPE Insulation
4. Insulation Screen (Non-metallic)
5. Insulation Screen (Metallic)
6. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	3.4	14.3	1.8	1.8	20	22	600	775
35	6.9	3.4	15.3	1.8	1.8	21	23	700	875
50	8.1	3.4	16.5	1.8	1.8	22	24	850	990
70	9.7	3.4	18.1	1.8	1.8	24	26	1075	1200
95	11.4	3.4	19.8	1.8	1.8	26	27	1350	1500
120	12.9	3.4	21.3	1.8	1.8	27	29	1625	1725
150	14.3	3.4	22.7	1.8	1.9	29	30	1900	2100
185	16.0	3.4	24.4	1.9	1.9	31	32	2300	2475
240	18.4	3.4	26.8	2.0	2.0	33	35	2900	3100
300	20.4	3.4	28.8	2.0	2.1	35	37	3475	3700
400	23.2	3.4	31.6	2.1	2.2	38	40	4325	4650
500	26.7	3.4	35.1	2.2	2.3	42	44	5400	5725
630	30.4	3.4	38.8	2.3	2.4	46	48	6825	7100

Size	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase	
		Trefoil	Flat			Buried Direct In the ground		In single-way ducts		In air				
						Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching	Flat Spaced		
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A. Km
25	0.727	0.460	0.770	0.21	3.575	140	144	132	133	163	167	196	0.829	
35	0.524	0.440	0.751	0.23	5.005	166	172	157	159	198	203	238	0.618	
50	0.387	0.420	0.726	0.25	7.150	196	203	186	188	238	243	286	0.474	
70	0.268	0.401	0.700	0.29	10.010	239	246	227	229	296	303	356	0.349	
95	0.193	0.383	0.681	0.31	13.585	285	293	271	274	361	369	434	0.270	
120	0.153	0.376	0.666	0.34	17.160	323	332	308	311	417	426	500	0.228	
150	0.124	0.364	0.650	0.37	21.450	361	366	343	347	473	481	559	0.196	
185	0.0991	0.354	0.635	0.40	26.455	406	410	387	391	543	550	637	0.169	
240	0.0754	0.341	0.615	0.45	34.320	469	470	447	453	641	647	745	0.143	
300	0.0601	0.329	0.593	0.49	42.900	526	524	504	510	735	739	846	0.126	
400	0.0470	0.318	0.580	0.55	57.200	590	572	564	571	845	837	938	0.111	
500	0.0366	0.308	0.565	0.60	71.500	655	625	635	640	956	935	1028	0.100	
630	0.0283	0.299	0.549	0.68	90.090	731	690	712	720	1095	1061	1158	0.091	

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

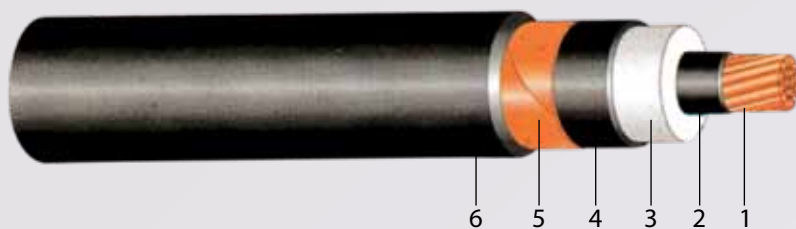


UNARMoured SINGLE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

U₀/U (Um)=8.7/15(17.5) kV



1. Conductor
2. Conductor Screen
3. XLPE Insulation
4. Insulation Screen (Non-metallic)
5. Insulation Screen (Metallic)
6. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	4.5	16.5	1.8	1.8	22	24	675	850
35	6.9	4.5	17.5	1.8	1.8	23	25	800	925
50	8.1	4.5	18.7	1.8	1.8	25	26	950	1075
70	9.7	4.5	20.3	1.8	1.8	26	28	1175	1300
95	11.4	4.5	22.0	1.8	1.8	28	30	1425	1575
120	12.9	4.5	23.5	1.9	1.9	30	31	1750	1850
150	14.3	4.5	24.9	1.9	1.9	31	33	2025	2225
185	16.0	4.5	26.6	2.0	2.0	33	35	2425	2625
240	18.4	4.5	29.0	2.0	2.1	35	37	3000	3225
300	20.4	4.5	31.0	2.1	2.1	38	39	3650	3825
400	23.2	4.5	33.8	2.2	2.3	41	42	4475	4800
500	26.7	4.5	37.3	2.3	2.4	44	46	5575	5900
630	30.4	4.5	41.0	2.4	2.5	49	51	7075	7375

Size	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings						Voltage drop per phase	
		Trefoil	Flat			Buried Direct In the ground		In single-way ducts		In air			
						Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching		Flat Spaced
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
25	0.727	0.470	0.780	0.17	0.456	140	144	132	133	163	167	196	0.830
35	0.524	0.758	0.19	0.435	0.732	166	172	157	159	198	203	238	0.621
50	0.387	0.21	0.415	0.706	0.23	196	203	186	188	238	243	286	0.477
70	0.268	0.402	0.690	0.25	0.389	239	246	227	229	296	303	356	0.352
95	0.193	0.672	0.27	0.377	0.656	285	293	271	274	361	369	434	0.273
120	0.153	0.29	0.366	0.641	0.32	323	332	308	311	417	426	500	0.230
150	0.124	0.352	0.621	0.35	0.340	361	366	343	347	473	481	559	0.198
185	0.0991	0.605	0.39	0.327	0.585	406	410	387	391	543	550	637	0.172
240	0.0754	0.43	0.318	0.570	0.48	469	470	447	453	641	647	745	0.146
300	0.0601	0.307	0.554	0.53	0.830	526	524	504	510	735	739	846	0.128
400	0.0470	0.621	0.477	0.352	0.273	590	572	564	571	845	837	938	0.113
500	0.0366	0.470	0.780	0.17	0.456	655	625	635	640	956	935	1028	0.102
630	0.0283	0.758	0.19	0.435	0.732	731	690	712	720	1095	1061	1158	0.092

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

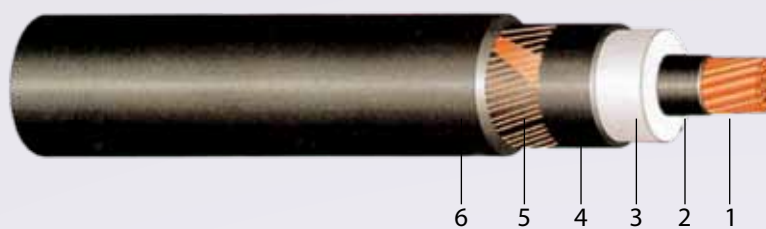
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UNARMoured SINGLE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

U₀/U (U_m)=12/20(24) kV
12.7/22(24) kV



- | | |
|---------------------|-------------------------------------|
| 1. Conductor | 4. Insulation Screen (Non-metallic) |
| 2. Conductor Screen | 5. Insulation Screen (Metallic) |
| 3. XLPE Insulation | 6. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	6.0	19.5	1.8	1.8	25	27	800	925
35	6.9	5.5	19.5	1.8	1.8	25	27	875	1000
50	8.1	5.5	20.7	1.8	1.8	27	28	1050	1150
70	9.7	5.5	22.3	1.8	1.9	28	30	1275	1400
95	11.4	5.5	24.0	1.9	1.9	30	31	1575	1675
120	12.9	5.5	25.5	1.9	2.0	32	33	1850	2000
150	14.3	5.5	26.9	2.0	2.0	33	35	2150	2350
185	16.0	5.5	28.6	2.0	2.1	35	37	2550	2750
240	18.4	5.5	31.0	2.1	2.1	38	39	3150	3350
300	20.4	5.5	33.0	2.2	2.2	40	41	3775	3975
400	23.2	5.5	35.8	2.3	2.3	43	44	4650	4925
500	26.7	5.5	39.3	2.4	2.4	49	49	5800	6100
630	30.4	5.5	43.0	2.5	2.5	51	53	7250	7525

Size	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase
		Trefoil	Flat			Buried Direct In the ground	In single -way ducts		In air				
							Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching	
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A. Km
25	0.727	0.497	0.792	0.14	3.575	140	144	132	133	163	167	196	0.835
35	0.524	0.468	0.763	0.16	5.005	166	172	157	159	198	203	238	0.623
50	0.387	0.448	0.738	0.18	7.150	196	203	186	188	238	243	286	0.480
70	0.268	0.426	0.712	0.20	10.010	239	246	227	229	296	303	356	0.354
95	0.193	0.414	0.696	0.21	13.585	285	293	271	274	361	369	434	0.276
120	0.153	0.399	0.677	0.23	17.160	323	332	308	311	417	426	500	0.232
150	0.124	0.388	0.662	0.25	21.450	361	366	343	347	473	481	559	0.201
185	0.0991	0.375	0.646	0.27	26.455	406	410	387	391	543	550	637	0.173
240	0.0754	0.361	0.626	0.30	34.320	469	470	447	453	641	647	745	0.147
300	0.0601	0.350	0.610	0.33	42.900	526	524	504	510	735	739	846	0.130
400	0.0470	0.336	0.590	0.37	57.200	590	572	564	571	845	837	938	0.115
500	0.0366	0.326	0.575	0.40	71.500	655	625	635	640	956	935	1028	0.103
630	0.0283	0.315	0.558	0.45	90.090	731	690	712	720	1095	1061	1158	0.094

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying -0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

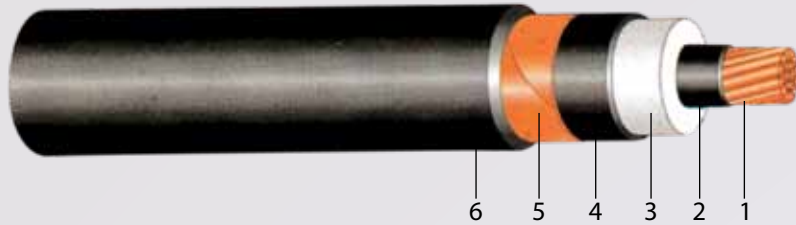


UNARMoured SINGLE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=18/30(36) \text{ kV}$
 $19/33(36) \text{ kV}$



- 1. Conductor
- 2. Conductor Screen
- 3. XLPE Insulation
- 4. Insulation Screen (Non-metallic)
- 5. Insulation Screen (Metallic)
- 6. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx.)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
50	8.1	8.0	25.7	1.9	2.0	32	33	1300	1500
70	9.7	8.0	27.3	2.0	2.0	34	35	1575	1700
95	11.4	8.0	29.0	2	2.1	36	37	1900	2000
120	12.9	8.0	30.5	2.1	2.1	37	38	2150	2275
150	14.3	8.0	31.9	2.1	2.2	38	40	2450	2675
185	16.0	8.0	33.6	2.2	2.2	40	42	2900	3075
240	18.4	8.0	36.0	2.3	2.3	43	44	3525	3700
300	20.4	8.0	38.0	2.3	2.4	45	47	4150	4350
400	23.2	8.0	40.8	2.5	2.5	49	50	5050	5400
500	26.7	8.0	44.3	2.5	2.6	52	54	6150	6525
630	30.4	8.0	48.0	2.7	2.7	56	57	7650	8000

Size	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase
		Trefoil	Flat			Buried Direct In the ground	In single-way ducts		In air				
							Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching	
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
50	0.387	0.482	0.755	0.14	7.150	196	203	186	188	238	243	286	0.486
70	0.268	0.457	0.728	0.16	10.010	239	246	227	229	296	303	356	0.36
95	0.193	0.446	0.712	0.17	13.585	285	293	271	274	361	369	434	0.282
120	0.153	0.430	0.693	0.18	17.160	323	332	308	311	417	426	500	0.238
150	0.124	0.417	0.677	0.19	21.450	361	366	343	347	473	481	559	0.206
185	0.0991	0.404	0.661	0.21	26.455	406	410	387	391	543	550	637	0.179
240	0.0754	0.388	0.641	0.23	34.320	469	470	447	453	641	647	745	0.152
300	0.0601	0.375	0.624	0.25	42.900	526	524	504	510	735	739	846	0.135
400	0.0470	0.360	0.604	0.27	57.200	590	572	564	571	845	837	938	0.119
500	0.0366	0.349	0.589	0.30	71.500	655	625	635	640	956	935	1028	0.108
630	0.0283	0.388	0.570	0.33	90.090	731	690	712	720	1095	1061	1158	0.098

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

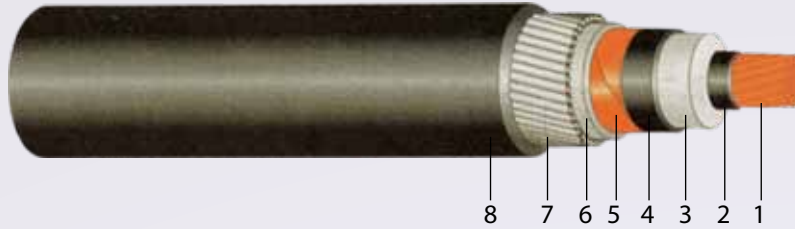


ARMoured SINGLE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

U_o/U (U_m)=3.6/6(7.2) kV
3.8/6.6(7.2) kV



1. Conductor
2. Conductor Screen
3. XLPE Insulation
4. Insulation Screen (Non-metallic)
5. Insulation Screen (Metallic)
6. Bedding
7. Aluminium Wire Armour
8. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of Aluminium Wire		Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW	Kg/km
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	2.5	12.5	1.6	1.8	1.8	24	26	875	1075	
35	6.9	2.5	13.5	1.6	1.8	1.8	25	27	1000	1175	
50	8.1	2.5	14.7	1.6	1.8	1.8	27	28	1150	1350	
70	9.7	2.5	16.3	1.6	1.8	1.8	28	30	1400	1600	
95	11.4	2.5	18.0	1.6	1.9	1.9	30	32	1750	1950	
120	12.9	2.5	19.5	1.6	1.9	1.9	32	33	1975	2200	
150	14.3	2.5	20.9	1.6/2.0	2.0	2.0	33	35	2300	2675	
185	16.0	2.5	22.6	2.0	2.0	2.0	36	37	2750	3100	
240	18.4	2.6	25.2	2.0	2.1	2.2	39	40	3450	3800	
300	20.4	2.8	27.6	2.0	2.2	2.2	41	43	4175	4475	
400	23.2	3.0	30.8	2.0/2.5	2.3	2.4	45	48	5100	5725	
500	26.7	3.2	34.7	2.5	2.5	2.5	50	52	6500	6900	
630	30.4	3.2	38.4	2.5	2.6	2.6	54	56	8050	8475	

Size	Max DC Resistance @ 20°C	Inductance			Capacitance	Conductor Short Circuit Current for 1 second	Current ratings						Voltage drop per phase
		Trefoil	Flat	Buried Direct In the ground			In single-way ducts		In air				
							Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching	Flat Spaced		
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
25	0.727	0.473	0.785	0.26	3.575	137	142	131	133	162	165	189	0.831
35	0.524	0.461	0.760	0.29	5.005	164	168	155	158	196	199	228	0.622
50	0.387	0.440	0.735	0.32	7.150	193	197	183	186	234	238	271	0.478
70	0.268	0.418	0.708	0.37	10.010	234	238	223	226	291	294	334	0.352
95	0.193	0.406	0.792	0.39	13.585	278	280	265	268	353	355	401	0.274
120	0.153	0.392	0.673	0.44	17.160	315	313	301	303	406	407	455	0.231
150	0.124	0.380	0.658	0.48	21.450	349	340	334	335	460	454	501	0.199
185	0.0991	0.369	0.642	0.52	26.455	391	374	376	375	524	513	559	0.172
240	0.0754	0.356	0.623	0.56	34.320	446	416	430	425	611	589	633	0.146
300	0.0601	0.346	0.608	0.58	42.900	495	451	478	471	692	657	697	0.129
400	0.0470	0.334	0.589	0.61	57.200	551	488	534	522	788	733	764	0.114
500	0.0366	0.327	0.576	0.64	71.500	593	509	578	555	873	786	815	0.103
630	0.0283	0.315	0.558	0.71	90.090	646	542	632	604	975	858	882	0.094

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMoured SINGLE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=6 /10(12) \text{ kV}$
 $6.35/11(12) \text{ kV}$



1. Conductor
2. Conductor Screen
3. XLPE Insulation
4. Insulation Screen (Non-metallic)
5. Insulation Screen (Metallic)
6. Bedding
7. Aluminium Wire Armour
8. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of Aluminium Wire		Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx.)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW	
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	3.4	14.3	1.6	1.8	1.8	26	27	950	1200	
35	6.9	3.4	15.3	1.6	1.8	1.8	27	28	1075	1325	
50	8.1	3.4	16.5	1.6	1.8	1.9	28	30	1275	1500	
70	9.7	3.4	18.1	1.6	1.9	1.9	30	31	1500	1750	
95	11.4	3.4	19.8	1.6	1.9	2.0	32	33	1850	2050	
120	12.9	3.4	21.3	1.6/2.0	2.0	2.0	33	35	2150	2450	
150	14.3	3.4	22.7	2.0	2	2.1	36	37	2575	2825	
185	16.0	3.4	24.4	2.0	2.1	2.1	37	39	2925	3225	
240	18.4	3.4	26.8	2.0	2.2	2.2	40	41	3625	3925	
300	20.4	3.4	28.8	2.0	2.2	2.3	42	44	4250	4575	
400	23.2	3.4	31.6	2.0/2.5	2.4	2.4	45	48	5175	5775	
500	26.7	3.4	35.1	2.5	2.5	2.5	50	52	6525	6950	
630	30.4	3.4	38.8	2.5	2.6	2.7	54	57	8050	8575	

Size	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase	
		Trefoil	Flat			Buried Direct In the ground	In single-way ducts		In air					
							Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching		Flat Spaced
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A. Km
25	0.727	0.488	0.790	0.21	3.575	137	142	131	133	162	165	189	0.833	
35	0.524	0.472	0.765	0.23	5.005	164	168	155	158	196	199	228	0.624	
50	0.387	0.450	0.739	0.25	7.150	193	197	183	186	234	238	271	0.48	
70	0.268	0.428	0.713	0.29	10.010	234	238	223	226	291	294	334	0.354	
95	0.193	0.416	0.697	0.31	13.585	278	280	265	268	353	355	401	0.276	
120	0.153	0.401	0.678	0.34	17.160	315	313	301	303	406	407	455	0.233	
150	0.124	0.390	0.663	0.37	21.450	349	340	334	335	460	454	501	0.201	
185	0.0991	0.378	0.647	0.40	26.455	391	374	376	375	524	513	559	0.174	
240	0.0754	0.363	0.627	0.45	34.320	446	416	430	425	611	589	633	0.147	
300	0.0601	0.351	0.611	0.49	42.900	495	451	478	471	692	657	697	0.130	
400	0.0470	0.338	0.591	0.55	57.200	551	488	534	522	788	733	764	0.115	
500	0.0366	0.328	0.576	0.60	71.500	593	509	578	555	873	786	815	0.103	
630	0.0283	0.317	0.560	0.68	90.090	646	542	632	604	975	858	882	0.094	

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m.
Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

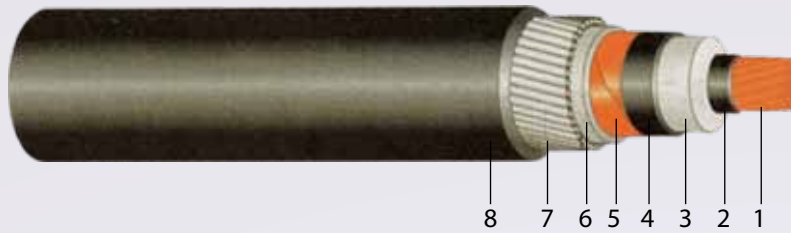


ARMOURED SINGLE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=8.7/15(17.5) \text{ kV}$



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. Bedding |
| 3. XLPE Insulation | 7. Aluminium Wire Armour |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of Aluminium Wire	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	4.5	16.5	1.6	1.8	1.9	28	30	1100	1325
35	6.9	4.5	17.5	1.6	1.9	1.9	29	31	1250	1475
50	8.1	4.5	18.7	1.6	1.9	1.9	30	32	1375	1625
70	9.7	4.5	20.3	1.6	1.9	2.0	32	34	1650	1875
95	11.4	4.5	22.0	2.0	2.0	2.1	35	36	2050	2300
120	12.9	4.5	23.5	2.0	2.1	2.1	36	38	2350	2600
150	14.3	4.5	24.9	2.0	2.1	2.2	38	40	2675	3000
185	16.0	4.5	26.6	2.0	2.2	2.2	40	41	3150	3450
240	18.4	4.5	29.0	2.0	2.3	2.3	42	44	3800	4125
300	20.4	4.5	31.0	2.0/2.5	2.3	2.4	44	47	4450	4975
400	23.2	4.5	33.8	2.5	2.5	2.5	49	50	5575	6000
500	26.7	4.5	37.3	2.5	2.6	2.6	52	54	6725	7200
630	30.4	4.5	41.0	2.5	2.7	2.7	57	59	8300	8775

