



OmanCables
الكابلات العمانية

Oil & Gas

Cable Solutions



Industry-leading
state-of-the-art
cable solutions
for the Oil, Gas
& Petrochemical
energy reserves



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Introduction

The Oil, Gas & Petrochemical is an ever-evolving industry with diverse economic challenges, costly downtimes and critical systems. From exploration in upstream applications to processing in refineries and petrochemical plants, major technical enhancements and innovation have been experienced throughout the value chain.

In cooperation with international Oil & Gas operators, our engineers and specialists in the cable industry have worked in parallel with such developments to provide efficient, reliable and safe cable solutions which contribute to high performance life cycles.

Lead sheathed cables are one of the main products in our extensive list. The characteristics of this category of products are designed to ensure continuous and safe power supply in extreme conditions of fluctuating operating temperatures, presence of moisture, aggressive chemicals and hydrocarbons.

As a major player in the Gulf region's cable industry, Oman Cables Industry (SAOG) is complementing its range of products by offering the Prysmian Group's DRYLAM™ Sheathing System technology as an alternative solution to conventional lead sheathed cables. DRYLAM™ is an environmentally friendly solution with design features that enhance the cables resistance to harsh petrochemical environments, high

temperatures and penetration by humidity or aggressive chemicals that compromise the cable's overall lifetime performance.

Using the most advanced technologies, our cables are designed in accordance to the most stringent standards and undergo exhaustive laboratory tests to perform outstandingly and meet the functional requirements in challenging environments of petrochemical and refining plants. The benefits are achieved as a consequence of the constructional characteristics of our cables which are:

- Designed to suit petrochemical environments.
- Able to withstand direct contact with chemical compounds such as acids, bases and oils.
- Flame retardant

Our commitment is underlined by our focus on relentless innovation to provide proactive and customized solutions for special applications. We take pride in providing solutions that protect the environment through sustainable manufacturing practices. We prioritize on asset and human safety in both normal and emergency conditions. Our team of engineers and specialists provide technical support for our customers at every stage of the project. We focus on long term partnerships and adding sustainable value.

Part A

Symbols



Fire Behavior

According to:

IEC 60332-1 flame retardant
IEC 60332-3-22 category A flame retardant
IEC 60332-3-23 category B flame retardant
IEC 60332-3-24 category C flame retardant



Chemical Resistance

Outer sheath resistance to chemicals



Impact Resistance

Cable ability to withstand mechanical impacts



Temperature

Permissible min. ambient installation temperature: -5 °C
Max. conductor operating temp. in normal cases: 90 °C
Conductor short circuit temp: 250°C



Bending radius

Minimum bending radius during installation is provided for each cable



Lead Sheathed



Lead free

Lead Sheathed Cables

1



Part 1

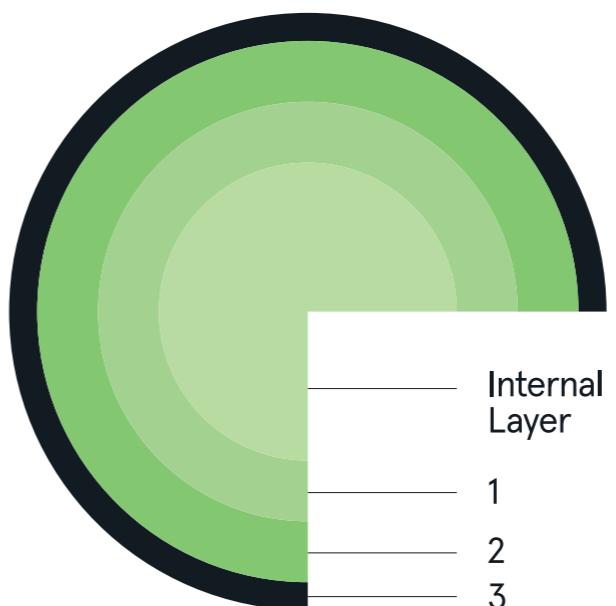
Lead Sheathed Cables

The following section will provide some specifications and explanations for lead sheathed cables.

Design of Lead Sheathed Cables

Polymeric layers are added to the lead sheath layer design:

1. Inner sheath/Bedding layer
This polymeric layer rests above the core or the assembled cores as a protective layer for the cable's internal sensitive elements and components. Bedding is provided to keep the bundle together and can be extruded or lapped tape (s).
2. Lead Alloy Sheath
This is a metallic layer that protects the cable cores from inorganic chemicals, such as bases and acids, and other organic hydrocarbons. In addition, Lead is referred to as an impervious (water) barrier.
3. Polymeric Separation Sheath
This layer is similar to the bedding layer, as it separates different metallic layers to protect from side impact among internal components. It can also act as additional protection from damages on internal cores.



Summary of the main agents in the environment, prevented by a lead sheathing system:



The presence of water molecules in this environment

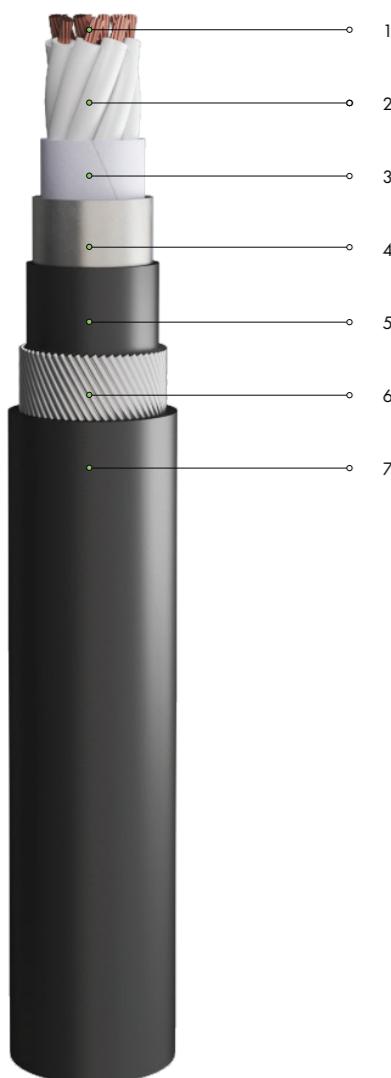
H_2SO_4 , HCl , NaOH

Toluene, IRM Oils (902, 903), Oil Type I & II (UL1581)
& Trichloroethylene



Control Cable

(0.6/1 kV)