Size	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase	
		Trefoil	Flat			Buried Direct In the ground	In single-way ducts		In air					
							Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching		Flat Spaced
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
25	0.727	0.505	0.796	0.17	3.575	137	142	131	133	162	165	189	0.837	
35	0.524	0.484	0.771	0.19	5.005	164	168	155	158	196	199	228	0.626	
50	0.387	0.463	0.745	0.21	7.150	193	197	183	186	234	238	271	0.482	
70	0.268	0.441	0.719	0.23	10.010	234	238	223	226	291	294	334	0.357	
95	0.193	0.428	0.703	0.25	13.585	278	280	265	268	353	355	401	0.278	
120	0.153	0.413	0.684	0.27	17.160	315	313	301	303	406	407	455	0.235	
150	0.124	0.401	0.668	0.29	21.450	349	340	334	335	460	454	501	0.203	
185	0.0991	0.388	0.652	0.32	26.455	391	374	376	375	524	513	559	0.176	
240	0.0754	0.373	0.632	0.35	34.320	446	416	430	425	611	589	633	0.149	
300	0.0601	0.361	0.616	0.39	42.900	495	451	478	471	692	657	697	0.132	
400	0.0470	0.346	0.596	0.43	57.200	551	488	534	522	788	733	764	0.117	
500	0.0366	0.337	0.582	0.48	71.500	593	509	578	555	873	786	815	0.105	
630	0.0283	0.325	0.565	0.53	90.090	646	542	632	604	975	858	882	0.095	

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMOURED SINGLE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2

and BS 6622

$U_0/U (U_m)=12/20(24) \text{ kV}$

12.7/22(24) kV



1. Conductor
2. Conductor Screen
3. XLPE Insulation
4. Insulation Screen (Non-metallic)
5. Insulation Screen (Metallic)
6. Bedding
7. Aluminium Wire Armour
8. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of Aluminium Wire		Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx.)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW	
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	6.0	19.5	1.6	1.9	2.0	31	33	1300	1525	
35	6.9	5.5	19.5	1.6	1.9	2.0	31	33	1375	1600	
50	8.1	5.5	20.7	1.6	2.0	2.0	33	35	1550	1825	
70	9.7	5.5	22.3	2.0	2.0	2.1	35	37	1850	2100	
95	11.4	5.5	24.0	2.0	2.1	2.1	37	38	2200	2475	
120	12.9	5.5	25.5	2.0	2.1	2.2	38	40	2550	2800	
150	14.3	5.5	26.9	2.0	2.2	2.2	40	41	2900	3175	
185	16.0	5.5	28.6	2.0	2.2	2.3	42	43	3275	3650	
240	18.4	5.5	31.0	2.0/2.5	2.3	2.4	44	47	3975	4500	
300	20.4	5.5	33.0	2.5	2.4	2.5	48	49	4825	5175	
400	23.2	5.5	35.8	2.5	2.5	2.6	51	53	5725	6250	
500	26.7	5.5	39.3	2.5	2.6	2.7	55	57	7000	7500	
630	30.4	5.5	43.0	2.5	2.8	2.8	59	61	8550	9050	

Size	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings						Voltage drop per phase	
		Trefoil	Flat			Buried Direct In the ground		In single-way ducts		In air			
						Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching		Flat Spaced
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
25	0.727	0.504	0.805	0.14	3.575	137	142	131	133	162	165	189	0.841
35	0.524	0.496	0.776	0.16	5.005	164	168	155	158	196	199	228	0.628
50	0.387	0.474	0.751	0.18	7.150	193	197	183	186	234	238	271	0.484
70	0.268	0.452	0.724	0.20	10.010	234	238	223	226	291	294	334	0.359
95	0.193	0.438	0.708	0.21	13.585	278	280	265	268	353	355	401	0.280
120	0.153	0.423	0.689	0.23	17.160	315	313	301	303	406	407	455	0.237
150	0.124	0.410	0.673	0.25	21.450	349	340	334	335	460	454	501	0.205
185	0.0991	0.397	0.657	0.27	26.455	391	374	376	375	524	513	559	0.178
240	0.0754	0.392	0.637	0.30	34.320	446	416	430	425	611	589	633	0.153
300	0.0601	0.370	0.621	0.33	42.900	495	451	478	471	692	657	697	0.133
400	0.0470	0.345	0.601	0.37	57.200	551	488	534	522	788	733	764	0.118
500	0.0366	0.355	0.586	0.40	71.500	593	509	578	555	873	786	815	0.106
630	0.0283	0.333	0.569	0.45	90.090	646	542	632	604	975	858	882	0.097

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

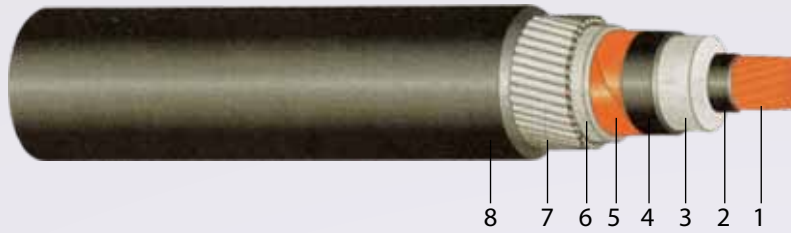
Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

ARMOURED SINGLE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=18/30(36) \text{ kV}$
 $19/33(36) \text{ kV}$



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. Bedding |
| 3. XLPE Insulation | 7. Aluminium Wire Armour |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of Aluminium Wire		Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW	CUT
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
50	8.1	8.0	25.7	2.0	2.2	2.2	39	40	2025	2250	
70	9.7	8.0	27.3	2.0	2.2	2.3	40	42	2300	2575	
95	11.4	8.0	29.0	2.0	2.3	2.3	42	44	2675	2900	
120	12.9	8.0	30.5	2.0/2.5	2.3	2.4	44	46	2950	3225	
150	14.3	8.0	31.9	2.5	2.4	2.5	47	48	3500	3850	
185	16.0	8.0	33.6	2.5	2.5	2.5	49	50	3925	4300	
240	18.4	8.0	36.0	2.5	2.5	2.6	51	53	4600	5025	
300	20.4	8.0	38.0	2.5	2.6	2.7	53	55	5375	5725	
400	23.2	8.0	40.8	2.5	2.7	2.8	57	59	6350	6850	
500	26.7	8.0	44.3	2.5	2.8	2.9	61	63	7600	8100	
630	30.4	8.0	48.0	2.5	2.9	3.0	65	67	9100	9700	

Size	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase	
		Trefoil	Flat			Buried Direct In the ground		In single -way ducts		In air				
						Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching	Flat Spaced		
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
50	0.387	0.504	0.766	0.14	7.150	193	197	183	186	234	238	271	0.490	
70	0.268	0.481	0.740	0.16	10.010	234	238	223	226	291	294	334	0.364	
95	0.193	0.467	0.723	0.17	13.585	278	280	265	268	353	355	401	0.286	
120	0.153	0.450	0.704	0.18	17.160	315	313	301	303	406	407	455	0.242	
150	0.124	0.437	0.688	0.19	21.450	349	340	334	335	460	454	501	0.21	
185	0.0991	0.424	0.672	0.21	26.455	391	374	376	375	524	513	559	0.182	
240	0.0754	0.407	0.652	0.23	34.320	446	416	430	425	611	589	633	0.156	
300	0.0601	0.394	0.635	0.25	42.900	495	451	478	471	692	657	697	0.138	
400	0.0470	0.377	0.614	0.27	57.200	551	488	534	522	788	733	764	0.122	
500	0.0366	0.366	0.599	0.30	71.500	593	509	578	555	873	786	815	0.111	
630	0.0283	0.357	0.582	0.33	90.090	646	542	632	604	975	858	882	0.101	

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

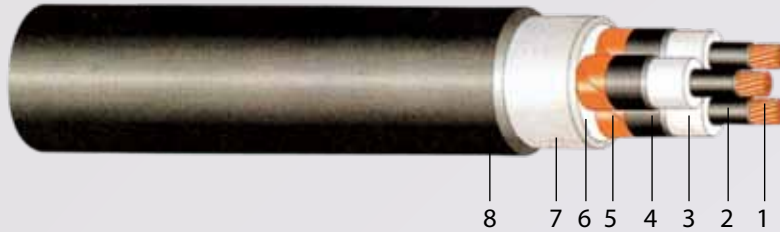


UNARMoured THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (Um)=3.6/6(7.2) \text{ kV}$
 $3.8/6.6(7.2) \text{ kV}$



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. PP Filler |
| 3. XLPE Insulation | 7. Bedding |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	2.5	12.5	2.1	2.1	39	42	1925	2075
35	6.9	2.5	13.5	2.1	2.2	41	44	2300	2450
50	8.1	2.5	14.7	2.2	2.3	44	47	2775	2950
70	9.7	2.5	16.3	2.3	2.4	48	51	3550	3700
95	11.4	2.5	18.	2.5	2.5	52	55	4500	4600
120	12.9	2.5	19.5	2.6	2.6	56	59	5350	5475
150	14.3	2.5	20.9	2.7	2.8	59	62	6350	6550
185	16.0	2.5	22.6	2.8	2.9	63	66	7550	7725
240	18.4	2.6	25.2	3.0	3.0	69	72	9500	9675
300	20.4	2.8	27.6	3.2	3.2	75	78	11650	11875

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	µF/km	kA	Amps	Amps	Amps	V/A.Km
25	0.727	0.305	0.26	3.575	129	112	142	0.799
35	0.524	0.294	0.29	5.005	153	133	170	0.590
50	0.387	0.283	0.32	7.150	181	158	204	0.448
70	0.268	0.272	0.36	10.010	221	193	253	0.325
95	0.193	0.266	0.39	13.585	262	231	304	0.248
120	0.153	0.259	0.43	17.160	298	264	351	0.206
150	0.124	0.253	0.47	21.450	334	297	398	0.175
185	0.0991	0.250	0.52	26.455	377	336	455	0.150
240	0.0754	0.243	0.56	34.320	434	390	531	0.125
300	0.0601	0.236	0.58	42.900	489	441	606	0.108

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



UNARMoured THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=6 /10(12) \text{ kV}$
 $6.35/11(12) \text{ kV}$



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. PP Filler |
| 3. XLPE Insulation | 7. Bedding |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	3.4	14.3	2.2	2.2	43	46	2125	2300
35	6.9	3.4	15.3	2.3	2.3	46	48	2575	2750
50	8.1	3.4	16.5	2.4	2.4	48	51	3050	3250
70	9.7	3.4	18.1	2.5	2.5	52	55	3825	4000
95	11.4	3.4	19.8	2.6	2.7	56	59	4750	5000
120	12.9	3.4	21.3	2.7	2.8	60	63	5675	5850
150	14.3	3.4	22.7	2.8	2.9	63	65	6625	6875
185	16.0	3.4	24.4	2.9	3.0	67	70	7875	8150
240	18.4	3.4	26.8	3.1	3.2	73	76	9900	10225
300	20.4	3.4	28.8	3.3	3.3	78	81	11975	12200

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
25	0.727	0.331	0.21	3.575	129	112	142	0.804
35	0.524	0.318	0.23	5.005	153	133	170	0.595
50	0.387	0.305	0.25	7.150	181	158	204	0.453
70	0.268	0.292	0.29	10.010	221	193	253	0.329
95	0.193	0.285	0.31	13.585	262	231	304	0.252
120	0.153	0.276	0.34	17.160	298	264	351	0.209
150	0.124	0.269	0.37	21.450	334	297	398	0.179
185	0.0991	0.263	0.40	26.455	377	336	455	0.152
240	0.0754	0.255	0.44	34.320	434	390	531	0.127
300	0.0601	0.248	0.48	42.900	489	441	606	0.111

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



UNARMoured THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=8.7/15(17.5) \text{ kV}$



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. PP Filler |
| 3. XLPE Insulation | 7. Bedding |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	4.5	16.5	2.4	2.4	47	50	2550	2700
35	6.9	4.5	17.5	2.5	2.5	51	54	2950	3125
50	8.1	4.5	18.7	2.6	2.6	53	56	3450	3600
70	9.7	4.5	20.3	2.7	2.7	58	61	4300	4450
95	11.4	4.5	22.0	2.8	2.8	61	64	5275	5425
120	12.9	4.5	23.5	2.9	2.9	65	68	6150	6300
150	14.3	4.5	24.9	3.0	3.1	66	71	7125	7400
185	16.0	4.5	26.6	3.1	3.2	72	76	8500	8800
240	18.4	4.5	29.0	3.3	3.3	78	81	10550	10775
300	20.4	4.5	31.0	3.4	3.5	83	86	12550	12800

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	µF/km	kA	Amps	Amps	Amps	V/A.Km
25	0.727	0.359	0.17	3.575	129	112	142	0.809
35	0.524	0.344	0.19	5.005	153	133	170	0.600
50	0.387	0.329	0.21	7.150	181	158	204	0.457
70	0.268	0.314	0.23	10.010	221	193	253	0.333
95	0.193	0.306	0.25	13.585	262	231	304	0.255
120	0.153	0.296	0.27	17.160	298	264	351	0.213
150	0.124	0.288	0.29	21.450	334	297	398	0.182
185	0.0991	0.280	0.32	26.455	377	336	455	0.155
240	0.0754	0.271	0.35	34.320	434	390	531	0.130
300	0.0601	0.260	0.39	42.900	489	441	606	0.113

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



UNARMoured THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=12/20(24) \text{ kV}$
 $12.7/22(24) \text{ kV}$



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. PP Filler |
| 3. XLPE Insulation | 7. Bedding |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	6.0	19.5	2.6	2.6	55	59	3075	3275
35	6.9	5.5	19.5	2.6	2.7	55	59	3900	3550
50	8.1	5.5	20.7	2.7	2.8	58	62	4000	4100
70	9.7	5.5	22.3	2.8	2.9	62	65	4725	4900
95	11.4	5.5	24.0	2.9	3.0	66	69	5700	6000
120	12.9	5.5	25.5	3.0	3.1	70	73	6700	6900
150	14.3	5.5	26.9	3.1	3.2	73	76	7775	8000
185	16.0	5.5	28.6	3.3	3.3	78	80	9100	9325
240	18.4	5.5	31.0	3.4	3.5	83	86	11100	11300
300	20.4	5.5	33.0	3.6	3.6	88	90	13150	13350

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
25	0.727	0.394	0.14	3.575	129	112	142	0.816
35	0.524	0.365	0.16	5.005	153	133	170	0.604
50	0.387	0.349	0.18	7.150	181	158	204	0.461
70	0.268	0.332	0.20	10.010	221	193	253	0.336
95	0.193	0.323	0.21	13.585	262	231	304	0.258
120	0.153	0.312	0.23	17.160	298	264	351	0.216
150	0.124	0.303	0.25	21.450	334	297	398	0.185
185	0.0991	0.295	0.27	26.455	377	336	455	0.158
240	0.0754	0.285	0.30	34.320	434	390	531	0.133
300	0.0601	0.270	0.33	42.900	489	441	606	0.115

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



UNARMoured THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (Um)=18/30(36) \text{ kV}$
 $19/33(36) \text{ kV}$



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. PP Filler |
| 3. XLPE Insulation | 7. Bedding |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
50	8.1	8.0	25.7	3.1	3.1	71	73	5100	5250
70	9.7	8.0	27.3	3.2	3.2	75	77	6100	6200
95	11.4	8.0	29.0	3.3	3.4	78	81	7150	7300
120	12.9	8.0	30.5	3.4	3.5	82	85	8100	8300
150	14.3	8.0	31.9	3.5	3.6	85	88	9150	9400
185	16.0	8.0	33.6	3.6	3.7	89	92	10500	10750
240	18.4	8.0	36.0	3.8	3.9	95	98	12600	12950
300	20.4	8.0	38.0	4.0	4.0	100	102	14900	15050

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
50	0.387	0.399	0.14	7.150	181	158	204	0.47
70	0.268	0.380	0.16	10.010	221	193	253	0.345
95	0.193	0.369	0.17	13.585	262	231	304	0.267
120	0.153	0.355	0.18	17.160	298	264	351	0.224
150	0.124	0.345	0.19	21.450	334	297	398	0.192
185	0.0991	0.334	0.21	26.455	377	336	455	0.166
240	0.0754	0.321	0.23	34.320	434	390	531	0.14
300	0.0601	0.308	0.25	42.900	489	441	606	0.122

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMOURED THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=3.6/6(7.2) \text{ kV}$
 $3.8/6.6(7.2) \text{ kV}$



- | | |
|-------------------------------------|----------------------|
| 1. Conductor | 6. PP Filler |
| 2. Conductor Screen | 7. Bedding |
| 3. XLPE Insulation | 8. Steel Wire Armour |
| 4. Insulation Screen (Non-metallic) | 9. Outer Sheath |
| 5. Insulation Screen (Metallic) | |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of steel wire	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	2.5	12.5	2.0	2.3	2.3	43	46	3300	3675
35	6.9	2.5	13.5	2.0/2.5	2.3	2.4	45	50	3750	4475
50	8.1	2.5	14.7	2.5	2.5	2.5	49	52	4775	5100
70	9.7	2.5	16.3	2.5	2.6	2.6	53	56	5725	6000
95	11.4	2.5	18.0	2.5	2.7	2.8	57	60	6800	7150
120	12.9	2.5	19.5	2.5	2.8	2.9	61	64	7850	8150
150	14.3	2.5	20.9	2.5	2.9	3.0	64	67	8900	9350
185	16.0	2.5	22.6	2.5	3.1	3.1	68	71	10375	10750
240	18.4	2.6	25.2	2.5/3.15	3.3	3.4	74	78	12600	13950
300	20.4	2.8	27.6	3.15	3.5	3.6	82	85	16050	16475

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	µF/km	kA	Amps	Amps	Amps	V/A.Km
25	0.727	0.363	0.26	3.575	129	112	143	0.81
35	0.524	0.344	0.29	5.005	154	134	172	0.60
50	0.387	0.333	0.32	7.150	181	158	205	0.458
70	0.268	0.322	0.36	10.010	220	194	253	0.334
95	0.193	0.316	0.39	13.585	263	232	307	0.257
120	0.153	0.309	0.43	17.160	298	264	352	0.215
150	0.124	0.303	0.47	21.450	332	296	397	0.185
185	0.0991	0.300	0.52	26.455	374	335	453	0.159
240	0.0754	0.293	0.56	34.320	431	387	529	0.124
300	0.0601	0.286	0.58	42.900	482	435	599	0.118

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMOURED THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=6 /10(12) \text{ kV}$
 $6.35/11(12) \text{ kV}$



- | | |
|-------------------------------------|----------------------|
| 1. Conductor | 6. PP Filler |
| 2. Conductor Screen | 7. Bedding |
| 3. XLPE Insulation | 8. Steel Wire Armour |
| 4. Insulation Screen (Non-metallic) | 9. Outer Sheath |
| 5. Insulation Screen (Metallic) | |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of steel wire	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	3.4	14.3	2.5	2.4	2.5	48	52	4150	4450
35	6.9	3.4	15.3	2.5	2.5	2.6	51	54	4625	5000
50	8.1	3.4	16.5	2.5	2.6	2.7	54	57	5300	5625
70	9.7	3.4	18.1	2.5	2.7	2.8	57	61	6200	6575
95	11.4	3.4	19.8	2.5	2.9	2.9	62	65	7425	7700
120	12.9	3.4	21.3	2.5	3.0	3.0	65	68	8475	8750
150	14.3	3.4	22.7	2.5	3.1	3.1	68	72	9550	9975
185	16.0	3.4	24.4	2.5	3.2	3.3	72	76	11000	11425
240	18.4	3.4	26.8	3.15	3.4	3.5	80	83	14300	14775
300	20.4	3.4	28.8	3.15	3.6	3.6	85	88	16625	17050

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
25	0.727	0.387	0.21	3.575	129	112	143	0.815
35	0.524	0.368	0.23	5.005	154	134	172	0.604
50	0.387	0.355	0.25	7.150	181	158	205	0.462
70	0.268	0.342	0.29	10.010	220	194	253	0.338
95	0.193	0.335	0.31	13.585	263	232	307	0.261
120	0.153	0.326	0.34	17.160	298	264	352	0.218
150	0.124	0.319	0.37	21.450	332	296	397	0.188
185	0.0991	0.313	0.40	26.455	374	335	453	0.161
240	0.0754	0.305	0.44	34.320	431	387	529	0.137
300	0.0601	0.297	0.48	42.900	482	435	599	0.120

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMOURED THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

U_o/U (U_m)=8.7/15(17.5) kV



- | | |
|-------------------------------------|----------------------|
| 1. Conductor | 6. PP Filler |
| 2. Conductor Screen | 7. Bedding |
| 3. XLPE Insulation | 8. Steel Wire Armour |
| 4. Insulation Screen (Non-metallic) | 9. Outer Sheath |
| 5. Insulation Screen (Metallic) | |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of steel wire	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	4.5	16.5	2.5	2.6	2.6	53	56	4800	5075
35	6.9	4.5	17.5	2.5	2.7	2.7	56	59	5300	5575
50	8.1	4.5	18.7	2.5	2.8	2.8	59	62	5950	6300
70	9.7	4.5	20.3	2.5	2.9	3.0	63	66	6925	7300
95	11.4	4.5	22.0	2.5	3.0	3.1	67	70	8100	8425
120	12.9	4.5	23.5	2.5	3.1	3.2	70	74	9175	9525
150	14.3	4.5	24.9	2.5/3.15	3.2	3.3	75	78	10325	11625
185	16.0	4.5	26.6	3.15	3.4	3.5	80	83	12900	13300
240	18.4	4.5	29.0	3.15	3.6	3.7	86	89	15225	15625
300	20.4	4.5	31.0	3.15	3.7	3.8	91	94	17525	17975

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	µF/km	kA	Amps	Amps	Amps	V/A.Km
25	0.727	0.413	0.17	3.575	129	112	143	0.820
35	0.524	0.394	0.19	5.005	154	134	172	0.609
50	0.387	0.379	0.21	7.150	181	158	205	0.466
70	0.268	0.364	0.23	10.010	220	194	253	0.342
95	0.193	0.356	0.25	13.585	263	232	307	0.265
120	0.153	0.346	0.27	17.160	298	264	352	0.222
150	0.124	0.338	0.29	21.450	332	296	397	0.191
185	0.0991	0.330	0.32	26.455	374	335	453	0.165
240	0.0754	0.321	0.35	34.320	431	387	529	0.140
300	0.0601	0.312	0.39	42.900	482	435	599	0.123

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMOURED THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=12/20(24) \text{ kV}$
 $12.7/22(24) \text{ kV}$



- | | |
|-------------------------------------|----------------------|
| 1. Conductor | 6. PP Filler |
| 2. Conductor Screen | 7. Bedding |
| 3. XLPE Insulation | 8. Steel Wire Armour |
| 4. Insulation Screen (Non-metallic) | 9. Outer Sheath |
| 5. Insulation Screen (Metallic) | |

SIZE	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of steel wire	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	6.0	19.5	2.5	2.8	2.9	61	64	5675	5975
35	6.9	5.5	19.5	2.5	2.8	2.9	61	64	5900	6200
50	8.1	5.5	20.7	2.5	3	3.0	64	67	6600	6925
70	9.7	5.5	22.3	2.5	3.1	3.1	68	71	7600	7925
95	11.4	5.5	24.0	2.5	3.2	3.3	73	75	8850	9100
120	12.9	5.5	25.5	3.15	3.3	3.4	77	81	10875	11300
150	14.3	5.5	26.9	3.15	3.4	3.5	81	84	12100	12600
185	16.0	5.5	28.6	3.15	3.6	3.6	85	88	13775	14125
240	18.4	5.5	31.0	3.15	3.7	3.8	91	94	16050	16525
300	20.4	5.5	33.0	3.15	3.9	4.0	95	99	18400	18900

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	µF/km	kA	Amps	Amps	Amps	V/A.Km
25	0.727	0.444	0.14	3.575	129	112	143	0.825
35	0.524	0.415	0.16	5.005	154	134	172	0.613
50	0.387	0.399	0.18	7.150	181	158	205	0.47
70	0.268	0.382	0.20	10.010	220	194	253	0.346
95	0.193	0.373	0.21	13.585	263	232	307	0.268
120	0.153	0.362	0.23	17.160	298	264	352	0.225
150	0.124	0.353	0.25	21.450	332	296	397	0.194
185	0.0991	0.345	0.27	26.455	374	335	453	0.167
240	0.0754	0.335	0.30	34.320	431	387	529	0.142
300	0.0601	0.320	0.33	42.900	482	435	599	0.124

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMOURED THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=18/30(36) \text{ kV}$
 $19/33(36) \text{ kV}$



- | | |
|-------------------------------------|----------------------|
| 1. Conductor | 6. PP Filler |
| 2. Conductor Screen | 7. Bedding |
| 3. XLPE Insulation | 8. Steel Wire Armour |
| 4. Insulation Screen (Non-metallic) | 9. Outer Sheath |
| 5. Insulation Screen (Metallic) | |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of steel Wire		Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW	Kg/km
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
50	8.1	8.0	25.7	3.15	3.4	3.4	78	81	9400	9725	
70	9.7	8.0	27.3	3.15	3.5	3.5	82	85	10475	10850	
95	11.4	8.0	29.0	3.15	3.6	3.7	86	89	11775	12150	
120	12.9	8.0	30.5	3.15	3.7	3.8	90	93	13000	13375	
150	14.3	8.0	31.9	3.15	3.8	3.9	93	96	14250	14750	
185	16.0	8.0	33.6	3.15	4.0	4.0	97	100	15975	16325	
240	18.4	8.0	36.0	3.15	4.1	4.2	103	106	18375	18850	
300	20.4	8.0	38.0	3.15	4.3	4.4	108	111	20925	21300	

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
50	0.387	0.449	0.14	7.150	181	158	205	0.480
70	0.268	0.430	0.16	10.010	220	194	253	0.355
95	0.193	0.419	0.17	13.585	263	232	307	0.277
120	0.153	0.405	0.18	17.160	298	264	352	0.233
150	0.124	0.395	0.19	21.450	332	296	397	0.202
185	0.0991	0.384	0.21	26.455	374	335	453	0.175
240	0.0754	0.371	0.23	34.320	431	387	529	0.149
300	0.0601	0.358	0.25	42.900	482	435	599	0.131

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMOURED THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (Um)=3.6/6(7.2) \text{ kV}$
 $3.8/6.6(7.2) \text{ kV}$



- | | |
|-------------------------------------|----------------------|
| 1. Conductor | 6. PP Filler |
| 2. Conductor Screen | 7. Bedding |
| 3. XLPE Insulation | 8. Steel Tape Armour |
| 4. Insulation Screen (Non-Metallic) | 9. Outer Sheath |
| 5. Insulation Screen (Metallic) | |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of steel Tape	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
					CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm		mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	2.5	12.5	2x0.5	2.2	2.2	41	44	2500	2700
35	6.9	2.5	13.5	2x0.5	2.3	2.3	43	46	2900	3150
50	8.1	2.5	14.7	2x0.5	2.4	2.4	46	49	3450	3650
70	9.7	2.5	16.3	2x0.5	2.5	2.5	50	53	4275	4500
95	11.4	2.5	18.0	2x0.5	2.6	2.6	54	57	5250	5500
120	12.9	2.5	19.5	2x0.5	2.7	2.8	58	61	6175	6400
150	14.3	2.5	20.9	2x0.5	2.8	2.9	61	64	7150	7500
185	16.0	2.5	22.6	2x0.5	2.9	3.0	65	68	8475	8775
240	18.4	2.6	25.2	2x0.5	3.1	3.2	71	74	10550	10900
300	20.4	2.8	27.6	2x0.5	3.3	3.4	77	80	12875	13175

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
25	0.727	0.363	0.26	3.575	129	112	143	0.810
35	0.524	0.344	0.29	5.005	154	134	172	0.600
50	0.387	0.333	0.32	7.150	181	158	205	0.458
70	0.268	0.322	0.36	10.010	220	194	253	0.334
95	0.193	0.316	0.39	13.585	263	232	307	0.257
120	0.153	0.309	0.43	17.160	298	264	352	0.215
150	0.124	0.303	0.47	21.450	332	296	397	0.185
185	0.0991	0.300	0.52	26.455	374	335	453	0.159
240	0.0754	0.293	0.56	34.320	431	387	529	0.124
300	0.0601	0.286	0.58	42.900	482	435	599	0.118

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

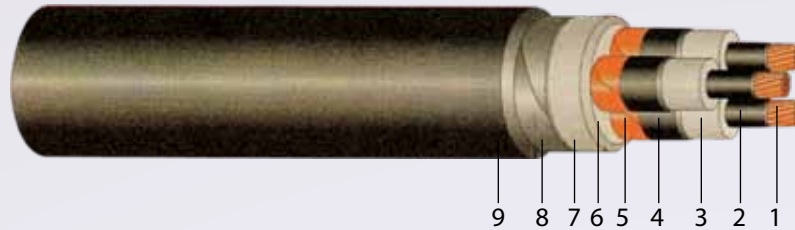


ARMOURED THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=6 /10(12) \text{ kV}$
 $6.35/11(12) \text{ kV}$



- 1. Conductor
- 2. Conductor Screen
- 3. XLPE Insulation
- 4. Insulation Screen (Non-Metallic)
- 5. Insulation Screen (Metallic)
- 6. PP Filler
- 7. Bedding
- 8. Steel Tape Armour
- 9. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of steel Tape	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
					CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	3.4	14.3	2x0.5	2.3	2.4	45	48	2825	3100
35	6.9	3.4	15.3	2x0.5	2.4	2.5	48	51	3275	3525
50	8.1	3.4	16.5	2x0.5	2.5	2.6	50	54	3825	4050
70	9.7	3.4	18.1	2x0.5	2.6	2.7	54	58	4650	4950
95	11.4	3.4	19.8	2x0.5	2.7	2.8	58	61	5675	5900
120	12.9	3.4	21.3	2x0.5	2.9	2.9	62	65	6650	6850
150	14.3	3.4	22.7	2x0.5	3.0	3.0	65	68	7650	7975
185	16.0	3.4	24.4	2x0.5	3.1	3.1	69	72	9000	9300
240	18.4	3.4	26.8	2x0.5	3.3	3.3	76	78	11200	11450
300	20.4	3.4	28.8	2x0.5	3.4	3.5	80	83	13300	13575

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	µF/km	kA	Amps	Amps	Amps	V/A.Km
25	0.727	0.387	0.21	3.575	129	112	143	0.815
35	0.524	0.368	0.23	5.005	154	134	172	0.604
50	0.387	0.355	0.25	7.150	181	158	205	0.462
70	0.268	0.342	0.29	10.010	220	194	253	0.338
95	0.193	0.355	0.31	13.585	263	232	307	0.265
120	0.153	0.326	0.34	17.160	298	264	352	0.218
150	0.124	0.319	0.37	21.450	332	296	397	0.188
185	0.0991	0.313	0.40	26.455	374	335	453	0.161
240	0.0754	0.303	0.44	34.320	431	387	529	0.137
300	0.0601	0.297	0.48	42.900	482	435	599	0.120

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

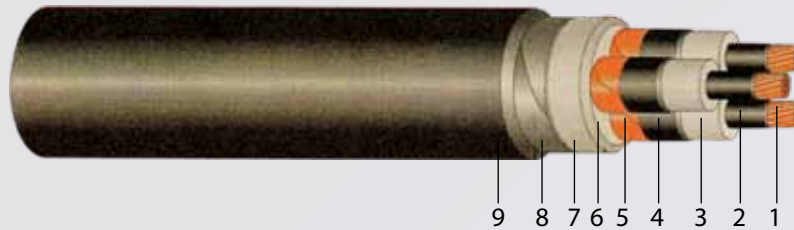


ARMOURED THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=8.7/15(17.5) \text{ kV}$



- | | |
|-------------------------------------|----------------------|
| 1. Conductor | 6. PP Filler |
| 2. Conductor Screen | 7. Bedding |
| 3. XLPE Insulation | 8. Steel Tape Armour |
| 4. Insulation Screen (Non-Metallic) | 9. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of steel Tape	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
					CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm		mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	4.5	16.5	2x0.5	2.5	2.5	50	53	3300	3500
35	6.9	4.5	17.5	2x0.5	2.6	2.6	53	56	3750	4000
50	8.1	4.5	18.7	2x0.5	2.7	2.7	56	59	4325	4525
70	9.7	4.5	20.3	2x0.5	2.8	2.8	60	63	5200	5425
95	11.4	4.5	22.0	2x0.5	2.9	3.0	64	67	6250	6550
120	12.9	4.5	23.5	2x0.5	3.0	3.1	67	70	725	7500
150	14.3	4.5	24.9	2x0.5	3.1	3.2	70	74	8250	8650
185	16.0	4.5	26.6	2x0.5	3.3	3.3	75	78	9800	1050
240	18.4	4.5	29.0	2x0.5	3.4	3.5	81	84	11900	12100
300	20.4	4.5	31.0	2x0.8	3.6	3.7	87	90	14800	15150

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
25	0.727	0.413	0.17	3.575	129	112	143	0.820
35	0.524	0.394	0.19	5.005	154	134	172	0.609
50	0.387	0.379	0.21	7.150	181	158	205	0.46
70	0.268	0.364	0.23	10.010	220	194	253	0.342
95	0.193	0.356	0.25	13.585	263	232	307	0.265
120	0.153	0.346	0.27	17.160	298	264	352	0.222
150	0.124	0.338	0.29	21.450	332	296	397	0.191
185	0.0991	0.330	0.32	26.455	374	335	453	0.165
240	0.0754	0.321	0.35	34.320	431	387	529	0.140
300	0.0601	0.312	0.39	42.900	482	435	599	0.123

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

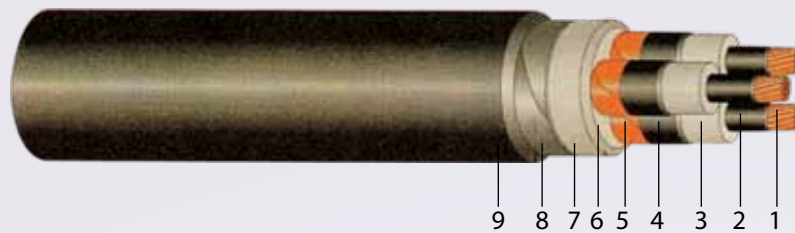


ARMoured THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=12/20(24) \text{ kV}$
 $12.7/22(24) \text{ kV}$



1. Conductor
2. Conductor Screen
3. XLPE Insulation
4. Insulation Screen (Non-Metallic)
5. Insulation Screen (Metallic)
6. PP Filler
7. Bedding
8. Steel Tape Armour
9. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of steelTape	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
					CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm		mm	mm	mm	mm	Kg/km	Kg/km
25	5.9	6.0	19.5	2x0.5	2.7	2.8	58	61	4000	4225
35	6.9	5.5	19.5	2x0.5	2.7	2.8	58	61	4225	4500
50	8.1	5.5	20.7	2x0.5	2.8	2.9	61	64	4825	5050
70	9.7	5.5	22.3	2x0.5	3	3.0	64	67	5800	5925
95	11.4	5.5	24.0	2x0.5	3.1	3.1	69	72	6825	7000
120	12.9	5.5	25.5	2x0.5	3.2	3.2	66	75	7900	8100
150	14.3	5.5	26.9	2x0.5	3.3	3.4	76	79	9000	9300
185	16.0	5.5	28.6	2x0.5	3.4	3.5	80	83	10400	10700
240	18.4	5.5	31.0	2x0.5	3.6	3.7	87	90	13400	13700
300	20.4	5.5	33.0	2x0.8	3.8	3.9	92	95	15600	15900

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	µF/km	kA	Amps	Amps	Amps	V/A.Km
25	0.727	0.444	0.14	3.575	129	112	143	0.825
35	0.524	0.415	0.16	5.005	154	134	172	0.613
50	0.387	0.399	0.18	7.150	181	158	205	0.47
70	0.268	0.382	0.20	10.010	220	194	253	0.346
95	0.193	0.373	0.21	13.585	263	232	307	0.268
120	0.153	0.362	0.23	17.160	298	264	352	0.225
150	0.124	0.353	0.25	21.450	332	296	397	0.194
185	0.0991	0.345	0.27	26.455	374	335	453	0.167
240	0.0754	0.335	0.30	34.320	431	387	529	0.142
300	0.0601	0.320	0.33	42.900	482	435	599	0.124

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMoured THREE CORE CABLES

COPPER CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=18/30(36) \text{ kV}$
 $19/33(36) \text{ kV}$



- | | |
|-------------------------------------|----------------------|
| 1. Conductor | 6. PP Filler |
| 2. Conductor Screen | 7. Bedding |
| 3. XLPE Insulation | 8. Steel Tape Armour |
| 4. Insulation Screen (Non-Metallic) | 9. Outer Sheath |
| 5. Insulation Screen (Metallic) | |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of steel Tape	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
					CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm		mm	mm	mm	mm	Kg/km	Kg/km
50	8.1	8.0	25.7	2x0.5	3.2	3.3	73	76	6300	6500
70	9.7	8.0	27.3	2x0.5	3.3	3.4	77	80	7300	7550
95	11.4	8.0	29.0	2x0.5	3.5	3.5	81	84	8500	8650
120	12.9	8.0	30.5	2x0.5	3.6	3.7	86	89	10325	10600
150	14.3	8.0	31.9	2x0.5	3.7	3.8	89	92	11450	11850
185	16.0	8.0	33.6	2x0.8	3.9	3.9	93	96	13050	13325
240	18.4	8.0	36.0	2x0.8	4.0	4.1	99	102	15300	15600
300	20.4	8.0	38.0	2x0.8	4.2	4.2	104	106	17650	17900

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
50	0.387	0.449	0.14	7.150	181	158	205	0.480
70	0.268	0.430	0.16	10.010	220	194	253	0.355
95	0.193	0.419	0.17	13.585	263	232	307	0.277
120	0.153	0.405	0.18	17.160	298	264	352	0.233
150	0.124	0.395	0.19	21.450	332	296	397	0.202
185	0.0991	0.384	0.21	26.455	374	335	453	0.175
240	0.0754	0.371	0.23	34.320	431	387	529	0.149
300	0.0601	0.358	0.25	42.900	482	435	599	0.131

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

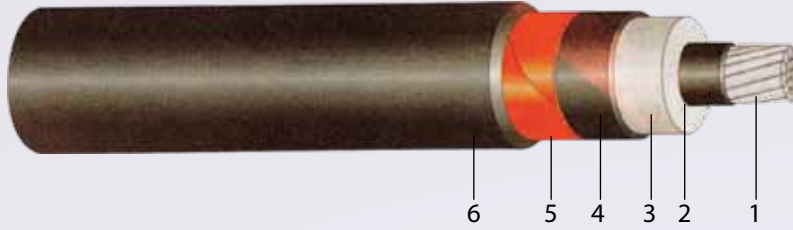


UNARMoured SINGLE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=3.6/6(7.2) \text{ kV}$
 $3.8/6.6(7.2) \text{ kV}$



- 1. Conductor
- 2. Conductor Screen
- 3. XLPE Insulation
- 4. Insulation Screen (Non-metallic)
- 5. Insulation Screen (Metallic)
- 6. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	2.5	12.6	1.8	1.8	18	20	375	550
35	7.1	2.5	13.7	1.8	1.8	19	21	425	550
50	8.3	2.5	14.9	1.8	1.8	21	22	500	675
70	9.7	2.5	16.3	1.8	1.8	22	24	600	750
95	11.55	2.5	18.15	1.8	1.8	24	26	700	850
120	12.95	2.5	19.55	1.8	1.8	26	27	800	925
150	14.3	2.5	20.9	1.8	1.8	27	29	925	1125
185	15.9	2.5	22.5	1.8	1.9	29	30	1050	1275
240	18.4	2.6	25.2	1.9	1.9	31	33	1300	1500
300	20.5	2.8	27.7	2.0	2.0	34	36	1550	1750
400	24.0	3.0	31.6	2.1	2.2	38	40	1925	2250
500	27.0	3.2	35.0	2.2	2.3	42	44	2350	2675
630	30.4	3.2	38.4	2.3	2.4	46	48	2900	3200