Application

Lead Sheathed Cables are used mainly for underground application in the oil, gas, petroleum and chemical industries, for protection against sulfides, water, Oils, hydrocarbon and any corrosive chemicals found in the ground water. For carrying signals from electrical devices, switchgears, etc. to control room (Up to 1 KV)

Construction

1. **Conductor Cu**
Bare copper stranded circular conductor according to class 2 of IEC 60228
2. **Insulation XLPE**
3. **Bedding/ Inner Covering**
Taped bedding / Extruded Bedding
4. **Metallic Sheath**
Lead sheath
5. **Separation sheath PVC or LSZH**
Extruded Separation sheath
6. **Armouring SWA**
Galvanized Steel Wire (SWA)
7. **Outer Sheath PVC or LSZH**
Flame retardant and/or Hydrocarbon resistant option available upon demand

Applicable Standards

IEC 60502-1	Design Specification
IEC 60228	Conductors
IEC 60332-1	Flame Retardant
IEC 60332-3-22 - Cat. A	Flame Retardant on Bunched Cables (if required)
IEC 60754-1, 2	Low Toxicity / Halogen Free Properties (if required)
IEC 61034-1, 2	Low Smoke Emission (if required)

Copper Conductor

1.5 mm², Lead Sheathed Control armoured Cables, 0.6/1 kV to IEC 60502-1

Number of cores	6	7	9	12	19	21	27	37	48	
(A) Manufacturing Dimensions										
1.0 Cable overall diameter (Approximate)	mm	20.0	20.0	22.5	24.0	26.5	27.5	30.5	34.5	38.5
2.0 Cable weight (Approximate)	kg/km	1080	1095	1395	1575	1910	2045	2365	3070	3695
3.0 Standard drum length ($\pm 5\%$ Tolerance)	m	1000	1000	1000	1000	1000	1000	500	500	500
4.0 Minimum bending radius of cable (During installation)	x Cable OD	15	15	15	15	15	15	15	15	15
(B) Electrical Parameters										
1.0 DC resistance of conductor at 20°C (Max)	ohm/km	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1
2.0 AC resistance of conductor at 90°C (Approximate)	ohm/km	15.430	15.430	15.430	15.430	15.430	15.430	15.430	15.430	15.430
3.0 Reactance at 50 Hz (Approximate)	ohm/km	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108
4.0 Impedance at 50 Hz (Approximate)	ohm/km	15.43	15.43	15.43	15.43	15.43	15.43	15.43	15.43	15.43
5.0 Voltage drop (Approximate for 1 phase system)	v/amp/km	30.86	30.86	30.86	30.86	30.86	30.86	30.86	30.86	30.86
6.0 Sustained current ratings (Laid Singly):										
6.1 Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	22	21	19	17	15	14	13	11	10
6.2 Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	18	17	15	14	12	11	10	9	8
6.3 Laid in air Ambient temp. 50°C	A	16	15	14	12	11	10	9	8	7
7.0 Short circuit current rating of conductor for 1 second	kA	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21



Flame retardant
IEC 60332-1



-5°C, 90 °C



Leaded



Standard Hydrocarbons
Resistance, GOOD



Excellent



LSZH/
FRLS PVC
(If required)



15 x Cable
OD (Min.)

Copper Conductor

2.5 mm ² , Lead Sheathed Control armoured Cables, 0.6/1 kV to IEC 60502-1											
Number of cores		6	7	9	12	19	21	27	37	48	
(A) Manufacturing Dimensions											
1.0	Cable overall diameter (Approximate)	mm	21.0	21.0	24.0	26.0	29.0	30.0	34.5	37.5	42.5
2.0	Cable weight (Approximate)	kg/km	1240	1260	1615	1830	2260	2420	3125	3785	4635
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	500	500	500	500
4.0	Minimum bending radius of cable (During installation)	x Cable OD	15	15	15	15	15	15	15	15	15
(B) Electrical Parameters											
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	7.41	7.41	7.41	7.41	7.41	7.41	7.41	7.41	7.41
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	9.45	9.45	9.45	9.45	9.45	9.45	9.45	9.45	9.45
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101
4.0	Impedance at 50 Hz (Approximate)	ohm/km	9.45	9.45	9.45	9.45	9.45	9.45	9.45	9.45	9.45
5.0	Voltage drop (Approximate for 1 phase system)	v/amp/km	18.90	18.90	18.90	18.90	18.90	18.90	18.90	18.90	18.90
6.0	Sustained current ratings (Laid Singly):										
6.1	Laid direct, Ground temp. = 35 °C & Thermal resistivity of soil = 1.2 °C m/W, depth of laying = 0.5 m	A	28	26	24	22	18	18	16	14	13
6.2	Drawn into earthenware ducts, ground temp. = 35 °C, Thermal resistivity of soil = 1.2 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.5 m	A	23	22	20	18	15	15	13	12	11
6.3	Laid in air, Ambient temp. = 50 °C	A	21	20	18	17	14	14	12	11	10
7.0	Short circuit current rating of conductor for 1 second	kA	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36

Copper Conductor

4 mm ² , Lead Sheathed Control armoured Cables, 0.6/1 kV to IEC 60502-1											
Number of cores		6	7	9	12	19	21	27	37	48	
(A) Manufacturing Dimensions											
1.0	Cable overall diameter (Approximate)	mm	23.5	23.5	26.0	28.0	31.5	34.0	38.0	42.0	48.0
2.0	Cable weight (Approximate)	kg/km	1550	1580	1895	2160	2835	3255	3900	4820	6235
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	500	500	500	500	500
4.0	Minimum bending radius of cable (During installation)	x Cable OD	15	15	15	15	15	15	15	15	15
(B) Electrical Parameters											
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	5.880	5.880	5.880	5.880	5.880	5.880	5.880	5.880	5.880
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
4.0	Impedance at 50 Hz (Approximate)	ohm/km	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88
5.0	Voltage drop (Approximate for 1 phase system)	v/amp/km	11.76	11.76	11.76	11.76	11.76	11.76	11.76	11.76	11.76
6.0	Sustained current ratings (Laid Singly):										
6.1	Laid direct, Ground temp. = 35 °C & Thermal resistivity of soil = 1.2 °C m/W, depth of laying = 0.5 m	A	38	35	32	29	25	24	21	19	17
6.2	Drawn into earthenware ducts, ground temp. = 35 °C, Thermal resistivity of soil = 1.2 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.5 m	A	31	29	26	24	20	20	17	16	14
6.3	Laid in air, Ambient temp. = 50 °C	A	29	27	25	22	19	18	16	15	13
7.0	Short circuit current rating of conductor for 1 second	kA	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57