SIZE	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings						Voltage drop per phase	
		Trefoil	Flat			Buried Direct In the ground		In single-way ducts		In air			
						Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching		Flat Spaced
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
25	1.20	0.444	0.760	0.26	2.360	108	112	102	103	127	130	153	1.314
35	0.868	0.426	0.745	0.29	3.304	129	134	122	123	154	157	185	0.971
50	0.641	0.412	0.726	0.31	4.720	152	157	144	146	184	189	222	0.735
70	0.443	0.388	0.694	0.37	6.608	186	192	176	178	230	236	278	0.528
95	0.320	0.378	0.679	0.39	8.968	221	229	210	213	280	287	338	0.400
120	0.253	0.364	0.660	0.44	11.328	252	260	240	242	324	332	391	0.328
150	0.206	0.354	0.645	0.48	14.160	281	288	267	271	368	376	440	0.279
185	0.164	0.343	0.630	0.52	17.464	317	324	303	307	424	432	504	0.234
240	0.125	0.332	0.611	0.56	22.656	367	373	351	356	502	511	593	0.192
300	0.100	0.324	0.596	0.58	28.320	414	419	397	402	577	586	677	0.165
400	0.0778	0.313	0.573	0.61	37.760	470	466	451	457	673	676	769	0.141
500	0.0605	0.306	0.564	0.64	47.200	528	519	512	518	770	767	857	0.122
630	0.0469	0.296	0.548	0.71	59.472	599	582	583	590	896	885	980	0.107

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

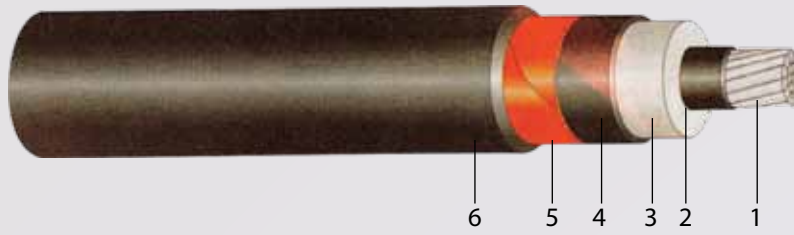


UNARMoured SINGLE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U(U_m)=6/10(12)$ kV
6.35/11(12) kV



1. Conductor
2. Conductor Screen
3. XLPE Insulation
4. Insulation Screen (Non-metallic)
5. Insulation Screen (Metallic)
6. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx.)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	3.4	14.4	1.8	1.8	20	22	450	625
35	7.1	3.4	15.5	1.8	1.8	21	23	500	650
50	8.3	3.4	16.7	1.8	1.8	23	24	575	700
70	9.7	3.4	18.1	1.8	1.8	24	26	675	800
95	11.55	3.4	19.95	1.8	1.8	26	28	800	900
120	12.95	3.4	21.35	1.8	1.8	28	29	900	1000
150	14.3	3.4	22.7	1.8	1.9	29	31	1000	1200
185	15.9	3.4	24.3	1.9	1.9	31	32	1150	1350
240	18.4	3.4	26.8	2.0	2.0	33	35	1400	1600
300	20.5	3.4	28.9	2.0	2.1	35	37	1625	1850
400	24.0	3.4	32.4	2.1	2.2	39	41	1975	2300
500	27.0	3.4	35.4	2.2	2.3	42	44	2375	2700
630	30.4	3.4	38.8	2.3	2.4	46	48	2875	3250

SIZE	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase
		Trefoil	Flat			Buried Direct In the ground		In single-way ducts		In air			
						Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching	Flat Spaced	
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
25	1.20	0.460	0.770	0.21	2.360	108	112	102	103	127	130	153	1.318
35	0.868	0.440	0.751	0.23	0.304	129	134	122	123	154	157	185	0.973
50	0.641	0.424	0.731	0.25	4.720	152	157	144	146	184	189	222	0.737
70	0.443	0.401	0.700	0.29	6.608	186	192	176	178	230	236	278	0.530
95	0.320	0.383	0.681	0.31	8.968	221	229	210	213	280	287	338	0.401
120	0.253	0.376	0.666	0.34	11.328	252	260	240	242	324	332	391	0.331
150	0.206	0.364	0.650	0.37	14.160	281	288	267	271	368	376	440	0.280
185	0.164	0.354	0.635	0.40	17.464	317	324	303	307	424	432	504	0.236
240	0.125	0.341	0.615	0.45	22.656	367	373	351	356	502	511	593	0.194
300	0.100	0.329	0.599	0.49	28.320	414	419	397	402	577	586	677	0.166
400	0.0778	0.318	0.580	0.55	37.760	470	466	451	457	673	676	769	0.142
500	0.0605	0.308	0.565	0.60	47.200	528	519	512	518	770	767	857	0.123
630	0.0469	0.299	0.549	0.68	59.472	599	582	583	590	896	885	980	0.108

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

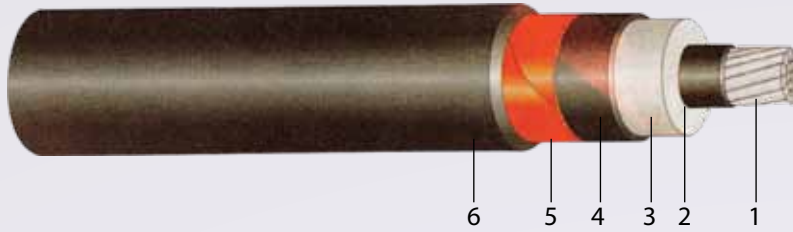


UNARMoured SINGLE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=8.7/15(17.5) \text{ kV}$



1. Conductor
2. Conductor Screen
3. XLPE Insulation
4. Insulation Screen (Non-metallic)
5. Insulation Screen (Metallic)
6. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	4.5	16.6	1.8	1.8	22	24	525	650
35	7.1	4.5	17.7	1.8	1.8	24	25	600	725
50	8.3	4.5	18.9	1.8	1.8	25	26	675	800
70	9.7	4.5	20.3	1.8	1.8	27	28	775	875
95	11.55	4.5	22.15	1.8	1.8	28	30	900	1000
120	12.95	4.5	23.55	1.9	1.9	30	31	1025	1125
150	14.3	4.5	24.9	1.9	1.9	31	33	1150	1325
185	15.9	4.5	26.5	2.0	2.0	33	34	1300	1500
240	18.4	4.5	29.0	2.0	2.1	36	37	1550	1750
300	20.5	4.5	31.1	2.1	2.1	38	39	1775	1975
400	24.0	4.5	34.6	2.2	2.3	42	43	2150	2450
500	27.0	4.5	37.6	2.3	2.4	45	47	2550	2850
630	30.4	4.5	41.0	2.4	2.5	49	51	3125	3450

SIZE	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings						Voltage drop per phase	
		Trefoil	Flat			Buried Direct In the ground		In single -way ducts		In air			
						Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching		Flat Spaced
mm ²	Ohm/km	mH/km	mH/km	μF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
25	1.20	0.470	0.780	0.17	2.360	108	112	102	103	127	130	153	1.320
35	0.868	0.456	0.758	0.19	0.304	129	134	122	123	154	157	185	0.976
50	0.641	0.440	0.738	0.20	4.720	152	157	144	146	184	189	222	0.74
70	0.443	0.415	0.706	0.23	6.608	186	192	176	178	230	236	278	0.533
95	0.320	0.402	0.690	0.25	8.968	221	229	210	213	280	287	338	0.404
120	0.253	0.389	0.672	0.27	11.328	252	260	240	242	324	332	391	0.333
150	0.206	0.377	0.656	0.29	14.160	281	288	267	271	368	376	440	0.283
185	0.164	0.366	0.641	0.32	17.464	317	324	303	307	424	432	504	0.238
240	0.125	0.352	0.621	0.35	22.656	367	373	351	356	502	511	593	0.196
300	0.100	0.340	0.605	0.39	28.320	414	419	397	402	577	586	677	0.168
400	0.0778	0.327	0.585	0.43	37.760	470	466	451	457	673	676	769	0.144
500	0.0605	0.318	0.570	0.48	47.200	528	519	512	518	770	767	857	0.125
630	0.0469	0.307	0.554	0.53	59.472	599	582	583	590	896	885	980	0.109

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

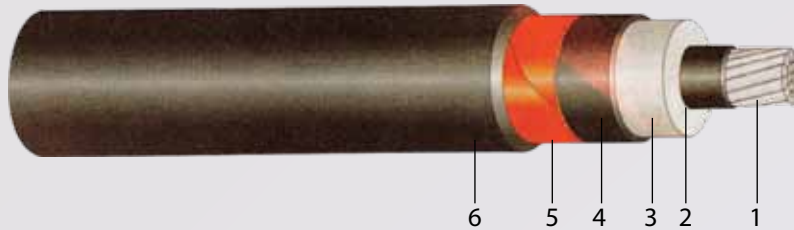


UNARMoured SINGLE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=12/20(24) \text{ kV}$
 $12.7/22(24) \text{ kV}$



1. Conductor
2. Conductor Screen
3. XLPE Insulation
4. Insulation Screen (Non-metallic)
5. Insulation Screen (Metallic)
6. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx.)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	6.0	19.6	1.8	1.8	26	27	675	775
35	7.1	5.5	19.7	1.8	1.8	26	27	700	800
50	8.3	5.5	20.9	1.8	1.8	27	29	775	875
70	9.7	5.5	22.3	1.8	1.9	29	30	875	1000
95	11.55	5.5	24.15	1.9	1.9	31	32	1025	1125
120	12.95	5.5	25.55	1.9	2.0	32	34	1125	1250
150	14.3	5.5	26.9	2.0	2.0	34	35	1250	1450
185	15.9	5.5	28.6	2.0	2.1	35	37	1425	1625
240	18.4	5.5	31.0	2.1	2.1	38	39	1675	1875
300	20.5	5.5	33.1	2.2	2.2	40	42	1925	2125
400	24.0	5.5	36.6	2.3	2.3	44	46	2300	2600
500	27.0	5.5	39.6	2.4	2.4	47	49	2800	3050
630	30.4	5.5	43.0	2.5	2.5	51	53	3325	3600

SIZE	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase
		Trefoil	Flat			Buried Direct In the ground		In single -way ducts		In air			
						Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching	Flat Spaced	
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
25	1.20	0.497	0.792	0.14	2.360	108	112	102	103	127	130	153	1.324
35	0.868	0.468	0.763	0.16	0.304	129	134	122	123	154	157	185	0.976
50	0.641	0.453	0.744	0.18	4.720	152	157	144	146	184	189	222	0.743
70	0.443	0.426	0.712	0.20	6.608	186	192	176	178	230	236	278	0.535
95	0.320	0.414	0.696	0.21	8.968	221	229	210	213	280	287	338	0.407
120	0.253	0.399	0.677	0.23	11.328	252	260	240	242	324	332	391	0.335
150	0.206	0.388	0.662	0.25	14.160	281	288	267	271	368	376	440	0.285
185	0.164	0.375	0.646	0.27	17.464	317	324	303	307	424	432	504	0.24
240	0.125	0.361	0.626	0.30	22.656	367	373	351	356	502	511	593	0.197
300	0.100	0.350	0.610	0.33	28.320	414	419	397	402	577	586	677	0.17
400	0.0778	0.336	0.590	0.37	37.760	470	466	451	457	673	676	769	0.146
500	0.0605	0.326	0.575	0.40	47.200	528	519	512	518	770	767	857	0.126
630	0.0469	0.315	0.558	0.45	59.472	599	582	583	590	896	885	980	0.111

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

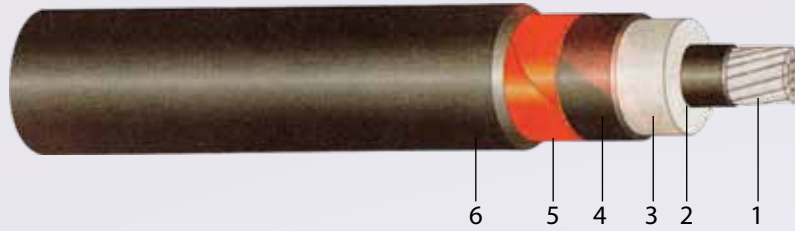


UNARMoured SINGLE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=18/30(36) \text{ kV}$
 $19/33(36) \text{ kV}$



- 1. Conductor
- 2. Conductor Screen
- 3. XLPE Insulation
- 4. Insulation Screen (Non-metallic)
- 5. Insulation Screen (Metallic)
- 6. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx.)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
50	8.3	8.0	25.9	1.9	2.0	32	34	1025	1150
70	9.7	8.0	27.3	2.0	2.0	34	35	1150	1275
95	11.55	8.0	29.15	2	2.1	36	38	1325	1450
120	12.95	8.0	30.55	2.1	2.1	38	39	1450	1550
150	14.3	8.0	31.9	2.1	2.2	39	40	1575	1800
185	15.9	8.0	33.5	2.2	2.2	41	42	1750	1950
240	18.4	8.0	36.0	2.3	2.3	43	45	2050	2225
300	20.5	8.0	38.1	2.3	2.4	46	47	2300	2500
400	24.0	8.0	41.6	2.5	2.5	50	51	2775	3050
500	27.0	8.0	44.6	2.5	2.6	53	54	3200	3500
630	30.4	8.0	48.0	2.7	2.7	56	58	3800	4050

SIZE	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase
		Trefoil	Flat			Buried Direct In the ground		In single -way ducts		In air			
						Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching	Flat Spaced	
mm ²	Ohm/km	mH/km	mH/km	μF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
50	0.641	0.487	0.761	0.14	4.720	152	157	144	146	184	189	222	0.749
70	0.443	0.459	0.728	0.16	6.608	186	192	176	178	230	236	278	0.541
95	0.320	0.446	0.712	0.17	8.968	221	229	210	213	280	287	338	0.413
120	0.253	0.430	0.693	0.18	11.328	252	260	240	242	324	332	391	0.341
150	0.206	0.417	0.677	0.19	14.160	281	288	267	271	368	376	440	0.291
185	0.164	0.404	0.661	0.21	17.464	317	324	303	307	424	432	504	0.245
240	0.125	0.388	0.641	0.23	22.656	367	373	351	356	502	511	593	0.203
300	0.100	0.375	0.624	0.25	28.320	414	419	397	402	577	586	677	0.175
400	0.0778	0.360	0.604	0.27	37.760	470	466	451	457	673	676	769	0.15
500	0.0605	0.349	0.589	0.30	47.200	528	519	512	518	770	767	857	0.131
630	0.0469	0.336	0.571	0.33	59.472	599	582	583	590	896	885	980	0.115

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

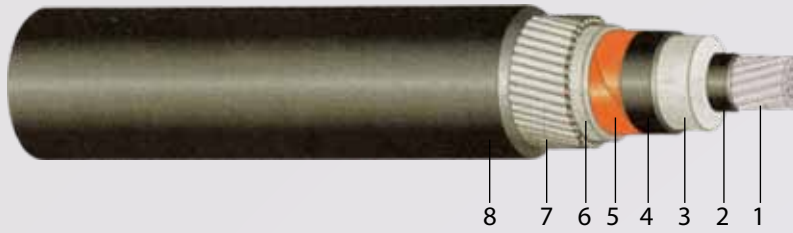


ARMoured SINGLE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=3.6/6(7.2) \text{ kV}$
 $3.8/6.6(7.2) \text{ kV}$



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. Bedding |
| 3. XLPE Insulation | 7. Aluminium Wire Armour |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of Aluminium Wire	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	2.5	12.6	1.6	1.8	1.8	24	26	750	950
35	7.1	2.5	13.7	1.6	1.8	1.8	25	27	825	1025
50	8.3	2.5	14.9	1.6	1.8	1.8	27	28	900	1100
70	9.7	2.5	16.3	1.6	1.8	1.8	28	29	975	1225
95	11.55	2.5	18.15	1.6	1.9	1.9	30	31	1175	1350
120	12.95	2.5	19.55	1.6	1.9	1.9	31	33	1300	1500
150	14.3	2.5	20.9	2.0	2.0	2.0	33	35	1400	1775
185	15.9	2.5	22.5	2.0	2.0	2.1	35	37	1650	2000
240	18.4	2.6	25.2	2.0	2.1	2.2	38	40	2000	2325
300	20.5	2.8	27.7	2.0	2.2	2.2	41	42	2325	2625
400	24.0	3.0	31.6	2/2.5	2.3	2.4	46	48	2725	3400
500	27.0	3.2	35.0	2.5	2.5	2.5	50	52	3475	3900
630	30.4	3.2	38.4	2.5	2.6	2.6	54	56	4100	4550

Size	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase
		Trefoil	Flat			Buried Direct In the ground		In single-way ducts		In air			
						Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching	Flat Spaced	
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
25	1.20	0.473	0.785	0.26	2.360	107	111	101	103	126	128	147	1.323
35	0.868	0.461	0.760	0.29	3.304	127	131	121	123	152	155	178	0.979
50	0.641	0.444	0.735	0.31	4.720	150	154	142	145	182	185	212	0.743
70	0.443	0.418	0.708	0.37	6.608	182	187	174	177	226	230	263	0.535
95	0.320	0.406	0.692	0.39	8.968	217	221	207	210	275	279	317	0.407
120	0.253	0.392	0.637	0.44	11.328	246	249	235	239	317	321	363	0.336
150	0.206	0.380	0.658	0.48	14.160	274	274	262	265	360	361	405	0.286
185	0.164	0.369	0.642	0.52	17.464	309	305	297	298	413	411	457	0.241
240	0.125	0.356	0.623	0.56	22.656	355	344	342	342	485	478	526	0.198
300	0.100	0.346	0.608	0.58	28.320	397	378	383	382	552	539	587	0.17
400	0.0778	0.334	0.589	0.61	37.760	448	416	434	430	638	613	656	0.146
500	0.0605	0.327	0.576	0.64	47.200	494	446	482	470	724	677	718	0.127
630	0.0469	0.315	0.558	0.71	59.472	549	484	537	521	824	755	792	0.112

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

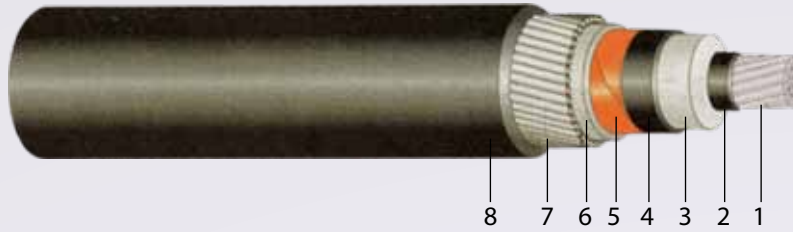


ARMOURED SINGLE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

U₀/U (U_m)=6 /10(12) kV
6.35/11(12) kV



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. Bedding |
| 3. XLPE Insulation | 7. Aluminium Wire Armour |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of Aluminium Wire	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	3.4	14.4	1.6	1.8	1.8	26	28	850	1050
35	7.1	3.4	15.5	1.6	1.8	1.8	27	29	925	1100
50	8.3	3.4	16.7	1.6	1.8	1.9	29	30	975	1225
70	9.7	3.4	18.1	1.6	1.9	1.9	30	31	1100	1350
95	11.55	3.4	19.95	1.6	1.9	2.0	32	33	1300	1475
120	12.95	3.4	21.35	1.6/2	2.0	2.0	34	36	1400	1700
150	14.3	3.4	22.7	2.0	2.1	2.1	36	37	1600	1925
185	15.9	3.4	24.3	2.0	2.1	2.1	37	39	1800	2100
240	18.4	3.4	26.8	2.0	2.2	2.2	40	41	2150	2450
300	20.5	3.4	28.9	2.0	2.2	2.3	42	44	2400	2725
400	24.0	3.4	32.4	2/2.5	2.4	2.4	47	49	2825	3450
500	27.0	3.4	35.4	2.5	2.5	2.5	51	52	3500	3900
630	30.4	3.4	38.8	2.5	2.6	2.7	55	57	4125	4600

Size	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase
		Trefoil	Flat			Buried Direct In the ground		In single-way ducts		In air			
						Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching	Flat Spaced	
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
25	1.20	0.488	0.790	0.21	2.360	107	111	101	103	126	128	147	1.323
35	0.868	0.472	0.765	0.23	3.304	127	131	121	123	152	155	178	0.979
50	0.641	0.455	0.745	0.25	4.720	150	154	142	145	182	185	212	0.743
70	0.443	0.428	0.713	0.29	6.608	182	187	174	177	226	230	263	0.535
95	0.320	0.416	0.697	0.31	8.968	217	221	207	210	275	279	317	0.407
120	0.253	0.401	0.678	0.34	11.328	246	249	235	239	317	321	363	0.336
150	0.206	0.390	0.663	0.37	14.160	274	274	262	265	360	361	405	0.286
185	0.164	0.378	0.647	0.40	17.464	309	305	297	298	413	411	457	0.241
240	0.125	0.363	0.627	0.45	22.656	355	344	342	342	485	478	526	0.198
300	0.100	0.351	0.611	0.49	28.320	397	378	383	382	552	539	587	0.17
400	0.0778	0.338	0.591	0.55	37.760	448	416	434	430	638	613	656	0.146
500	0.0605	0.328	0.576	0.60	47.200	494	446	482	470	724	677	718	0.127
630	0.0469	0.317	0.560	0.68	59.472	549	484	537	521	824	755	792	0.112

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

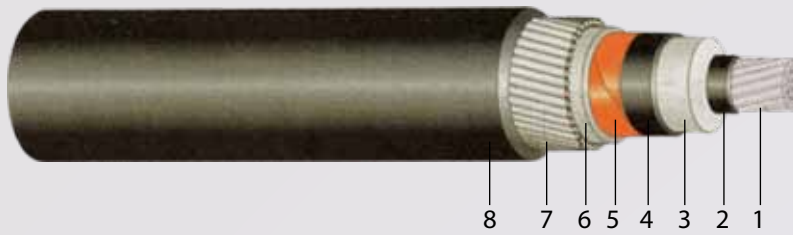


ARMoured SINGLE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U(U_m)=8.7/15(17.5)$ kV



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. Bedding |
| 3. XLPE Insulation | 7. Aluminium Wire Armour |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of Aluminium Wire	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx.)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	4.5	16.6	1.6	1.8	1.9	28	30	925	1175
35	7.1	4.5	17.7	1.6	1.9	1.9	30	31	1050	1275
50	8.3	4.5	18.9	1.6	1.9	1.9	31	32	1100	1350
70	9.7	4.5	20.3	1.6	1.9	2.0	33	34	1225	1500
95	11.55	4.5	22.15	2.0	2.0	2.1	35	37	1475	1775
120	12.95	4.5	23.55	2.0	2.1	2.1	37	38	1625	1875
150	14.3	4.5	24.9	2.0	2.1	2.2	38	40	1775	2100
185	15.9	4.5	26.5	2.0	2.2	2.2	40	41	2025	2325
240	18.4	4.5	29.0	2.0	2.3	2.3	43	44	2300	2650
300	20.5	4.5	31.1	2.5	2.3	2.4	46	48	2575	3075
400	24.0	4.5	34.6	2.5	2.5	2.5	50	51	3225	3675
500	27.0	4.5	37.6	2.5	2.6	2.6	53	55	3700	4175
630	30.4	4.5	41.0	2.5	2.7	2.7	57	59	4375	4850

Size	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase
		Trefoil	Flat			Buried Direct In the ground	In single-way ducts		In air				
							Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching	
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
25	1.20	0.505	0.796	0.17	2.360	107	111	101	103	126	128	147	1.326
35	0.868	0.484	0.771	0.19	3.304	127	131	121	123	152	155	178	0.982
50	0.641	0.468	0.751	0.21	4.720	150	154	142	145	182	185	212	0.746
70	0.443	0.441	0.719	0.23	6.608	182	187	174	177	226	230	263	0.538
95	0.320	0.428	0.703	0.25	8.968	217	221	207	210	275	279	317	0.409
120	0.253	0.413	0.684	0.27	11.328	246	249	235	239	317	321	363	0.338
150	0.206	0.401	0.668	0.29	14.160	274	274	262	265	360	361	405	0.288
185	0.164	0.388	0.652	0.32	17.464	309	305	297	298	413	411	457	0.242
240	0.125	0.373	0.632	0.35	22.656	355	344	342	342	485	478	526	0.200
300	0.100	0.361	0.616	0.39	28.320	397	378	383	382	552	539	587	0.172
400	0.0778	0.346	0.596	0.43	37.760	448	416	434	430	638	613	656	0.147
500	0.0605	0.337	0.582	0.48	47.200	494	446	482	470	724	677	718	0.128
630	0.0469	0.325	0.656	0.53	59.472	549	484	537	521	824	755	792	0.113

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

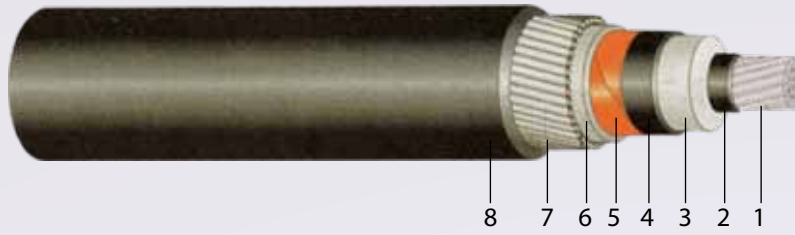


ARMOURED SINGLE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=12/20(24) \text{ kV}$
 $12.7/22(24) \text{ kV}$



- 1. Conductor
- 2. Conductor Screen
- 3. XLPE Insulation
- 4. Insulation Screen (Non-metallic)
- 5. Insulation Screen (Metallic)
- 6. Bedding
- 7. Aluminium Wire Armour
- 8. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of Aluminium Wire	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx.)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	6.0	19.6	1.6	1.9	2.0	32	33	1150	1375
35	7.1	5.5	19.7	1.6	1.9	2.0	32	33	1175	1400
50	8.3	5.5	20.9	1.6	2.0	2.0	32	35	1250	1600
70	9.7	5.5	22.3	2.0	2.0	2.1	35	37	1500	1700
95	11.55	5.5	24.15	2.0	2.1	2.1	37	39	1650	1875
120	12.95	5.5	25.55	2.0	2.1	2.2	39	40	1850	2100
150	14.3	5.5	26.9	2.0	2.2	2.2	40	42	2000	2300
185	15.9	5.5	28.5	2.0	2.2	2.3	42	44	2200	2525
240	18.4	5.5	31.0	2.0/2.5	2.3	2.4	45	48	2475	3025
300	20.5	5.5	33.1	2.5	2.4	2.5	48	50	2925	3325
400	24.0	5.5	36.6	2.5	2.5	2.6	52	54	3425	3900
500	27.0	5.5	39.6	2.5	2.6	2.7	56	57	4000	4450
630	30.4	5.5	43.0	2.5	2.8	2.8	59	61	4650	5100

Size	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase
		Trefoil	Flat			Buried Direct In the ground	In single -way ducts		In air				
							Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching	
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
25	1.20	0524	0.805	0.14	2.360	107	111	101	103	126	128	147	1.33
35	0.868	0.496	0.776	0.16	3.304	127	131	121	123	152	155	178	0.984
50	0.641	0.478	0.456	0.18	4.720	150	154	142	145	182	185	212	0.748
70	0.443	0.452	0.724	0.20	6.608	182	187	174	177	226	230	263	0.540
95	0.320	0.438	0.708	0.21	8.968	217	221	207	210	275	279	317	0.411
120	0.253	0.23	0.689	0.23	11.328	246	249	235	239	317	321	363	0.34
150	0.206	0.410	0.673	0.25	14.160	274	274	262	265	360	361	405	0.289
185	0.164	0.397	0.657	0.27	17.464	309	305	297	298	413	411	457	0.244
240	0.125	0.382	0.637	0.30	22.656	355	344	342	342	485	478	526	0.201
300	0.100	0.370	0.621	0.33	28.320	397	378	383	382	552	539	587	0.174
400	0.0778	0.355	0.601	0.37	37.760	448	416	434	430	638	613	656	0.149
500	0.0605	0.345	0.586	0.40	47.200	494	446	482	470	724	677	718	0.130
630	0.0469	0.333	0.569	0.45	59.472	549	484	537	521	824	755	792	0.115

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

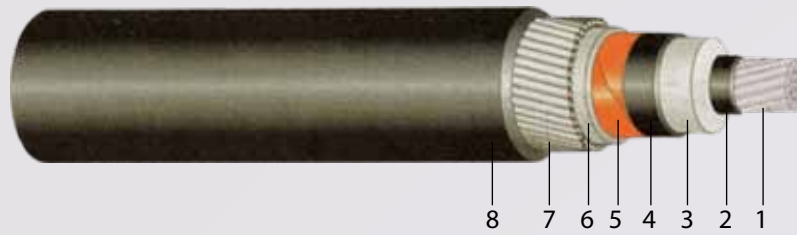


ARMOURED SINGLE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=18/30(36) \text{ kV}$
 $19/33(36) \text{ kV}$



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. Bedding |
| 3. XLPE Insulation | 7. Aluminium Wire Armour |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Diameter of Aluminium Wire		Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT/CUW	CUT	CUW	CUT	CUW	CUT	CUW	
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km	
50	8.3	8.0	25.9	2.0	2.2	2.2	39	41	1775	2000	
70	9.7	8.0	27.3	2.0	2.2	2.3	41	42	1900	2150	
95	11.55	8.0	29.15	2.0	2.3	2.3	43	44	2125	2350	
120	12.95	8.0	30.55	2.5	2.3	2.4	44	46	2225	2500	
150	14.3	8.0	31.9	2.5	2.4	2.5	47	49	2600	2950	
185	15.9	8.0	33.5	2.5	2.5	2.5	49	50	2850	3150	
240	18.4	8.0	36.0	2.5	2.5	2.6	52	53	3125	3550	
300	20.5	8.0	38.1	2.5	2.6	2.7	54	55	3475	3875	
400	24.0	8.0	41.6	2.5	2.7	2.8	58	60	4050	4550	
500	27.0	8.0	44.6	2.5	2.8	2.9	61	63	4600	5075	
630	30.4	8.0	48.0	2.5	2.9	3.0	65	67	5275	5775	

SIZE	Max DC Resistance @ 20°C	Inductance		Capacitance	Conductor Short Circuit Current for 1 second	Current ratings							Voltage drop per phase
		Trefoil	Flat			Buried Direct In the ground	In single -way ducts		In air				
							Trefoil	Flat Spaced	Trefoil ducts	Flat Touching ducts	Trefoil	Flat Touching	
mm ²	Ohm/km	mH/km	mH/km	µF/km	kA	Amps	Amps	Amps	Amps	Amps	Amps	Amps	V/A.Km
50	0.641	0.509	0.772	0.14	4.720	150	154	142	145	182	185	212	0.754
70	0.443	0.481	0.740	0.16	6.608	182	187	174	177	226	230	263	0.545
95	0.320	0.467	0.723	0.17	8.968	217	221	207	210	275	279	317	0.417
120	0.253	0.450	0.704	0.18	11.328	246	249	235	239	317	321	363	0.345
150	0.206	0.437	0.688	0.19	14.160	274	274	262	265	360	361	405	0.294
185	0.164	0.424	0.672	0.21	17.464	309	305	297	298	413	411	457	0.249
240	0.125	0.407	0.652	0.23	22.656	355	344	342	342	485	478	526	0.206
300	0.100	0.394	0.635	0.25	28.320	397	378	383	382	552	539	587	0.179
400	0.0778	0.377	0.614	0.27	37.760	448	416	434	430	638	613	656	0.153
500	0.0605	0.366	0.599	0.30	47.200	494	446	482	470	724	677	718	0.134
630	0.0469	0.353	0.582	0.33	59.472	549	484	537	521	824	755	792	0.118

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

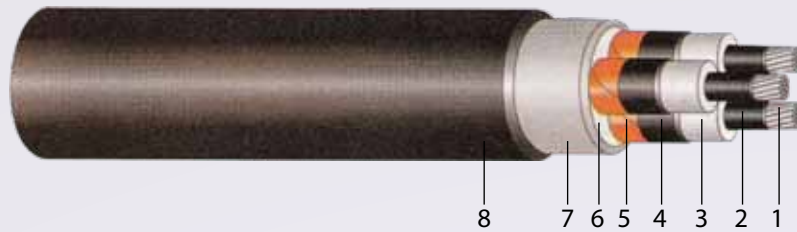


UNARMoured THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=3.6/6(7.2) \text{ kV}$
 $3.8/6.6(7.2) \text{ kV}$



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. PP Filler |
| 3. XLPE Insulation | 7. Bedding |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	2.5	12.6	2.1	2.1	39	42	1425	1600
35	7.1	2.5	13.7	2.1	2.2	41	45	1625	1825
50	8.3	2.5	14.9	2.2	2.3	44	48	1875	2100
70	9.7	2.5	16.3	2.3	2.4	45	51	2250	2450
95	11.55	2.5	18.15	2.5	2.5	47	55	2725	2900
120	12.95	2.5	19.55	2.6	2.6	55	59	3100	3300
150	14.3	2.5	20.9	2.7	2.8	58	62	3550	3800
185	15.9	2.5	22.5	2.8	2.9	62	65	4050	4325
240	18.4	2.6	25.2	3.0	3.0	68	72	4975	5225
300	20.5	2.8	27.7	3.2	3.2	75	78	6050	6275

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	µF/km	kA	Amps	Amps	Amps	V/A.Km
25	1.20	0.305	0.26	2.360	100	87	110	1.288
35	0.868	0.294	0.29	3.304	119	103	132	0.946
50	0.641	0.283	0.31	4.720	140	122	158	0.711
70	0.443	0.272	0.36	6.608	171	150	196	0.506
95	0.320	0.266	0.39	8.968	203	179	236	0.379
120	0.253	0.259	0.43	11.328	232	205	273	0.309
150	0.206	0.253	0.47	14.160	260	231	309	0.259
185	0.164	0.250	0.52	17.464	294	262	355	0.217
240	0.125	0.243	0.56	22.656	340	305	415	0.175
300	0.100	0.236	0.58	28.320	384	346	475	0.149

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m.
Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

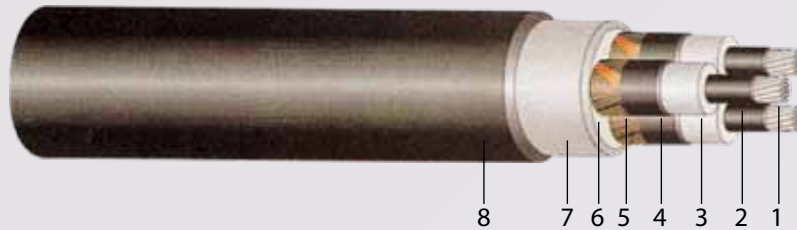


UNARMoured THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=6 /10(12) \text{ kV}$
 $6.35/11(12) \text{ kV}$



- 1. Conductor
- 2. Conductor Screen
- 3. XLPE Insulation
- 4. Insulation Screen (Non-metallic)
- 5. Insulation Screen (Metallic)
- 6. PP Filler
- 7. Bedding
- 8. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	3.4	14.4	2.2	2.2	43	46	1700	1850
35	7.1	3.4	15.5	2.3	2.3	46	49	1950	2150
50	8.3	3.4	16.7	2.4	2.4	49	52	2225	2400
70	9.7	3.4	18.1	2.5	2.5	52	55	2575	2750
95	11.55	3.4	19.95	2.6	2.7	56	60	3050	3275
120	12.95	3.4	21.35	2.7	2.8	60	63	3500	3675
150	14.3	3.4	22.7	2.8	2.9	63	66	3925	4175
185	15.9	3.4	24.3	2.9	3.0	67	70	4450	4750
240	18.4	3.4	26.8	3.1	3.2	73	76	5450	5775
300	20.5	3.4	28.9	3.3	3.3	79	81	6375	6600

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
25	1.20	0.331	0.21	2.360	100	87	110	1.293
35	0.868	0.318	0.23	3.304	119	103	132	0.95
50	0.641	0.308	0.25	4.720	140	122	158	0.716
70	0.443	0.292	0.29	6.608	171	150	196	.0510
95	0.320	0.285	0.31	8.968	203	179	236	0.383
120	0.253	0.276	0.34	11.328	232	205	273	0.312
150	0.206	0.269	0.37	14.160	260	231	309	0.263
185	0.164	0.263	0.40	17.464	294	262	355	0.219
240	0.125	0.255	0.44	22.656	340	305	415	0.177
300	0.100	0.248	0.48	28.320	384	346	475	0.151

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m.
Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

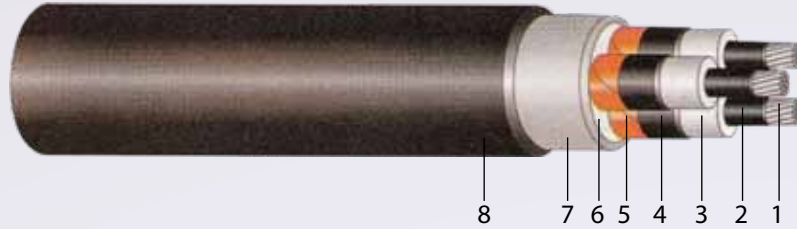


UNARMoured THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U(U_m)=8.7/15(17.5)$ kV



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. PP Filler |
| 3. XLPE Insulation | 7. Bedding |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	4.5	16.6	2.4	2.4	49	52	1950	2025
35	7.1	4.5	17.7	2.5	2.5	52	55	2425	2525
50	8.3	4.5	18.9	2.6	2.6	55	57	2700	2800
70	9.7	4.5	20.3	2.7	2.7	58	61	3150	3250
95	11.55	4.5	22.15	2.8	2.8	63	65	3675	3875
120	12.95	4.5	23.55	2.9	2.9	66	68	4075	4200
150	14.3	4.5	24.9	3.0	3.1	69	72	4525	4725
185	15.9	4.5	26.5	3.1	3.2	73	76	5175	5350
240	18.4	4.5	29.0	3.3	3.3	79	81	6125	6275
300	20.5	4.5	31.1	3.4	3.5	84	86	6975	7150

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
25	1.20	0.359	0.17	2.360	100	87	110	1.299
35	0.868	0.344	0.19	3.304	119	103	132	0.955
50	0.641	0.332	0.21	4.720	140	122	158	0.72
70	0.443	0.314	0.23	6.608	171	150	196	0.514
95	0.320	0.306	0.25	8.968	203	179	236	0.386
120	0.253	0.296	0.27	11.328	232	205	273	0.316
150	0.206	0.288	0.29	14.160	260	231	309	0.266
185	0.164	0.280	0.32	17.464	294	262	355	0.222
240	0.125	0.271	0.35	22.656	340	305	415	0.18
300	0.100	0.260	0.39	28.320	384	346	475	0.153

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

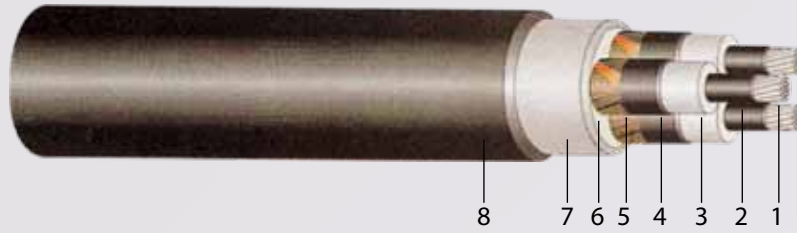


UNARMoured THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U(U_m)=12/20(24) \text{ kV}$
 $12.7/22(24) \text{ kV}$



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. PP Filler |
| 3. XLPE Insulation | 7. Bedding |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx.)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	6.0	19.6	2.6	2.6	55	59	2650	2850
35	7.1	5.5	19.7	2.6	2.7	56	60	2700	2950
50	8.3	5.5	20.9	2.7	2.8	58	61	3050	3225
70	9.7	5.5	22.3	2.8	2.9	62	65	3450	3625
95	11.55	5.5	24.15	2.9	3.0	66	69	4000	4175
120	12.95	5.5	25.55	3.0	3.1	70	73	4525	4700
150	14.3	5.5	26.9	3.1	3.2	74	77	5075	5325
185	15.9	5.5	28.5	3.3	3.3	78	80	5700	5925
240	18.4	5.5	31.0	3.4	3.5	83	86	6650	6925
300	20.5	5.5	33.1	3.6	3.6	88	91	7575	7775

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
25	1.20	0.394	0.14	2.360	100	87	110	0.305
35	0.868	0.365	0.16	3.304	119	103	132	0.959
50	0.641	0.352	0.18	4.720	140	122	158	0.724
70	0.443	0.332	0.20	6.608	171	150	196	0.517
95	0.320	0.323	0.21	8.968	203	179	236	0.389
120	0.253	0.312	0.23	11.328	232	205	273	0.319
150	0.206	0.303	0.25	14.160	260	231	309	0.269
185	0.164	0.295	0.27	17.464	294	262	355	0.225
240	0.125	0.285	0.30	22.656	340	305	415	0.183
300	0.100	0.270	0.33	28.320	384	346	475	0.155