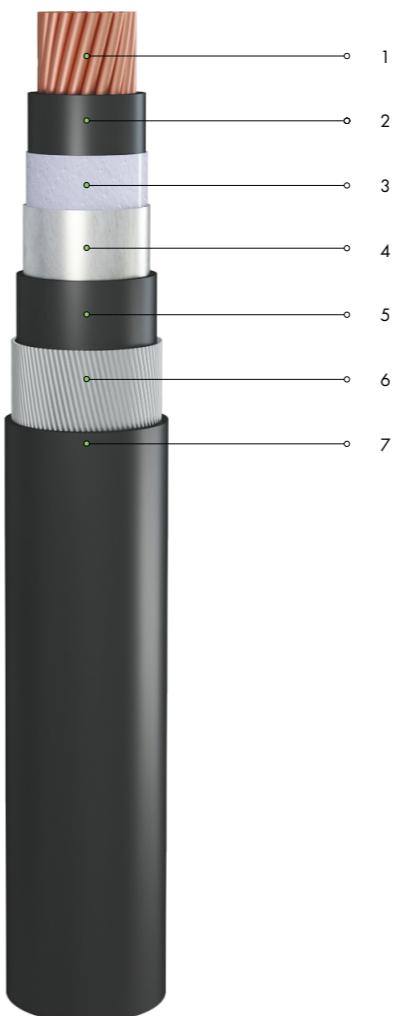
Low Voltage Cable

(0.6/1 kV), Single Core

Application

Lead Sheathed Cables are used mainly for underground application in the oil, gas, petroleum and chemical industries, for protection against sulfides, water, Oils, hydrocarbon and any corrosive chemicals found in the ground water. For power distribution substations, industrial applications to distribution electric panels, etc. (Up to 1 KV)

Construction



1. **Conductor Cu or Al**
Bare Copper/Aluminium stranded circular conductor according to class 2 of IEC 60228
2. **Insulation XLPE**
3. **Bedding/ Inner Covering**
Taped bedding/ Extruded Bedding
4. **Metallic Sheath**
Lead sheath
5. **Separation Sheath PVC or LSZH**
Extruded Separation sheath
6. **Armouring AWA**
Aluminium Wire (AWA)
7. **Outer Sheath PVC or LSZH**
Flame retardant and/or Hydrocarbon resistant option available upon demand

Applicable Standards

IEC 60502-1	Design Specification
IEC 60228	Conductors
IEC 60332-1	Flame Retardant
IEC 60332-3-22 - Cat. A	Flame Retardant on Bunched Cables (if required)
IEC 60754-1, 2	Low Toxicity / Halogen Free Properties (if required)
IEC 61034-1, 2	Low Smoke Emission (if required)



Flame retardant
IEC 60332-1
IEC 60332-3-22 Cat. A (if required)



-5°C, 90 °C



Leaded



Standard Hydrocarbons
Resistance, GOOD



Excellent



LSZH/
FRLS PVC
(if required)



15 x Cable
OD (Min.)

Copper Conductor**Copper Conductor**

Single Core, Lead Sheathed armoured Cables, 0.6/1 kV to IEC 60502-1																			
Nominal Area of Conductor		10	16	25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000	
(A) Manufacturing Dimensions																			
1.0	Cable overall diameter (Approximate)	mm	15.5	16.5	18.0	19.0	21.0	23.0	25.0	27.0	28.5	31.0	35.0	37.5	41.5	46.0	51.0	56.0	61.0
2.0	Cable weight (Approximate)	kg/km	625	730	920	1075	1305	1615	1970	2305	2685	3240	4125	4870	6020	7550	9415	11650	14360
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	1000	1000	500	500	500	500	500	500	250	
4.0	Minimum bending radius of cable (During installation)	x Cable OD	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
(B) Electrical Parameters																			
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.8300	1.1500	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	2.330	1.470	0.928	0.669	0.494	0.343	0.247	0.196	0.160	0.128	0.098	0.080	0.064	0.051	0.042	0.035	0.030
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.149	0.141	0.134	0.127	0.124	0.115	0.110	0.107	0.105	0.102	0.101	0.098	0.096	0.095	0.093	0.091	0.089
4.0	Impedance at 50 Hz (Approximate)	ohm/km	2.330	1.480	0.938	0.681	0.509	0.362	0.270	0.223	0.191	0.164	0.141	0.127	0.115	0.108	0.102	0.097	0.094
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	4.036	2.563	1.625	1.180	0.882	0.627	0.468	0.386	0.331	0.284	0.244	0.220	0.199	0.187	0.177	0.168	0.163
6.0	Sustained current ratings (Three single core cables laid in trefoil formation):																		
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	82	108	139	165	199	244	292	332	371	417	480	536	594	658	723	764	810
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	78	101	134	154	199	239	281	315	341	376	421	459	488	529	571	595	632
6.3	Laid in air Ambient temp. 50°C	A	67	92	123	146	180	230	282	328	377	433	510	581	664	751	846	919	997
7.0	Short circuit current rating of conductor for 1 second	kA	1.43	2.29	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20	71.50	90.09	114.40	143.00

Aluminium Conductor**Aluminium Conductor**

Single Core, Lead Sheathed armoured Cables, 0.6/1 kV to IEC 60502-1																		
Nominal Area of Conductor		16	25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000	
(A) Manufacturing Dimensions																		
1.0	Cable overall diameter (Approximate)	mm	16.5	18.0	19.0	21.0	23.0	25.0	27.0	28.5	31.0	35.0	37.5	41.5	46.0	51.0	56.0	61.0
2.0	Cable weight (Approximate)	kg/km	635	765	865	1025	1210	1400	1585	1795	2130	2655	3025	3675	4520	5505	6605	8050
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	1000	500	500	500	500	500	500	250	
4.0	Minimum bending radius of cable (During installation)	x Cable OD	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
(B) Electrical Parameters																		
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.9100	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	2.450	1.540	1.110	0.823	0.569	0.411	0.325	0.265	0.212	0.162	0.130	0.102	0.081	0.064	0.052	0.043
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.141	0.134	0.127	0.124	0.115	0.110	0.107	0.105	0.102	0.101	0.098	0.096	0.095	0.093	0.091	0.089
4.0	Impedance at 50 Hz (Approximate)	ohm/km	2.450	1.550	1.120	0.832	0.581	0.425	0.342	0.285	0.235	0.191	0.163	0.140	0.125	0.113	0.105	0.099
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	4.244	2.685	1.940	1.441	1.006	0.736	0.592	0.494	0.407	0.331	0.282	0.242	0.217	0.196	0.182	0.171
6.0	Sustained current ratings (Three single core cables laid in trefoil formation):																	
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	84	109	127	152	187	224	255	285	322	372	418	481	534	589	649	706
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	79	103	123	153	186	219	248	271	301	341	377	415	451	485	520	559
6.3	Laid in air Ambient temp. 50°C	A	72	94	118	135	172	211	245	282	325	385	441	526	595	672	760	843
7.0	Short circuit current rating of conductor for 1 second	kA	1.50	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00

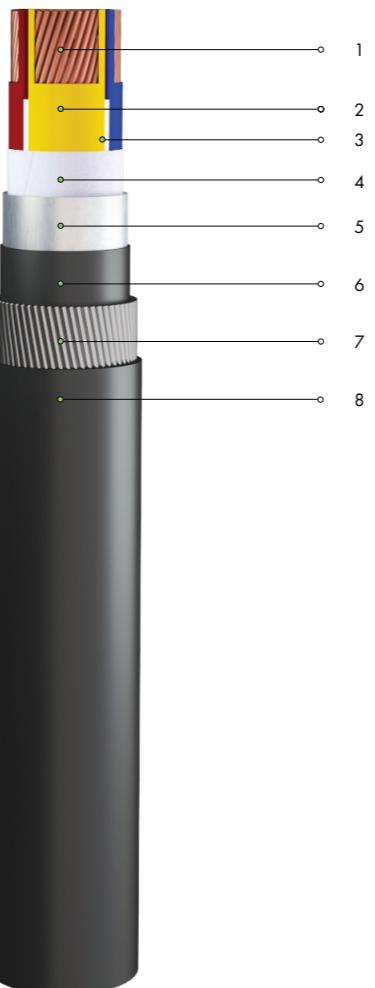
Application

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Low Voltage Cable

(0.6/1 kV), Multi Core

Construction



1. **Conductor Cu or Al**
Bare Copper/Aluminium stranded circular or sector shaped conductor according to class 2 of IEC 60228
2. **Insulation XLPE**
3. **Filler (if required)**
PP yarns or Extruded filling
4. **Bedding/ Inner Covering**
Taped bedding/ Extruded Bedding
5. **Metallic Sheath**
Lead sheath
6. **Separation Sheath PVC or LSZH**
Extruded Separation sheath
7. **Armouring SWA**
Galvanized Steel Wire (SWA)
8. **Outer Sheath PVC or LSZH**
Flame retardant and/or Hydrocarbon resistant option available upon demand

Applicable Standards

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IEC 60754-1, 2	Low Toxicity / Halogen Free Properties (if required)
IEC 61034-1, 2	Low Smoke Emission (if required)



Flame retardant
IEC 60332-1
IEC 60332-3-22 Cat. A (if required)



-5°C, 90 °C



Leaded



Standard Hydrocarbons
Resistance, GOOD



Excellent



LSZH/
FRLS PVC
(if required)



15 x Cable
OD (Min.)

Copper Conductor**Copper Conductor**

2 Core, Lead Sheathed armoured Cables, 0.6/1 kV to IEC 60502-1																			
Nominal Area of Conductor		1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions																			
1.0	Cable overall diameter (Approximate)	mm	16.5	17.5	18.5	20.0	22.5	24.0	23.5	25.5	29.5	32.5	35.5	39.0	43.0	45.5	53.0	57.5	65.0
2.0	Cable weight (Approximate)	kg/km	785	870	980	1110	1435	1670	1780	2125	2795	3540	4360	5425	6490	7560	9750	11595	14915
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	1000	1000	500	500	500	500	500	500	250	
4.0	Minimum bending radius of cable (During installation)	x Cable OD	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
(B) Electrical Parameters																			
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	12.1000	7.4100	4.6100	3.0800	1.8300	1.1500	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	15.430	9.450	5.880	3.930	2.330	1.470	0.928	0.669	0.495	0.343	0.248	0.197	0.161	0.130	0.100	0.082	0.066
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.108	0.101	0.095	0.090	0.085	0.082	0.082	0.080	0.079	0.075	0.073	0.073	0.073	0.072	0.071	0.071	
4.0	Impedance at 50 Hz (Approximate)	ohm/km	15.430	9.450	5.880	3.930	2.330	1.470	0.932	0.674	0.501	0.351	0.259	0.210	0.177	0.149	0.123	0.108	0.097
5.0	Voltage drop (Approximate for 1 phase system)	v/amp/km	30.860	18.900	11.760	7.860	4.660	2.940	1.864	1.348	1.002	0.702	0.518	0.420	0.354	0.298	0.246	0.216	0.194
6.0	Sustained current ratings: (Laid Singly)	A	22	31	39	49	67	93	119	142	169	207	248	266	304	349	406	450	492
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	19	25	32	41	54	76	96	116	138	169	204	232	256	293	336	372	425
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	18	24	30	39	53	74	95	116	140	177	218	235	269	308	364	409	470
7.0	Short circuit current rating of conductor for 1 second	kA	0.21	0.36	0.57	0.86	1.43	2.29	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Copper Conductor**Copper Conductor**