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

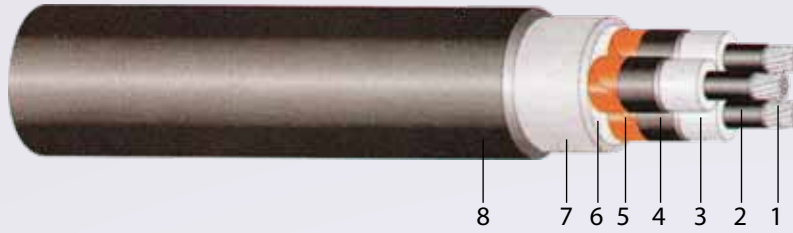


UNARMoured THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=18/30(36) \text{ kV}$
 $19/33(36) \text{ kV}$



- | | |
|-------------------------------------|---------------------------------|
| 1. Conductor | 5. Insulation Screen (Metallic) |
| 2. Conductor Screen | 6. PP Filler |
| 3. XLPE Insulation | 7. Bedding |
| 4. Insulation Screen (Non-metallic) | 8. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
50	8.3	8.0	25.9	3.1	3.1	72	74	4300	4425
70	9.7	8.0	27.3	3.2	3.2	75	77	4825	4950
95	11.5	8.0	29.15	3.4	3.4	79	82	5475	5600
120	12.95	8.0	30.55	3.4	3.5	82	85	5925	6100
150	14.3	8.0	31.9	3.5	3.6	85	88	6450	6625
185	15.9	8.0	33.5	3.6	3.7	89	92	7100	7275
240	18.4	8.0	36.0	3.8	3.9	95	98	8275	8475
300	20.5	8.0	38.1	4.0	4.0	100	103	9275	9425

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
50	0.641	0.404	0.14	4.720	140	122	158	0.734
70	0.443	0.380	0.16	6.608	171	150	196	0.526
95	0.320	0.369	0.17	8.968	203	179	236	0.398
120	0.253	0.355	0.18	11.328	232	205	273	0.327
150	0.206	0.345	0.19	14.160	260	231	309	0.277
185	0.164	0.334	0.21	17.464	294	262	355	0.232
240	0.125	0.321	0.23	22.656	340	305	415	0.19
300	0.100	0.308	0.25	28.320	384	346	475	0.162

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

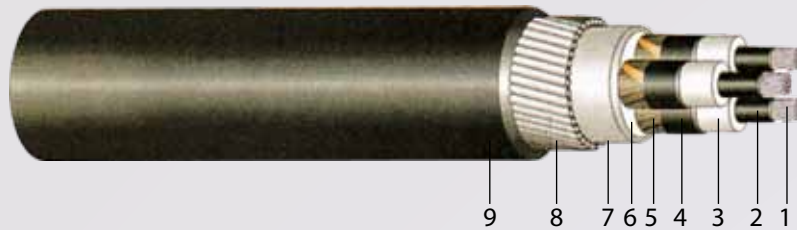


ARMOURED THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=3.6/6(7.2) \text{ kV}$
 $3.8/6.6(7.2) \text{ kV}$



- | | |
|-------------------------------------|----------------------|
| 1. Conductor | 6. PP Filler |
| 2. Conductor Screen | 7. Bedding |
| 3. XLPE Insulation | 8. Steel Wire Armour |
| 4. Insulation Screen (Non-Metallic) | 9. Outer Sheath |
| 5. Insulation Screen (Metallic) | |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of steel Wire		Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT / CUT	CUT	CUW	CUT	CUW	CUT	CUW	
Mm ²	mm	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	2.5	12.6	2.0	2.3	2.3	42	45	2850	3025	
35	7.1	2.5	13.7	2.0	2.3	2.4	45	50	3150	3900	
50	8.3	2.5	14.9	2.5	2.5	2.5	49	52	3950	4275	
70	9.7	2.5	16.3	2.5	2.6	2.6	53	55	4475	4750	
95	11.55	2.5	18.15	2.5	2.7	2.8	57	60	5150	5450	
120	12.95	2.5	19.55	2.5	2.8	2.9	60	64	5475	6025	
150	14.3	2.5	20.9	2.5	2.9	3.0	63	67	6200	6675	
185	15.9	2.5	22.5	2.5	3.1	3.1	67	70	6975	7350	
240	18.4	2.6	25.2	2.5/3.15	3.3	3.3	74	78	8150	9500	
300	20.5	2.8	27.7	3.15	3.5	3.5	82	85	10525	10875	

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
25	1.20	0.363	0.26	2.360	100	87	111	1.299
35	0.868	0.344	0.29	3.304	119	104	133	0.955
50	0.641	0.333	0.31	4.720	140	123	159	0.721
70	0.443	0.322	0.36	6.608	171	150	196	0.515
95	0.320	0.316	0.39	8.968	204	180	238	0.388
120	0.253	0.309	0.43	11.328	232	206	274	0.318
150	0.206	0.303	0.47	14.160	259	231	309	0.269
185	0.164	0.300	0.52	17.464	293	262	354	0.226
240	0.125	0.293	0.56	22.656	338	304	415	0.185
300	0.100	0.286	0.58	28.320	380	343	472	0.158

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMOURED THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=6 /10(12) \text{ kV}$
 $6.35/11(12) \text{ kV}$



- | | |
|-------------------------------------|----------------------|
| 1. Conductor | 6. PP Filler |
| 2. Conductor Screen | 7. Bedding |
| 3. XLPE Insulation | 8. Steel Wire Armour |
| 4. Insulation Screen (Non-Metallic) | 9. Outer Sheath |
| 5. Insulation Screen (Metallic) | |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of steel Wire	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT / CUT	CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	3.4	14.5	2.5	2.4	2.5	48	51	3700	4050
35	7.1	3.4	15.5	2.5	2.5	2.6	50	54	4050	4375
50	8.3	3.4	16.7	2.5	2.6	2.7	54	57	4475	4775
70	9.7	3.4	18.1	2.5	2.7	2.8	57	60	4950	5325
95	11.55	3.4	19.95	2.5	2.9	2.9	61	64	5700	6025
120	12.95	3.4	21.35	2.5	3.0	3.0	65	68	6300	6575
150	14.3	3.4	22.7	2.5	3.1	3.2	68	71	6850	7275
185	15.9	3.4	24.3	2.5	3.2	3.3	72	75	7600	8025
240	18.4	3.4	26.8	3.15	3.4	3.5	80	83	9875	10325
300	20.5	3.4	28.9	3.15	3.6	3.6	85	88	11025	11450

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	µF/km	kA	Amps	Amps	Amps	V/A.Km
25	1.20	0.387	0.21	2.360	100	87	111	1.304
35	0.868	0.368	0.23	3.304	119	104	133	0.960
50	0.641	0.355	0.25	4.720	140	123	159	0.725
70	0.443	0.342	0.29	6.608	171	150	196	0.519
95	0.320	0.355	0.31	8.968	204	180	238	0.392
120	0.253	0.326	0.34	11.328	232	206	274	0.321
150	0.206	0.319	0.37	14.160	259	231	309	0.272
185	0.164	0.313	0.40	17.464	293	262	354	0.228
240	0.125	0.303	0.44	22.656	338	304	415	0.187
300	0.100	0.297	0.48	28.320	380	343	472	0.160

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMoured THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=8.7/15(17.5) \text{ kV}$



- | | |
|-------------------------------------|----------------------|
| 1. Conductor | 6. PP Filler |
| 2. Conductor Screen | 7. Bedding |
| 3. XLPE Insulation | 8. Steel Wire Armour |
| 4. Insulation Screen (Non-Metallic) | 9. Outer Sheath |
| 5. Insulation Screen (Metallic) | |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of steel Wire	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
				CUT / CUT	CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	4.5	16.6	2.5	2.6	2.6	53	56	4350	4625
35	7.1	4.5	17.7	2.5	2.7	2.7	56	59	4700	5000
50	8.3	4.5	18.9	2.5	2.8	2.8	59	62	5175	5450
70	9.7	4.5	20.3	2.5	2.9	2.9	62	65	5675	6050
95	11.55	4.5	22.15	2.5	3.0	3.1	66	70	6425	6725
120	12.95	4.5	23.55	2.5	3.2	3.2	70	73	7000	7350
150	14.3	4.5	24.9	2.5	3.3	3.4	73	78	7600	8925
185	15.9	4.5	26.5	3.15	3.4	3.5	79	82	9450	9900
240	18.4	4.5	29.0	3.15	3.6	3.7	85	88	10775	11200
300	20.5	4.5	31.1	3.15	3.8	3.8	90	93	12000	12400

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	µF/km	kA	Amps	Amps	Amps	V/A.Km
25	1.20	0.413	0.17	2.360	100	87	111	1.309
35	0.868	0.394	0.19	3.304	119	104	133	0.965
50	0.641	0.382	0.21	4.720	140	123	159	0.73
70	0.443	0.364	0.23	6.608	171	150	196	0.523
95	0.320	0.356	0.25	8.968	204	180	238	0.396
120	0.253	.0346	0.27	11.328	232	206	274	0.325
150	0.206	0.338	0.29	14.160	259	231	309	0.276
185	0.164	0.330	0.32	17.464	293	262	354	0.232
240	0.125	0.321	0.35	22.656	338	304	415	0.19
300	0.100	0.312	0.39	28.320	380	343	472	0.163

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMOURED THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_o/U (U_m)=12/20(24) \text{ kV}$
 $12.7/22(24) \text{ kV}$



- 1. Conductor
- 2. Conductor Screen
- 3. XLPE Insulation
- 4. Insulation Screen (Non-Metallic)
- 5. Insulation Screen (Metallic)
- 6. PP Filler
- 7. Bedding
- 8. Steel Wire Armour
- 9. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of steel Wire	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx.)	
				CUT / CUT	CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	6.0	19.6	2.5	2.8	2.9	60	63	5225	5575
35	7.1	5.5	19.7	2.5	2.8	2.9	60	64	5325	5650
50	8.3	5.5	20.9	2.5	2.9	3.0	64	67	5825	6100
70	9.7	5.5	22.3	2.5	3.1	3.1	67	70	6350	6675
95	11.55	5.5	24.15	2.5	3.2	3.3	71	74	7150	7400
120	12.95	5.5	25.55	3.15	3.4	3.4	77	80	8700	9100
150	14.3	5.5	26.9	3.15	3.5	3.5	80	83	9400	9875
185	15.9	5.5	28.5	3.15	3.6	3.6	84	87	10300	10700
240	18.4	5.5	31.0	3.15	3.8	3.8	90	93	11625	12075
300	20.5	5.5	33.1	3.15	3.9	4.0	95	98	12825	13325

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	µF/km	kA	Amps	Amps	Amps	V/A.Km
25	1.20	0.444	0.14	2.360	100	87	111	1.314
35	0.868	0.415	0.16	3.304	119	104	133	0.968
50	0.641	0.399	0.18	4.720	140	123	159	0.733
70	0.443	0.382	0.20	6.608	171	150	196	0.527
95	0.320	0.373	0.21	8.968	204	180	238	0.399
120	0.253	0.362	0.23	11.328	232	206	274	0.328
150	0.206	0.353	0.25	14.160	259	231	309	0.279
185	0.164	0.345	0.27	17.464	293	262	354	0.234
240	0.125	0.335	0.30	22.656	338	304	415	0.192
300	0.100	0.320	0.33	28.320	380	343	472	0.165

LLaying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMOURED THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_o/U (U_m)=18/30(36) \text{ kV}$
 $19/33(36) \text{ kV}$



- | | |
|-------------------------------------|----------------------|
| 1. Conductor | 6. PP Filler |
| 2. Conductor Screen | 7. Bedding |
| 3. XLPE Insulation | 8. Steel wire Armour |
| 4. Insulation Screen (Non-Metallic) | 9. Outer Sheath |
| 5. Insulation Screen (Metallic) | |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of steel Wire	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx.)	
				CUT / CUT	CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm	mm	mm	mm	mm	mm	Kg/km	Kg/km
50	8.3	8.0	25.9	3.15	3.4	3.5	78	81	8550	8900
70	9.7	8.0	27.3	3.15	3.5	3.6	81	84	9225	9600
95	11.5	8.0	29.15	3.15	3.6	3.7	85	80	10150	10450
120	12.95	8.0	30.55	3.15	3.8	3.8	89	92	10900	11200
150	14.3	8.0	31.9	3.15	3.9	3.9	92	95	11550	12050
185	15.3	8.0	33.5	3.15	4.0	4.0	96	99	12500	12900
240	18.4	8.0	36.0	3.15	4.2	4.2	102	105	13925	14400
300	20.5	8.0	38.1	3.15	4.3	4.4	107	110	15350	15725

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
50	0.641	0.454	0.14	4.720	140	123	159	0.743
70	0.443	0.430	0.16	6.608	171	150	196	0.536
95	0.320	0.419	0.17	8.968	204	180	238	0.408
120	0.253	0.405	0.18	11.328	232	206	274	0.336
150	0.206	0.395	0.19	14.160	259	231	309	0.286
185	0.164	0.384	0.21	17.464	293	262	354	0.242
240	0.125	0.371	0.23	22.656	338	304	415	0.20
300	0.100	0.358	0.25	28.320	380	343	472	0.171

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMoured THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=3.6/6(7.2) \text{ kV}$
 $3.8/6.6(7.2) \text{ kV}$



- | | | |
|---------------------|-------------------------------------|----------------------|
| 1. Conductor | 4. Insulation Screen (Non-metallic) | 7. Bedding |
| 2. Conductor Screen | 5. Insulation Screen (Metallic) | 8. Steel Tape Armour |
| 3. XLPE Insulation | 6. PP Filler | 9. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of steel Tape	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx.)	
					CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm		mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	2.5	12.6	2x0.5	2.2	2.2	41	44	2000	2250
35	7.1	2.5	13.7	2x0.5	2.3	2.3	43	46	2300	2575
50	8.3	2.5	14.9	2x0.5	2.4	2.4	46	50	2625	2825
70	9.7	2.5	16.3	2x0.5	2.5	2.5	50	53	3025	3275
95	11.55	2.5	18.15	2x0.5	2.6	2.6	54	57	3550	3750
120	12.95	2.5	19.55	2x0.5	2.7	2.8	57	61	4000	4225
150	14.3	2.5	20.9	2x0.5	2.8	2.9	60	64	4450	4800
185	15.9	2.5	22.5	2x0.5	2.9	3.0	64	67	5075	5375
240	18.4	2.6	25.2	2x0.5	3.1	3.2	71	74	6100	6450
300	20.5	2.8	27.7	2x0.5	3.3	3.4	78	81	7275	7575

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
25	1.20	0.363	0.26	2.360	100	87	111	1.299
35	0.868	0.344	0.29	3.304	119	104	133	0.955
50	0.641	0.333	0.32	4.720	140	123	159	0.721
70	0.443	0.322	0.36	6.608	171	150	196	0.515
95	0.320	0.316	0.39	8.968	204	180	238	0.388
120	0.253	0.309	0.43	11.328	232	206	274	0.318
150	0.206	0.303	0.47	14.160	259	231	309	0.269
185	0.164	0.300	0.52	17.464	293	262	354	0.226
240	0.125	0.293	0.56	22.656	338	304	415	0.185
300	0.100	0.286	0.58	28.320	380	343	472	0.158

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMoured THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2

and BS 6622

$U_0/U (U_m) = 6 / 10(12) \text{ kV}$

6.35/11(12) kV



- | | | |
|---------------------|-------------------------------------|----------------------|
| 1. Conductor | 4. Insulation Screen (Non-metallic) | 7. Bedding |
| 2. Conductor Screen | 5. Insulation Screen (Metallic) | 8. Steel Tape Armour |
| 3. XLPE Insulation | 6. PP Filler | 9. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of steel Tape	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
					CUT	CUW	CUT	CUW	CUT	CUW
Mm ²	mm	mm	mm		mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	3.4	14.4	2x0.5	2.3	2.4	45	48	2400	2625
35	7.1	3.4	15.5	2x0.5	2.4	2.5	47	51	2675	2900
50	8.3	3.4	16.7	2x0.5	2.5	2.6	51	54	3000	3225
70	9.7	3.4	18.1	2x0.5	2.6	2.7	54	57	3400	3650
95	11.55	3.4	19.95	2x0.5	2.7	2.8	58	61	3975	4200
120	12.95	3.4	21.35	2x0.5	2.9	2.9	62	65	4475	4675
150	14.3	3.4	22.7	2x0.5	3.0	3.0	65	68	4950	5275
185	15.9	3.4	24.3	2x0.5	3.1	3.1	69	72	5600	5900
240	18.4	3.4	26.8	2x0.5	3.3	3.3	76	79	6750	7000
300	20.5	3.4	28.9	2x0.5	3.4	3.5	81	84	7675	8000

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	µF/km	kA	Amps	Amps	Amps	V/A.Km
25	1.20	0.387	0.21	2.360	100	87	111	1.304
35	0.868	0.368	0.23	3.304	119	104	133	0.960
50	0.641	0.355	0.25	4.720	140	123	159	0.725
70	0.443	0.342	0.29	6.608	171	150	196	0.519
95	0.320	0.355	0.31	8.968	204	180	238	0.392
120	0.253	0.326	0.34	11.328	232	206	274	0.321
150	0.206	0.319	0.37	14.160	259	231	309	0.272
185	0.164	0.313	0.40	17.464	293	262	354	0.228
240	0.125	0.303	0.44	22.656	338	304	415	0.187
300	0.100	0.297	0.48	28.320	380	343	472	0.160

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



ARMOURED THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U(U_m)=8.7/15(17.5)$ kV



- | | | |
|---------------------|-------------------------------------|----------------------|
| 1. Conductor | 4. Insulation Screen (Non-metallic) | 7. Bedding |
| 2. Conductor Screen | 5. Insulation Screen (Metallic) | 8. Steel Tape Armour |
| 3. XLPE Insulation | 6. PP Filler | 9. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of steel Tape	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
					CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm		mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	4.5	16.6	2x0.5	2.5	2.5	50	54	2875	3075
35	7.1	4.5	17.7	2x0.5	2.6	2.6	53	56	3150	3400
50	8.3	4.5	18.9	2x0.5	2.7	2.7	56	59	3500	3750
70	9.7	4.5	20.3	2x0.5	2.8	2.8	59	63	3950	4175
95	11.55	4.5	22.15	2x0.5	2.9	3.0	63	67	4550	4775
120	12.95	4.5	23.55	2x0.5	3.0	3.1	67	70	5050	5275
150	14.3	4.5	24.9	2x0.5	3.1	3.2	70	74	5550	5850
185	15.9	4.5	26.5	2x0.5	3.3	3.3	75	78	6375	6650
240	18.4	4.5	29.0	2x0.5	3.4	3.5	81	84	7425	7725
300	20.5	4.5	31.1	2x0.8	3.6	3.7	88	90	9225	9575

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	µF/km	kA	Amps	Amps	Amps	V/A.Km
25	1.20	0.413	0.17	2.360	100	87	111	1.309
35	0.868	0.394	0.19	3.304	119	104	133	0.965
50	0.641	0.382	0.21	4.720	140	123	159	0.73
70	0.443	0.364	0.23	6.608	171	150	196	0.523
95	0.320	0.356	0.25	8.968	204	180	238	0.396
120	0.253	.0346	0.27	11.328	232	206	274	0.325
150	0.206	0.338	0.29	14.160	259	231	309	0.276
185	0.164	0.330	0.32	17.464	293	262	354	0.232
240	0.125	0.321	0.35	22.656	338	304	415	0.19
300	0.100	0.312	0.39	28.320	380	343	472	0.163

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m.
Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

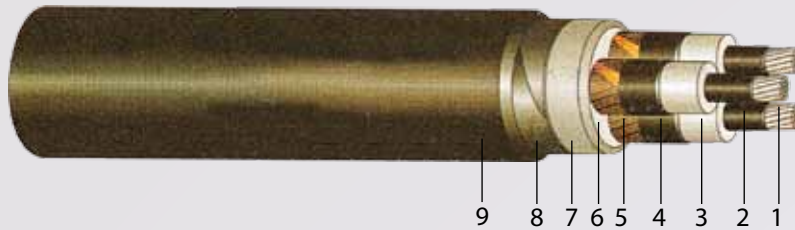


ARMOURED THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=12/20(24) \text{ kV}$
 $12.7/22(24) \text{ kV}$



- | | | |
|---------------------|-------------------------------------|----------------------|
| 1. Conductor | 4. Insulation Screen (Non-metallic) | 7. Bedding |
| 2. Conductor Screen | 5. Insulation Screen (Metallic) | 8. Steel Tape Armour |
| 3. XLPE Insulation | 6. PP Filler | 9. Outer Sheath |

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of steel Tape	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
					CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm		mm	mm	mm	mm	Kg/km	Kg/km
25	6.0	6.0	19.6	2x0.5	2.7	2.8	57	61	350	3750
35	7.1	5.5	19.7	2x0.5	2.7	2.8	58	61	3625	3850
50	8.3	5.5	20.9	2x0.5	2.8	2.9	61	63	4000	4225
70	9.7	5.5	22.3	2x0.5	2.9	3.0	64	67	4475	4675
95	11.55	5.5	24.15	2x0.5	3.1	3.1	68	72	5125	5325
120	12.95	5.5	25.55	2x0.5	3.2	3.2	73	76	5775	5950
150	14.3	5.5	26.9	2x0.5	3.3	3.4	76	79	6300	6600
185	15.9	5.5	28.5	2x0.5	3.4	3.5	80	83	7000	7300
240	18.4	5.5	31.0	2x0.5	3.6	3.7	87	90	8925	9250
300	20.5	5.5	33.1	2x0.5	3.8	3.9	92	95	9950	10350

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	µF/km	kA	Amps	Amps	Amps	V/A.Km
25	1.20	0.444	0.14	2.360	100	87	111	1.314
35	0.868	0.415	0.16	3.304	119	104	133	0.968
50	0.641	0.399	0.18	4.720	140	123	159	0.733
70	0.443	0.382	0.20	6.608	171	150	196	0.527
95	0.320	0.373	0.21	8.968	204	180	238	0.399
120	0.253	0.362	0.23	11.328	232	206	274	0.328
150	0.206	0.353	0.25	14.160	259	231	309	0.279
185	0.164	0.345	0.27	17.464	293	262	354	0.234
240	0.125	0.335	0.30	22.656	338	304	415	0.192
300	0.100	0.320	0.33	28.320	380	343	472	0.165

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m.
Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².