3 Core, Lead Sheathed armoured Cables, 0.6/1 kV to IEC 60502-1																			
Nominal Area of Conductor		1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions																			
1.0	Cable overall diameter (Approximate)	mm	17.0	18.0	19.0	20.5	23.0	25.0	25.5	28.5	32.5	36.5	41.0	45.0	49.0	52.0	59.0	65.0	71.5
2.0	Cable weight (Approximate)	kg/km	835	940	1065	1225	1585	1905	2200	2740	3605	4635	6065	7300	8705	10230	12930	15565	19885
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	500	500	500	500	500	500	250	250	250	
4.0	Minimum bending radius of cable (During installation)	x Cable OD	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
(B) Electrical Parameters																			
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	12.1000	7.4100	4.6100	3.0800	1.8300	1.1500	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	15.430	9.450	5.880	3.930	2.330	1.470	0.928	0.669	0.495	0.343	0.248	0.197	0.161	0.130	0.100	0.082	0.066
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.108	0.101	0.095	0.090	0.085	0.082	0.082	0.080	0.079	0.075	0.073	0.073	0.073	0.072	0.071	0.071	0.071
4.0	Impedance at 50 Hz (Approximate)	ohm/km	15.430	9.450	5.880	3.930	2.330	1.470	0.932	0.674	0.501	0.351	0.259	0.210	0.177	0.149	0.123	0.108	0.097
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	26.726	16.368	10.184	6.807	4.036	2.546	1.614	1.167	0.868	0.608	0.449	0.364	0.307	0.258	0.213	0.187	0.168
6.0	Sustained current ratings: (Laid Singly)																		
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	20	26	34	43	57	78	100	120	142	175	210	239	267	304	352	396	428
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	17	22	28	36	47	64	82	97	116	144	173	198	223	253	294	332	357
6.3	Laid in air Ambient temp. 50°C	A	15	20	26	34	45	63	83	101	122	154	190	221	253	293	346	396	420
7.0	Short circuit current rating of conductor for 1 second	kA	0.21	0.36	0.57	0.86	1.43	2.29	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Copper Conductor**Copper Conductor**

4 Core, Lead Sheathed armoured Cables, 0.6/1 kV to IEC 60502-1																			
Nominal Area of Conductor		1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions																			
1.0	Cable overall diameter (Approximate)	mm	18.0	19.0	20.5	22.5	24.5	26.5	29.0	32.5	36.0	40.0	45.0	51.0	55.5	61.0	67.5	74.5	83.5
2.0	Cable weight (Approximate)	kg/km	920	1035	1185	1470	1815	2195	2800	3560	4440	5725	7520	9185	10975	13335	16630	20600	25860
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	500	500		500	500	500	500	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	15	15	15	15	15	15	15	15		15	15	15	15	15	15	15	15
(B) Electrical Parameters																			
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	12.1000	7.4100	4.6100	3.0800	1.8300	1.1500	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	15.43	9.45	5.88	3.93	2.33	1.47	0.928	0.669	0.495	0.343	0.248	0.197	0.161	0.13	0.1	0.082	0.066
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.108	0.101	0.095	0.09	0.085	0.082	0.082	0.08	0.079	0.075	0.073	0.073	0.073	0.072	0.071	0.071	
4.0	Impedance at 50 Hz (Approximate)	ohm/km	15.43	9.45	5.88	3.93	2.33	1.47	0.932	0.674	0.501	0.351	0.259	0.21	0.177	0.149	0.123	0.108	0.097
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	26.726	16.368	10.184	6.807	4.036	2.546	1.614	1.167	0.868	0.608	0.449	0.364	0.307	0.258	0.213	0.187	0.168
6.0	Sustained current ratings: (Laid Singly)																		
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	20	26	34	43	57	78	100	120	142	175	210	239	267	304	352	396	428
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	17	22	28	36	47	64	82	97	116	144	173	198	223	253	294	332	357
6.3	Laid in air Ambient temp. 50°C	A	15	20	26	34	45	63	83	101	122	154	190	221	253	293	346	396	420
7.0	Short circuit current rating of conductor for 1 second	kA	0.21	0.36	0.57	0.86	1.43	2.29	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Copper Conductor**Copper Conductor**

5 Core, Lead Sheathed armoured Cables, 0.6/1 kV to IEC 60502-1																			
Nominal Area of Conductor		1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions																			
1.0	Cable overall diameter (Approximate)	mm	19.0	20.0	22.0	23.5	26.0	28.5	34.0	37.0	41.5	48.5	53.5	58.5	64.0	70.5	79.5	87.0	97.5
2.0	Cable weight (Approximate)	kg/km	1010	1140	1415	1630	2015	2460	3550	4350	5565	7690	9700	11695	14060	16885	21925	26520	33050
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	500	500	500	500	500	500	500	250	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
(B) Electrical Parameters																			
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	12.1000	7.4100	4.6100	3.0800	1.8300	1.1500	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	15.43	9.45	5.88	3.93	2.33	1.47	0.928	0.669	0.495	0.343	0.248	0.197	0.161	0.13	0.1	0.082	0.066
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.108	0.101	0.095	0.090	0.085	0.082	0.084	0.081	0.080	0.076	0.074	0.074	0.074	0.073	0.072	0.072	0.072
4.0	Impedance at 50 Hz (Approximate)	ohm/km	15.430	9.450	5.880	3.930	2.330	1.470	0.932	0.674	0.501	0.351	0.259	0.210	0.177	0.149	0.124	0.108	0.098
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	26.726	16.368	10.184	6.807	4.036	2.546	1.614	1.167	0.868	0.608	0.449	0.364	0.307	0.258	0.215	0.187	0.170
6.0	Sustained current ratings: (Laid Singly)																		
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	16	22	28	35	48	67	86	102	122	149	179	192	219	251	292	324	354
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	14	18	23	30	39	55	69	84	99	122	147	167	184	211	242	268	306
6.3	Laid in air Ambient temp. 50°C	A	13	17	22	28	38	53	68	84	101	127	157	169	194	222	262	294	338
7.0	Short circuit current rating of conductor for 1 second	kA	0.21	0.36	0.57	0.86	1.43	2.29	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Aluminium Conductor**Aluminium Conductor**