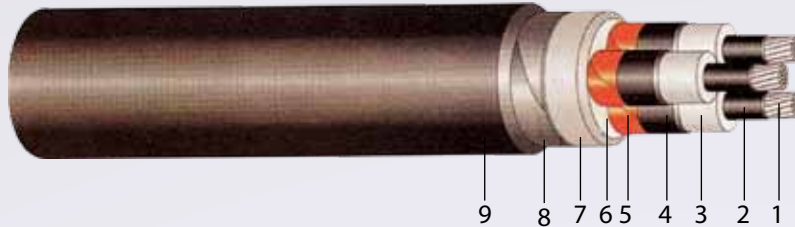


ARMOURED THREE CORE CABLES

ALUMINIUM CONDUCTORS

IEC 60502-2
and BS 6622

$U_0/U (U_m)=18/30(36) \text{ kV}$
 $19/33(36) \text{ kV}$



1. Conductor
2. Conductor Screen
3. XLPE Insulation

4. Insulation Screen (Non-metallic)
5. Insulation Screen (Metallic)
6. PP Filler

7. Bedding
8. Steel Tape Armour
9. Outer Sheath

Size	Diameter of Conductor (Approx.)	Nominal Insulation Thickness	Diameter Over Insulation (Approx.)	Number & Nominal Thickness of Aluminium Tape	Nominal Outer Sheath Thickness		Overall Diameter (Approx.)		Weight of Cable (Approx)	
					CUT	CUW	CUT	CUW	CUT	CUW
mm ²	mm	mm	mm		mm	mm	mm	mm	Kg/km	Kg/km
50	8.3	8.0	25.9	2x0.5	3.2	3.3	74	77	5500	5725
70	9.7	8.0	27.3	2x0.5	3.3	3.4	77	80	6050	6275
95	11.55	8.0	29.15	2x0.5	3.5	3.5	82	84	6775	6950
120	12.95	8.0	30.55	2x0.8	3.6	3.7	86	89	8150	8400
150	14.3	8.0	31.9	2x0.8	3.7	3.8	89	92	8775	9075
185	15.9	8.0	33.5	2x0.8	3.9	3.9	93	96	9600	9825
240	18.4	8.0	36.0	2x0.8	4.0	4.1	100	102	10900	11125
300	20.5	8.0	38.1	2x0.8	4.2	4.2	104	107	12050	12275

Size	Max DC Resistance @ 20°C	Nominal Inductance	Capacitance	Conductor Short Circuit Current for 1 second	Current ratings			Voltage drop Per phase
					Buried Direct In the ground	In buried ducts	In air	
mm ²	Ohm/km	mH/km	μF/km	kA	Amps	Amps	Amps	V/A.Km
50	0.641	0.454	0.14	4.720	140	123	159	0.743
70	0.443	0.430	0.16	6.608	171	150	196	0.536
95	0.320	0.419	0.17	8.968	204	180	238	0.408
120	0.253	0.405	0.18	11.328	232	206	274	0.336
150	0.206	0.395	0.19	14.160	259	231	309	0.286
185	0.164	0.384	0.21	17.464	293	262	304	0.242
240	0.125	0.371	0.23	22.656	338	304	415	0.20
300	0.100	0.358	0.25	28.320	380	343	472	0.171

Laying condition: Maximum conductor temperature 90°C, Ambient temperature 30°C. Underground temperature of soil 20°C, Depth of laying - 0.8m. Ground thermal resistivity 1.5 K.m/W, thermal resistivity of earthenware ducts 1.2 K.m/W.

Note: Area of copper wire considered is 16 mm² up to 120 mm², 25 mm² from 150 mm² up to 300 mm², 35 mm² from 400 mm² up to 630 mm².



**Current Carrying Capacity for Aluminium Wire Armoured Cables with Single Point Bonding
CU/XLPE/AWA/PVC 3.5/6kV to 18/30kV**

IEC		
Current Carrying Capacity (2)		
Size	Direct Buried	In Air
mm ²	Amps	Amps
25	138	162
35	165	197
50	195	236
70	236	294
95	282	358
120	322	415
150	359	472
185	406	541
240	469	640
300	527	734
400	604	858
500	667	973
630	747	1114

**Current Carrying Capacity for Aluminium Wire Armoured Cables with Single Point Bonding
AL/XLPE/AWA/PVC 3.5/6kV to 18/30kV**

IEC		
Current Carrying Capacity (2)		
Size	Direct Buried	In Air
mm ²	Amps	Amps
25	108	126
35	128	152
50	151	183
70	183	227
95	219	277
120	249	322
150	280	366
185	316	422
240	367	498
300	414	573
400	476	675
500	535	778
630	609	904



Derating Factors

Table 1: Correction Factors for Ambient Air Temperature

Maximum Conductor Temperature	Ambient Air Temperature (°C)							
	20	25	35	40	45	50	55	60
90 °C	1.08	1.04	0.96	0.91	0.87	0.82	0.76	0.71

Table 2: Correction Factors for Ambient Ground Temperature

Maximum Conductor Temperature	Temperature (°C)							
	10	15	25	30	35	40	45	50
90 °C	1.07	1.04	0.96	0.93	0.89	0.85	0.80	0.76

Table 3: Correction Factors for Depth of Laying

Depth of Laying (m)	Single Core Cables		Three-Core Cables
	Nominal Conductor Size		
	≤ 185 mm ²	> 185 mm ²	
0.5	1.04	1.06	1.04
0.6	1.02	1.04	1.03
1	0.98	0.97	0.98
1.25	0.96	0.95	0.96
1.5	0.95	0.93	0.95
1.75	0.94	0.91	0.94
2	0.93	0.90	0.93
2.5	0.91	0.88	0.91
3	0.90	0.86	0.90



Derating Factors

Table 4: Correction Factors for Depth of Laying for Cables in Ducts

Depth of Laying (m)	Single Core Cables		Three-Core Cables
	Nominal Conductor Size		
	$\leq 185 \text{ mm}^2$	$> 185 \text{ mm}^2$	
0.5	1.04	1.05	1.03
0.6	1.02	1.03	1.02
1	0.98	0.97	0.99
1.25	0.96	0.95	0.97
1.5	0.95	0.93	0.96
1.75	0.94	0.92	0.95
2	0.93	0.91	0.94
2.5	0.91	0.89	0.93
3	0.90	0.88	0.92

Table 5: Correction Factors for Soil Thermal Resistivities other than 1.5 k.m/W for Direct Buried Single-Core Cable

Nominal area of Conductor mm ²	Values of Soil Thermal Resistivity K.m/W						
	0.7	0.8	0.9	1	2	2.5	3
16	1.29	1.24	1.19	1.15	0.89	0.82	0.75
25	1.30	1.25	1.20	1.16	0.89	0.81	0.75
35	1.30	1.25	1.21	1.16	0.89	0.81	0.75
50	1.32	1.26	1.21	1.16	0.89	0.81	0.74
70	1.33	1.27	1.22	1.17	0.89	0.81	0.74
95	1.34	1.28	1.22	1.18	0.89	0.80	0.74
120	1.34	1.28	1.22	1.18	0.88	0.80	0.74
150	1.35	1.28	1.23	1.18	0.88	0.80	0.74
185	1.35	1.29	1.23	1.18	0.88	0.80	0.74
240	1.36	1.29	1.23	1.18	0.88	0.80	0.73
300	1.36	1.30	1.24	1.19	0.88	0.80	0.73
400	1.37	1.30	1.24	1.19	0.88	0.79	0.73



Derating Factors

Table 6: Correction Factors for Thermal Resistivities other than 1.5 K.m/W for Single-Core Cables in Buried Ducts

Nominal Area of Conductor	Values of Soil Thermal Resistivity K.m/W						
	0.7	0.8	0.9	1	2	2.5	3
mm ²							
16	1.20	1.17	1.14	1.11	0.92	0.85	0.79
25	1.21	1.17	1.14	1.12	0.91	0.85	0.79
35	1.21	1.18	1.15	1.12	0.91	0.84	0.79
50	1.21	1.18	1.15	1.12	0.91	0.84	0.78
70	1.22	1.19	1.15	1.12	0.91	0.84	0.78
95	1.23	1.19	1.16	1.13	0.91	0.84	0.78
120	1.23	1.20	1.16	1.13	0.91	0.84	0.78
150	1.24	1.20	1.16	1.13	0.91	0.83	0.78
185	1.24	1.20	1.17	1.13	0.91	0.83	0.78
240	1.25	1.21	1.17	1.14	0.90	0.83	0.77
300	1.25	1.21	1.17	1.14	0.90	0.83	0.77
400	1.25	1.21	1.17	1.14	0.90	0.83	0.77

Table 7: Correction Factors for Thermal Resistivities other than 1.5 K.m/W for Three –Core Cables Direct Buried

Nominal Area of Conductor	Values of Soil Thermal Resistivity K.m/W						
	0.7	0.8	0.9	1	2	2.5	3
mm ²							
16	1.23	1.19	1.16	1.13	0.91	0.84	0.78
25	1.24	1.20	1.16	1.13	0.91	0.84	0.78
35	1.25	1.21	1.17	1.13	0.91	0.83	0.78
50	1.25	1.21	1.17	1.14	0.91	0.83	0.77
70	1.26	1.21	1.18	1.14	0.90	0.83	0.77
95	1.26	1.22	1.18	1.14	0.90	0.83	0.77
120	1.26	1.22	1.18	1.14	0.90	0.836	0.77
150	1.27	1.22	1.18	1.15	0.90	0.83	0.77
185	1.27	1.23	1.18	1.15	0.90	0.83	0.77
240	1.28	1.23	1.19	1.15	0.90	0.83	0.77
300	1.28	1.23	1.19	1.15	0.90	0.82	0.77
400	1.28	1.23	1.19	1.15	0.90	0.82	0.76



Derating Factors

Table 8: Correction Factors for Soil Thermal Resistivities other than 1.5Km/W for Three –Core Cables in Ducts

Nominal Area of Conductor mm ²	Values of Soil Thermal Resistivity K.m/W						
	0.7	0.8	0.9	1	2	2.5	3
16	1.12	1.11	1.09	1.08	0.94	0.89	0.84
25	1.14	1.12	1.10	1.08	0.94	0.89	0.84
35	1.14	1.12	1.10	1.08	0.94	0.88	0.84
50	1.14	1.12	1.10	1.08	0.94	0.88	0.84
70	1.15	1.13	1.11	1.09	0.94	0.88	0.83
95	1.15	1.13	1.11	1.09	0.94	0.88	0.83
120	1.15	1.13	1.11	1.09	0.93	0.88	0.83
150	1.16	1.13	1.11	1.09	0.93	0.88	0.83
185	1.16	1.14	1.11	1.09	0.93	0.87	0.83
240	1.16	1.14	1.12	1.10	0.93	0.87	0.82
300	1.17	1.14	1.12	1.10	0.93	0.87	0.82
400	1.17	1.14	1.12	1.10	0.92	0.86	0.81

Table 9 : Correction Factors for Groups of Three –Core Cables in Horizontal Formation Laid in the Ground

Number of Cables in Group	Spacing Between Cable Centres				
	Touching	200	400	600	800
2	0.80	0.86	0.90	0.92	0.94
3	0.69	0.77	0.82	0.86	0.89
4	0.62	0.72	0.79	0.83	0.87
5	0.57	0.68	0.76	0.81	0.85
6	0.54	0.65	0.74	0.80	0.84
7	0.51	0.63	0.72	0.78	0.83
8	0.49	0.61	0.71	0.78	-
9	0.47	0.60	0.70	0.77	-
10	0.46	0.59	0.69	-	-
11	0.45	0.57	0.69	-	-
12	0.43	0.56	0.68	-	-



Derating Factors

Table 10: Correction Factors for Groups of Three Phase Circuits of Single Core Cables Laid Direct in the Ground

Number of Cables in Group	Spacing Between Cable Centers				
	Touching	200	400	600	800
2	0.73	0.83	0.88	0.90	0.92
3	0.60	0.73	0.79	0.83	0.86
4	0.54	0.68	0.75	0.80	0.84
5	0.49	0.63	0.72	0.78	0.82
6	0.46	0.61	0.70	0.76	0.81
7	0.43	0.58	0.68	0.75	0.80
8	0.41	0.57	0.67	0.74	-
9	0.39	0.55	0.66	0.73	-
10	0.37	0.54	0.65	-	-
11	0.36	0.53	0.64	-	-
12	0.35	0.52	0.64	-	-

Table 11: Correction Factors for Groups of Three –Core Cables in Single way Ducts in Horizontal Formation.

Number of Cables in Group	Spacing Between Cable Centers				
	Touching	200	400	600	800
2	0.85	0.88	0.92	0.94	0.95
3	0.75	0.80	0.85	0.88	0.91
4	0.69	0.75	0.82	0.86	0.89
5	0.65	0.72	0.79	0.84	0.87
6	0.62	0.69	0.77	0.83	0.87
7	0.59	0.67	0.76	0.82	0.86
8	0.57	0.65	0.75	0.81	-
9	0.55	0.64	0.74	0.80	-
10	0.54	0.63	0.73	-	-
11	0.52	0.62	0.73	-	-
12	0.51	0.61	0.72	-	-



Derating Factors

Table 12: Correction Factors for Groups for Three Phase Circuits of Single Core Cables in Single Way Ducts

Number of Cables in Group	Spacing Between Cable Centres				
	Touching	200	400	600	800
2	0.78	0.85	0.89	0.91	0.93
3	0.66	0.75	0.81	0.85	0.88
4	0.59	0.70	0.77	0.82	0.86
5	0.55	0.66	0.74	0.80	0.84
6	0.51	0.64	0.72	0.78	0.83
7	0.48	0.61	0.71	0.77	0.82
8	0.46	0.60	0.70	0.76	-
9	0.44	0.58	0.69	0.76	-
10	0.43	0.57	0.68	-	-
11	0.42	0.56	0.67	-	-
12	0.40	0.55	0.67	-	-

Table 13: Max. Short Circuit Current For Copper Conductors at 1 Sec.

Construction	Cond. Max Temp Normal Operation	Short Circuit Conductor Max Temp	Conductor Temp. at the beginning of short circuit								
			90	80	70	65	60	50	40	30	20
	°C	°C	Short Circuit Current (A/mm ²)								
XLPE Cable	90	250	143	149	154	157	159	165	170	176	181

Table 14: Max. Short Circuit Current For Aluminium Conductors at 1 Sec.

Construction	Cond. Max Temp Normal Operation	Short Circuit Conductor Max Temp	Conductor Temp. at the beginning of short circuit								
			90	80	70	65	60	50	40	30	20
	°C	°C	Short Circuit Current (A/mm ²)								
XLPE Cable	90	250	94	98	102	104	105	109	113	116	120

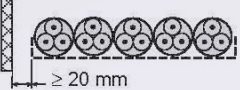
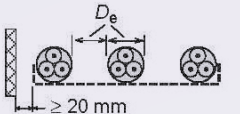
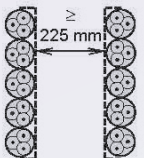
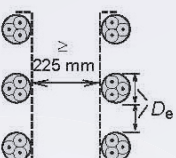
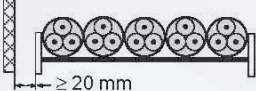
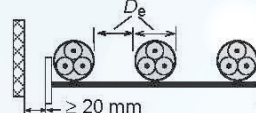
Isc for time (t) can be obtained from the following formula:

$$I_{sc}(t) = \frac{I_{sc}(1)}{\sqrt{t}}$$

Where: I_{sc} (1) = short circuit current at 1 sec.



**Table 15: Reduction Factors for groups of more than one multi-core cable in air -
To be applied to the current-carrying capacity for one multi-core cable in free air**

Method of installation		Number of trays	Number of cables					
			1	2	3	4	6	9
Cables on perforated trays	Touching 	1	1,00	0,88	0,82	0,79	0,76	0,73
		2	1,00	0,87	0,80	0,77	0,73	0,68
		3	1,00	0,86	0,79	0,76	0,71	0,66
	Spaced 	1	1,00	1,00	0,98	0,95	0,91	-
		2	1,00	0,99	0,96	0,92	0,87	-
		3	1,00	0,98	0,95	0,91	0,85	-
Cables on vertical perforated trays	Touching 	1	1,00	0,88	0,82	0,78	0,73	0,72
		2	1,00	0,88	0,81	0,76	0,71	0,70
		3	1,00	0,88	0,81	0,76	0,71	0,70
	Spaced 	1	1,00	0,91	0,89	0,88	0,87	-
		2	1,00	0,91	0,88	0,87	0,85	-
		3	1,00	0,91	0,88	0,87	0,85	-
Cables on ladder supports, cleats, etc.	Touching 	1	1,00	0,87	0,82	0,80	0,79	0,78
		2	1,00	0,86	0,80	0,78	0,76	0,73
		3	1,00	0,85	0,79	0,76	0,73	0,70
	Spaced 	1	1,00	1,00	1,00	1,00	1,00	-
		2	1,00	0,99	0,98	0,97	0,96	-
		3	1,00	0,98	0,97	0,96	0,93	-

NOTE 1 Values given are averages for the cable types and range of conductor sizes considered. The spread of values is generally less than 5 %.


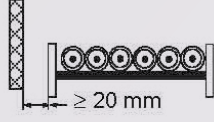
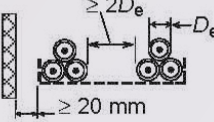
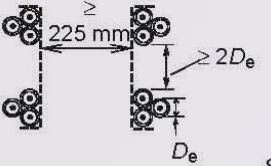
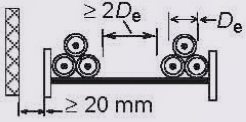
NOTE 2 Factors apply to single layer groups of cables as shown above and do not apply when cables are installed in more than one layer touching each other. Values for such installations may be significantly lower and must be determined by an appropriate method.

NOTE 3 Values are given for vertical spacings between trays of 300 mm and at least 20 mm between trays and wall. For closer spacing, the factors should be reduced.

NOTE 4 Values are given for horizontal spacing between trays of 225 mm with trays mounted back to back. For closer spacing, the factors should be reduced.



Table 16: Reduction Factors for groups of more than one circuit of single-core cable (Note 2) - To be applied to the current-carrying capacity for one circuit of single-core cable in free air

Method of installation		Number of trays	Number of three-phase circuits (Note 5)			Use as a multiplier to rating for
			1	2	3	
Perforated trays (Note 3)	 <p>Touching</p>	1	0,98	0,91	0,87	Three cables in horizontal formation
		2	0,96	0,87	0,81	
		3	0,95	0,85	0,78	
Ladder supports, cleats etc. (Note 3)	 <p>Touching</p>	1	1,00	0,97	0,96	Three cables in horizontal formation
		2	0,98	0,93	0,89	
		3	0,97	0,90	0,86	
Perforated trays (Note 3)		1	1,00	0,98	0,96	Three cables in horizontal formation
		2	0,97	0,93	0,89	
		3	0,96	0,92	0,86	
Vertical perforated trays (Note 4)	 <p>Spaced</p>	1	1,00	0,91	0,89	Three cables in trefoil formation
		2	1,00	0,90	0,86	
Ladder supports, cleats, etc. (Note 3)		1	1,00	1,00	1,00	Three cables in trefoil formation
		2	0,97	0,95	0,93	
		3	0,96	0,94	0,90	

NOTE 1 Values given are averages for the cable types and range of conductor sizes considered. The spread of values is generally less than 5 %.