2 Core, Lead Sheathed armoured Cables, 0.6/1 kV to IEC 60502-1														
Nominal Area of Conductor		16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions														
1.0	Cable overall diameter (Approximate)	mm	24.0	23.5	25.5	29.5	32.5	35.5	39.0	43.0	45.5	53.0	57.5	65.0
2.0	Cable weight (Approximate)	kg/km	1475	1475	1695	2220	2710	3205	3970	4675	5310	6800	7870	10110
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	500	500	500	500	500	500	500	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	15	15	15	15	15	15	15	15	15	15	15	15
(B) Electrical Parameters														
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.9100	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	2.450	1.540	1.110	0.823	0.569	0.412	0.326	0.266	0.212	0.163	0.131	0.104
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.082	0.082	0.080	0.079	0.075	0.073	0.073	0.073	0.073	0.072	0.071	0.071
4.0	Impedance at 50 Hz (Approximate)	ohm/km	2.450	1.540	1.110	0.827	0.574	0.418	0.334	0.276	0.224	0.178	0.149	0.126
5.0	Voltage drop (Approximate for 1 phase system)	v/amp/km	4.900	3.080	2.220	1.654	1.148	0.836	0.668	0.552	0.448	0.356	0.298	0.252
6.0	Sustained current ratings: (Laid Singly)	A	93	119	142	169	207	248	266	304	349	406	450	492
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	76	96	116	138	169	204	232	256	293	336	372	425
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	74	95	116	140	177	218	235	269	308	364	409	470
7.0	Short circuit current rating of conductor for 1 second	kA	2.29	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Aluminium Conductor**Aluminium Conductor**

3 Core, Lead Sheathed armoured Cables, 0.6/1 kV to IEC 60502-1														
Nominal Area of Conductor		16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions														
1.0	Cable overall diameter (Approximate)	mm	25.0	25.5	28.5	32.5	36.5	41.0	45.0	49.0	52.0	59.0	65.0	71.5
2.0	Cable weight (Approximate)	kg/km	1615	1740	2105	2740	3385	4335	5115	5985	6850	8505	9975	12680
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	500	500	500	500	500	500	500	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	15	15	15	15	15	15	15	15	15	15	15	15
(B) Electrical Parameters														
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.9100	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	2.450	1.540	1.110	0.823	0.569	0.412	0.326	0.266	0.212	0.163	0.131	0.104
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.082	0.082	0.080	0.079	0.075	0.073	0.073	0.073	0.073	0.072	0.071	0.071
4.0	Impedance at 50 Hz (Approximate)	ohm/km	2.450	1.540	1.110	0.827	0.574	0.418	0.334	0.276	0.224	0.178	0.149	0.126
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	4.244	2.667	1.923	1.432	0.994	0.724	0.579	0.478	0.388	0.308	0.258	0.218
6.0	Sustained current ratings: (Laid Singly)	A	78	100	120	142	175	210	239	267	304	352	396	428
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	64	82	97	116	144	173	198	223	253	294	332	357
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	63	83	101	122	154	190	221	253	293	346	396	420
7.0	Short circuit current rating of conductor for 1 second	kA	2.29	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Aluminium Conductor**Aluminium Conductor**

4 Core, Lead Sheathed armoured Cables, 0.6/1 kV to IEC 60502-1														
Nominal Area of Conductor		16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions														
1.0	Cable overall diameter (Approximate)	mm	26.5	29.0	32.5	36.0	40.0	45.0	51.0	55.5	61.0	67.5	74.5	83.5
2.0	Cable weight (Approximate)	kg/km	1810	2185	2710	2800	4065	5215	6270	7350	8835	10725	13150	16255
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	500	500	500	500	500	250		250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	15	15	15	15	15	15	15	15		15	15	15
(B) Electrical Parameters														
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.9100	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	2.450	1.540	1.110	0.823	0.569	0.412	0.326	0.266	0.212	0.163	0.131	0.104
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.082	0.082	0.080	0.079	0.075	0.073	0.073	0.073	0.073	0.072	0.071	0.071
4.0	Impedance at 50 Hz (Approximate)	ohm/km	2.450	1.540	1.110	0.827	0.574	0.418	0.334	0.276	0.224	0.178	0.149	0.126
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	4.244	2.667	1.923	1.432	0.994	0.724	0.579	0.478	0.388	0.308	0.258	0.218
6.0	Sustained current ratings: (Laid Singly)	A	78	100	120	142	175	210	239	267	304	352	396	428
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	64	82	97	116	144	173	198	223	253	294	332	357
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	63	83	101	122	154	190	221	253	293	346	396	420
7.0	Short circuit current rating of conductor for 1 second	kA	2.29	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Aluminium Conductor**Aluminium Conductor**

5 Core, Lead Sheathed armoured Cables, 0.6/1 kV to IEC 60502-1														
Nominal Area of Conductor		16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions														
1.0	Cable overall diameter (Approximate)	mm	28.5	34.0	37.0	41.5	48.5	53.5	58.5	64.0	70.5	79.5	87.0	97.5
2.0	Cable weight (Approximate)	kg/km	1980	2790	3295	4145	5650	6830	8060	9580	11290	14530	17240	21240
3.0	Standard drum length (±5% Tolerance)	m	1000	500	500	500	500	500	250	250		250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	15	15	15	15	15	15	15	15		15	15	15
(B) Electrical Parameters														
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.9100	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	2.450	1.540	1.110	0.823	0.569	0.412	0.326	0.266	0.212	0.163	0.131	0.104
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.082	0.084	0.081	0.080	0.076	0.074	0.074	0.074	0.074	0.073	0.072	0.072
4.0	Impedance at 50 Hz (Approximate)	ohm/km	2.450	1.540	1.110	0.827	0.574	0.419	0.334	0.276	0.225	0.179	0.149	0.126
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	4.244	2.667	1.923	1.432	0.994	0.726	0.579	0.478	0.390	0.310	0.258	0.218
6.0	Sustained current ratings: (Laid Singly)	A	67	86	102	122	149	179	192	219	251	292	324	354
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	55	69	84	99	122	147	167	184	211	242	268	306
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	53	68	84	101	127	157	169	194	222	262	294	338
7.0	Short circuit current rating of conductor for 1 second	kA	2.29	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

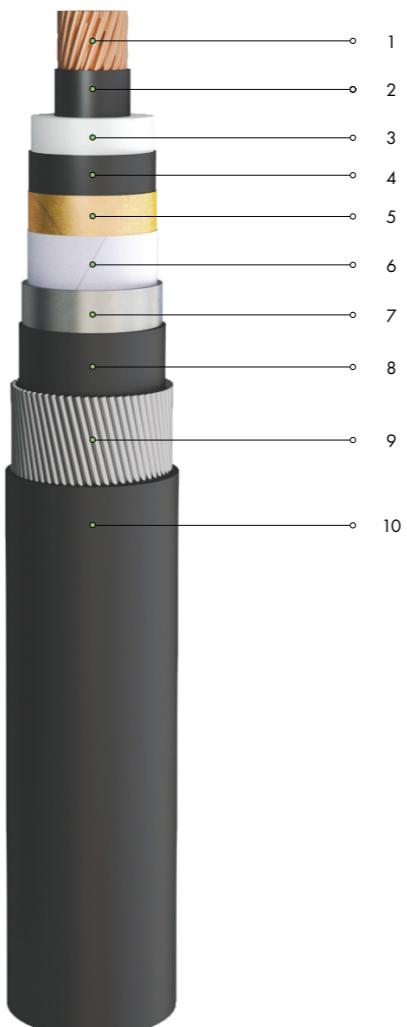
Medium Voltage Cable

Up to 18/30 (36) kV, Single Core

Application

Lead Sheathed Cables are used mainly for underground application in the oil, gas, petroleum and chemical industries, for protection against sulfides, water, Oils, hydrocarbon and any corrosive chemicals found in the ground water. For power distribution between high voltage mains power supply and low voltage applications at different voltage (above 1 KV up to 33 KV)

Construction



1. **Conductor Cu or Al**
Bare Copper/Aluminium stranded circular conductor according to class 2 of IEC 60228
2. **Conductor Screen**
semi conductive XLPE
3. **Insulation XLPE**
4. **Insulation Screen**
semi conductive XLPE
5. **Metallic Screen**
Copper Wire Screen (CWS) or Copper Tape (CUT)
6. **Bedding/ Inner Covering**
Taped bedding/ Extruded Bedding
7. **Metallic Sheath**
Lead sheath
8. **Separation Sheath PVC or LSZH**
Extruded Separation sheath
9. **Armouring AWA**
Aluminium Wire Armour (AWA)
10. **Outer Sheath PVC or LSZH**
Flame retardant and/or Hydrocarbon resistant option available upon demand"

Applicable Standards

IEC 60502-2	Design Specification
IEC 60228	Conductors
IEC 60332-1	Flame Retardant
IEC 60332-3-22 - Cat. A	Flame Retardant on Bunched Cables (if required)
IEC 60754-1, 2	Low Toxicity / Halogen Free Properties (if required)
IEC 61034-1, 2	Low Smoke Emission (if required)



Flame retardant
IEC 60332-1
IEC 60332-3-22 Cat. A (if required)



-5°C, 90 °C



Leaded



Standard Hydrocarbons Resistance, GOOD



Excellent



LSZH/
FRLS PVC
(if required)



20 x Cable OD (Min.)

Copper Conductor**Copper Conductor**

1 Core, Lead Sheathed armoured Cables, 3.6/6 (7.2) kV to IEC 60502-2													(Also suitable for 3.8/6.6 (7.2) kV Effectively Earthed system)							
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000				
(A) Manufacturing Dimensions																				
1.0	Cable overall diameter (Approximate)	mm	24.0	25.0	26.5	28.0	30.0	32.5	34.0	36.0	39.0	41.5	46.5	50.5	54.5	60.0	65.0			
2.0	Cable weight (Approximate)	kg/km	1380	1535	1740	2045	2500	2920	3355	3835	4700	5580	6935	8410	10285	12660	15235			
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	500		500	500	500	500	500	500			
4.0	Minimum bending radius of cable (During installation)	x Cable OD	20	20	20	20	20	20	20	20		20	20	20	20	20	20			
(B) Electrical Parameters																				
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176			
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.928	0.669	0.494	0.343	0.247	0.196	0.160	0.128	0.098	0.079	0.063	0.051	0.041	0.034	0.029			
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.152	0.145	0.138	0.128	0.122	0.119	0.116	0.111	0.108	0.105	0.103	0.101	0.097	0.095	0.093			
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.940	0.685	0.513	0.366	0.275	0.229	0.198	0.169	0.146	0.131	0.121	0.113	0.105	0.101	0.097			
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.628	1.186	0.889	0.634	0.476	0.397	0.343	0.293	0.253	0.227	0.210	0.196	0.182	0.175	0.168			
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.29	0.32	0.36	0.41	0.47	0.52	0.56	0.61	0.66	0.68	0.72	0.75	0.84	0.97	1.07			
7.0	Approximate charging current per phase at Uo=3.6 kV and f = 50 Hz	mA/m	0.33	0.36	0.41	0.46	0.53	0.59	0.63	0.69	0.75	0.77	0.81	0.85	0.95	1.10	1.21			
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																			
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	137	164	193	234	278	315	349	391	446	495	551	593	646	693	731			
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	131	155	183	223	265	301	334	376	430	478	534	578	632	682	721			
8.3	Laid in air Ambient temp. 30°C	A	162	196	234	291	353	406	460	524	611	692	788	873	975	1074	1156			
9.0	Short circuit current rating of conductor for 1 second	kA	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20	71.50	90.09	114.40	143.00			

Copper Conductor**Copper Conductor**

1 Core, Lead Sheathed armoured Cables, 6/10 (12) kV to IEC 60502-2													(Also suitable for 6.35/11 (12) kV Effectively Earthed system)							
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000				
(A) Manufacturing Dimensions																				
1.0	Cable overall diameter (Approximate)	mm	25.5	26.5	28.0	30.0	32.5	34.5	36.0	38.0	40.5		44.0	47.5	51.0	55.0	60.5	65.0		
2.0	Cable weight (Approximate)	kg/km	1515	1690	1965	2295	2750	3180	3545	4135	4870		5860	8475	8490	10370	12730	15295		
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	500		500	500	500	500	500	500			
4.0	Minimum bending radius of cable (During installation)	x Cable OD	20	20	20	20	20	20	20	20		20	20	20	20	20	20			
(B) Electrical Parameters																				
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754		0.0601	0.0470	0.0366	0.0283	0.0221	0.0176		
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.928	0.669	0.494	0.343	0.247	0.196	0.159	0.128	0.098		0.079	0.063	0.051	0.041	0.034	0.029		
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.156	0.148	0.142	0.132	0.127	0.123	0.119	0.115	0.110		0.108	0.104	0.101	0.098	0.096	0.093		
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.941	0.685	0.514	0.368	0.278	0.231	0.199	0.172	0.147		0.134	0.122	0.113	0.106	0.102	0.097		
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.630	1.186	0.890	0.637	0.482	0.400	0.345	0.298	0.255		0.232	0.211	0.196	0.184	0.177	0.168		
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.22	0.25	0.28	0.32	0.36	0.39	0.42	0.46	0.52		0.57	0.64	0.71	0.79	0.91	1.01		
7.0	Approximate charging current per phase at $U_0 = 6 \text{ kV}$ and $f = 50 \text{ Hz}$	mA/m	0.41	0.47	0.53	0.60	0.68	0.74	0.79	0.87	0.98		1.07	1.21	1.34	1.49	1.72	1.90		
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																			
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	137	164	193	234	278	315	349	391	446		495	551	593	646	693	731		
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5°C m/W and Thermal resistivity of Earthenware duct = 1.2°C m/W , depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	131	155	183	223	265	301	334	376	430		478	534	578	632	682	721		
8.3	Laid in air Ambient temp. 30°C	A	162	196	234	291	353	406	460	524	611		692	788	873	975	1074	1156		
9.0	Short circuit current rating of conductor for 1 second	kA	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32		42.90	57.20	71.50	90.09	114.40	143.00		