NOTE 2 Factors are given for single layers of cables (or trefoil groups) as shown in the table and do not apply when cables are installed in more than one layer touching each other. Values for such installations may be significantly lower and should be determined by an appropriate method.

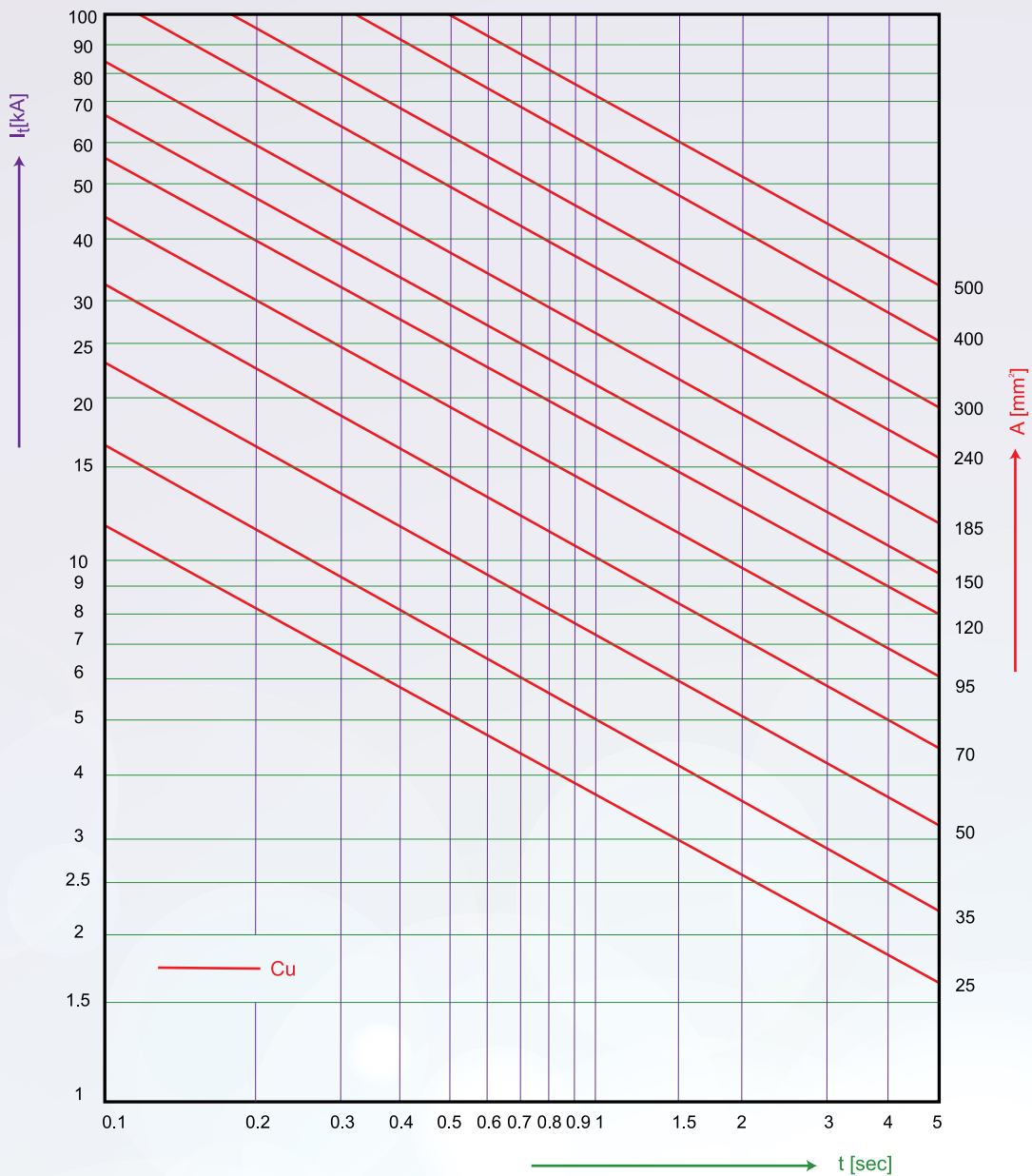
NOTE 3 Values are given for vertical spacings between trays of 300 mm. For closer spacing, the factors should be reduced.

NOTE 4 Values are given for horizontal spacing between trays of 225 mm with trays mounted back to back. For closer spacing, the factors should be reduced.

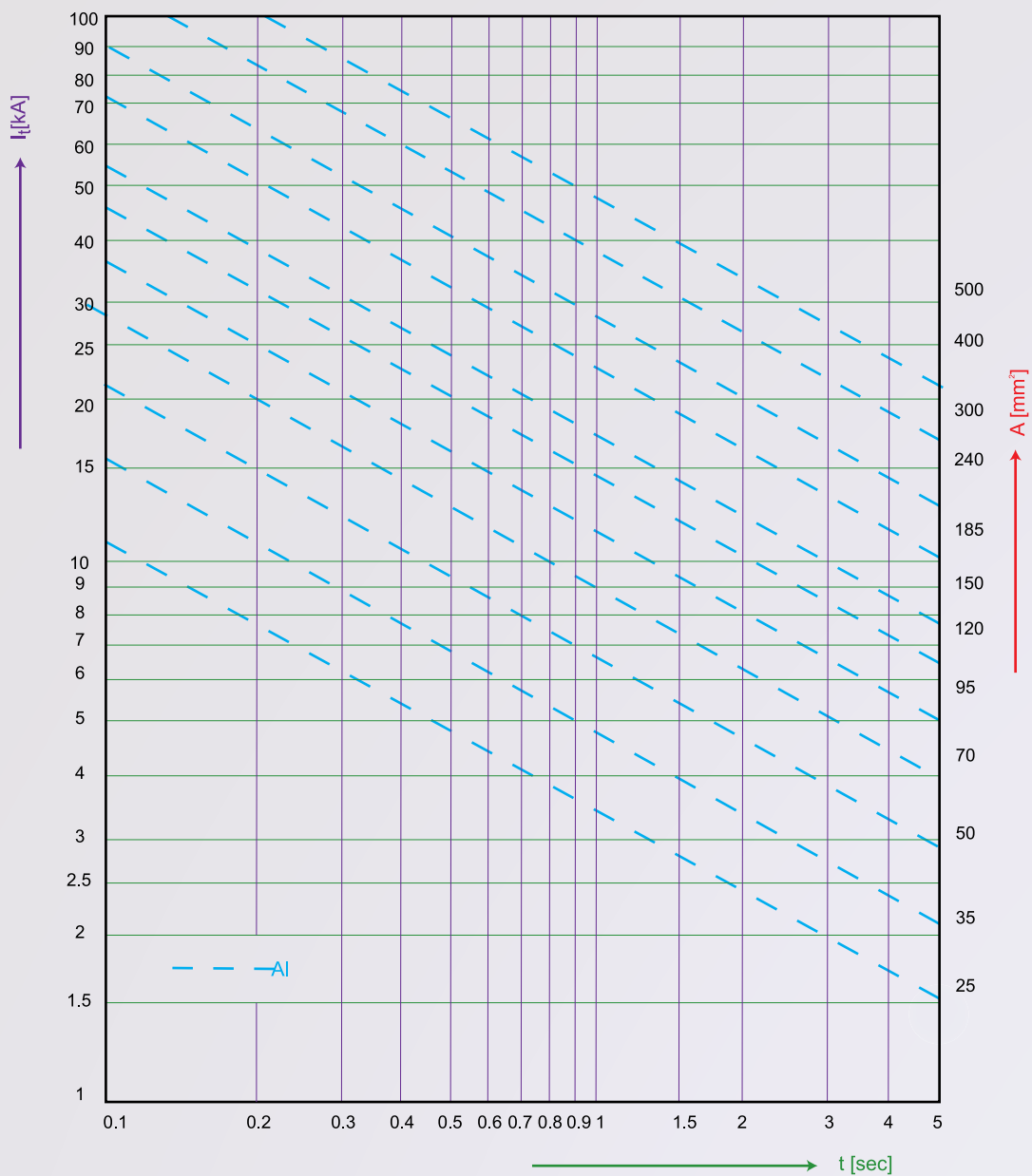
NOTE 5 For circuits having more than one cable in parallel per phase, each three phase set of conductors should be considered as a circuit for the purpose of this table.



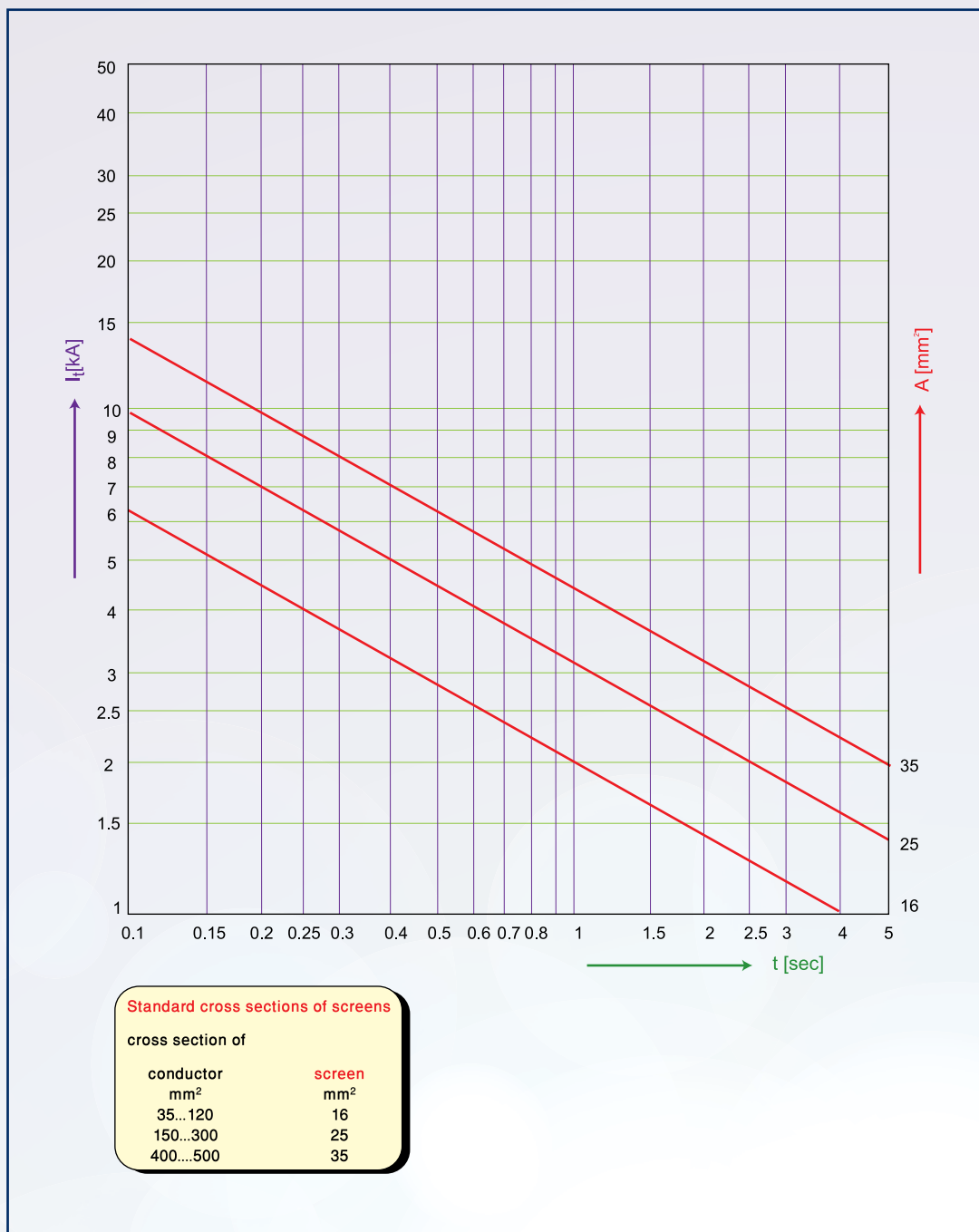
**Permissible short circuit current of XLPE insulated power cables for 1 – 30 kV
(COPPER CONDUCTOR)**



**Permissible short circuit current of XLPE insulated power cables for 1 – 30 kV
(ALUMINIUM CONDUCTOR)**



Permissible short circuit current for Various cross section of round wire screens



CABLE PULLING, LAYING AND HANDLING INSTRUCTION

(a) DRUM HANDLING

- 1) Unloading the drum should be by forklift or crane, rolling should be avoided.
- 2) If the above equipment are not available, rolling as per direction on special constructed ramps is allowed with a slope of $\frac{1}{4}$ ($\varnothing=14$ degrees).
- 3) Drum should not be dropped on the ground under any circumstances even on soft material.
- 4) Drums should be kept in the up-right position.
- 5) Be sure that the end seal cap is still in place.
- 6) Drums should be covered all the time.

(b) PREPARATION, CABLE PULLING AND LAYING

- 1) Is it recommended to dig a trial hole in the cable route, which shall indicate the position of other services, and a smooth bend can be provided to reduce the pulling load on the cable.
- 2) Cable should be inspected before laying to ensure that it is damage free.
- 3) Location of drum prior to pulling can be decided based on minimum pulling tension, which can be achieved.
- 4) Drums should be normally mounted so that the cable is pulled from the top of the drum and for very heavy cables it may be necessary to use a ramp to support the cable during passage into the trench. When cables have significant stiffness, e.g. those with HDPE outer sheaths, it may be preferable to pull from the bottom to reduce the tendency for the cable to come off with a wavy or spiral profile.
- 5) The cable should preferably be drawn to its final position in a continuous manner. During stops, it will settle between rollers and may cause high strain on machines during re-starting.
- 6) When pulling cables beside existing cables, special care should be taken to avoid damage to the existing cables.
- 7) Precautions should be taken such as clearing all excavated material from the trench edges, using vertical timbers etc., so that no stones or sharp objects shall fall onto the cable.
- 8) Minimum permissible bending radius shall be as per Table-17.
- 9) Maximum pulling tension should be as per Table-18.
- 10) Side wall pressure at the bend should not be exceeded.
- 11) Remember always that cable is a high commodity value and it is very sensitive to damage and must be handled with necessary care.
- 12) Possibility of braking the drum anytime should be prepared as in sudden stoppage of cable pulling. Continuation of drum rotation can cause sharp bending of the cable.
- 13) During pulling the inner end of the cable might be projected more and more, then it is necessary to interrupt the cable pulling from time to time in such cases for re-securing the said end.
- 14) Depth of laying shall be minimum 0.6 meters under footpath and 0.8 meters under roads for Low Voltage and Medium Voltage cables while it shall be around 1.5 meters for High Voltage Cables.



CABLE PULLING, LAYING AND HANDLING INSTRUCTION

- 15) Layer of sand 10 cm approx. under and over the cable shall be furnished. Then a layer of brick or tile shall be placed for warning, mechanical protection, load distribution.
- 16) When pulling the cable inside conduit/pipe the inner diameter of the pipe shall be min. 1.5 times the cable diameter.
- 17) It is preferable to use pipe with funnel shape, cable should not rest at the sharp edges of the pipe, special care should be taken such that stones and other objects are not dragged with the cable inside the pipe.
- 18) Pipe should be cleaned before pulling operation.
- 19) Special lubricant can be used to minimize the cable friction with the pipe wall.
- 20) When cables of different voltages are laid together it is preferable that the higher voltage to be laid down, then the lower voltage and then the lower voltage. High voltage cables should be separated by a covering slab from the other cables.
- 21) For direct buried installations, rollers at a distance of around 1 – 2 meters are to be used based on cable weight, in any case cable should not touch the ground. It is recommended to use motorized rollers at the distance of 20 M to 30 M with proper monitoring. These are beside the normal cable rollers specially near bending points so that the cable pulling force shall be distributed evenly over the complete length of the cable. This kind of pulling is recommended when there are many bends in the cable route.
- 22) For cable pulling, cable stocking can be used for Steel Wire armoured cables while for non-armoured cables Steel Tape armoured cables pulling head is preferred. Special care shall be taken to seal the cable head avoiding water penetration during pulling.
- 23) It is not advisable to use cable pulling stocking when the ambient temperature is around 45°C or more and under direct sunlight as the outer jacket might soften and get damaged.
- 24) It is recommended to use pulling head when the cable is pulled inside pipes or conduits as slipping of stocking might occur inside the pipe or conduit.
- 25) While pulling, continuous monitoring of the tensile force should be maintained.
- 26) At the bend, cable shall be guided by rollers. Direct touch with trench wall shall be completely avoided.
- 27) Immediately after cutting, the cable ends must be suitably sealed so that there is no ingress of moisture.
- 28) It is recommended to inspect the cable after laying to ensure that the cable has not been damaged.
- 29) Cable after laying should not be straightened but left with slight meandering to allow longitudinal expansion and contraction during thermal cycling.
- 30) When the ground water table is high it is advisable to use special cable construction with longitudinal and radial watertight characteristics.



CABLE PULLING, LAYING AND HANDLING INSTRUCTION

(c) CONSIDERATION FOR CABLE CURRENT RATING:

When laying cables special attention should be given to:

- 1) Cable Spacing
- 2) Any other cable passing by, in parallel or crossing as this might affect considerably the cable rating.
- 3) Any other heat source which might be near the cable as this shall have the same effect as point no. 2
- 4) Drying effect of soil on the value of soil thermal resistivity and side effects on current rating.
- 5) Avoid connecting the armour and sheath at both ends for single core cables as this shall reduce the current rating of the cables considerably but special attention should be given to induced voltage in both normal operation and short circuit.
- 6) The deeper the cables are laid lower is the ampacity of cables.
- 7) If cables are passing through pipes for more than 6 meters then the pipe derating factor should be considered.
- 8) Avoid pulling single core cable inside steel pipe or any other magnetic material, as this shall cause high losses and cable overheating.
- 9) Soil thermal resistivity of the actual ground at different places of the trench shall be measured to ensure that the value is matching the one used for current rating computation.

Table 17: Installation Bending Radius for Medium Voltage Cables

XLPE Insulated Vables 6.6 kV to 33 KV

Type of Cable	Minimum Radius	
	During Laying	Adjacent to joints or terminations
Single Core:		
(a) Unarmoured	20 X D	15 X D
(b) Armoured (PVC)	15 X D	12 X D
(c) Armoured (PE)	20 X D	15 X D
Three Core:		
(d) Unarmoured	15 X D	12 X D
(e) Armoured (PVC)	12 X D	10 X D
(f) Armoured (PE)	15 X D	12 X D



Table 18: Permissible Pulling Force in the Laying of MV Cables

Means of Pulling	Type of Cable	Formula	Factor
With pulling head attached to the Conductor	All types of cables	$P = \sigma \cdot A$	$\sigma = 50 \text{ N/mm}^2$ (Copper Conductor) $\sigma = 30 \text{ N/mm}^2$ (Aluminium Conductor)
With pulling stocking	Un-armoured Cables*	$P = \sigma \cdot A$	$\sigma = 50 \text{ N/mm}^2$ (Copper Conductor) $\sigma = 30 \text{ N/mm}^2$ (Aluminium Conductor)
	Armoured cables	$P = k \cdot d^2$	$k = 9 \text{ N/mm}^2$

*When pulling 3 single core cables simultaneously with a common pulling stocking, the same maximum pulling force applies, whereas the pulling force 3 laid-up single core cables is 3 times that of a single core and for 3 non-laid-up single core cables is 2 times that of a single core.

Where:

- P = Pull in Newtons
- A = Total cross sectional area in mm² of all conductors (but not screen or concentric conductor)
- d = Outside diameter of the cable in mm
- σ = Permissible tensile stress of conductor in N/mm²
- k = Empirically derived factor in N/mm²

Table 19: Permissible Radial Load Values

Permissible radial loads for pulling through plastic pipes	
Non-Armoured Cables	10000 N/m
Cables with Single Armour	15000 N/m
Maximum permissible loads on rollers fitted on bends	
Non-Armoured Cables	1500 N/m
Cables with Single Armour	2500 N/m
When using roller chain (5 rollers / m)	
Non-Armoured Cables	7500 N/m
Cables with Single Armour	12500 N/m
When only 3 rollers / m are fitted	
Non-Armoured Cables	4500 N/m
Cables with Single Armour	7500 N/m





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