Copper Conductor**Copper Conductor**

1 Core, Lead Sheathed armoured Cables, 8.7/15 (17.5) kV to IEC 60502-2																	
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000	
(A) Manufacturing Dimensions																	
1.0	Cable overall diameter (Approximate)	mm	28.0	29.0	31.0	33.0	35.0	37.0	38.5	40.0	44.0	46.5	50.0	53.0	57.5	63.0	67.5
2.0	Cable weight (Approximate)	kg/km	1775	1955	2240	2645	3035	3525	3900	4380	5365	6265	7475	8785	10705	13290	15890
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	500	500	500	500	500	500	500	500	500	500
4.0	Minimum bending radius of cable (During installation)	x Cable OD	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
(B) Electrical Parameters																	
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.928	0.669	0.494	0.343	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.051	0.041	0.034	0.029
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.162	0.154	0.148	0.138	0.131	0.127	0.123	0.118	0.116	0.112	0.108	0.104	0.101	0.098	0.095
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.942	0.686	0.516	0.370	0.280	0.234	0.201	0.174	0.152	0.137	0.125	0.116	0.109	0.104	0.099
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.632	1.188	0.894	0.641	0.485	0.405	0.348	0.301	0.263	0.237	0.217	0.201	0.189	0.180	0.171
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.18	0.20	0.22	0.25	0.28	0.31	0.33	0.36	0.40	0.44	0.49	0.55	0.61	0.70	0.77
7.0	Approximate charging current per phase at Uo=8.7 kV and f = 50 Hz	mA/m	0.49	0.55	0.60	0.68	0.77	0.85	0.90	0.98	1.09	1.20	1.34	1.50	1.67	1.91	2.10
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	137	164	193	234	278	315	349	391	446	495	551	593	646	693	731
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	131	155	183	223	265	301	334	376	430	478	534	578	632	682	721
8.3	Laid in air Ambient temp. 30°C	A	162	196	234	291	353	406	460	524	611	692	788	873	975	1074	1156
9.0	Short circuit current rating of conductor for 1 second	kA	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20	71.50	90.09	114.40	143.00

Copper Conductor**Copper Conductor**

1 Core, Lead Sheathed armoured Cables, 12/20 (24) kV to IEC 60502-2												(Also suitable for 12.7/22 (24) kV Effectively Earthed system)						
Nominal Area of Conductor		35	50	70	95	120	150	185	240	300	400	500	630	800	1000			
(A) Manufacturing Dimensions																		
1.0	Cable overall diameter (Approximate)	mm	32.0	33.5	35.0	37.0	39.0	40.5	43.5	46.0	48.5	52.0	55.5	59.5	65.0	69.5		
2.0	Cable weight (Approximate)	kg/km	2220	2510	2850	3365	3745	4220	4845	5745	6550	7745	9255	11170	13635	16210		
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	1000	1000	1000	1000	500	500	500	500	500	500	500	500	500	500		
4.0	Minimum bending radius of cable (During installation)	x Cable OD	20	20	20	20	20	20	20	20	20	20	20	20	20	20		
(B) Electrical Parameters																		
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176		
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.669	0.494	0.343	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.050	0.041	0.034	0.029		
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.160	0.153	0.142	0.135	0.130	0.127	0.123	0.118	0.115	0.110	0.107	0.103	0.100	0.097		
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.688	0.517	0.371	0.281	0.235	0.203	0.178	0.153	0.140	0.127	0.118	0.111	0.106	0.101		
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.192	0.895	0.643	0.487	0.407	0.352	0.308	0.265	0.242	0.220	0.204	0.192	0.184	0.175		
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.17	0.19	0.22	0.24	0.26	0.28	0.31	0.34	0.37	0.41	0.46	0.51	0.58	0.64		
7.0	Approximate charging current per phase at $U_0=12$ kV and $f = 50$ Hz	mA/m	0.64	0.72	0.83	0.90	0.98	1.06	1.17	1.28	1.39	1.55	1.73	1.92	2.19	2.41		
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																	
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	164	193	234	278	315	349	391	446	495	551	593	646	693	731		
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5°C m/W and Thermal resistivity of Earthenware duct = 1.2°C m/W , depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	155	183	223	265	301	334	376	430	478	534	578	632	682	721		
8.3	Laid in air Ambient temp. 30°C	A	196	234	291	353	406	460	524	611	692	788	873	975	1074	1156		
9.0	Short circuit current rating of conductor for 1 second	kA	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20	71.50	90.09	114.40	143.00		

Copper Conductor**Copper Conductor**

1 Core, Lead Sheathed armoured Cables, 18/30 (36) kV to IEC 60502-2												(Also suitable for 19/33 (36) kV Effectively Earthed system)					
Nominal Area of Conductor			50	70	95	120	150	185	240	300	400	500	630	800	1000		
(A) Manufacturing Dimensions																	
1.0	Cable overall diameter (Approximate)	mm	38.5	40.5	43.5	45.0	46.5	48.5	51.0	54.0	57.0	60.5	65.0	71.5	76.5		
2.0	Cable weight (Approximate)	kg/km	3150	3620	4170	4690	5095	5750	6560	7545	8800	10375	12365	15170	17865		
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	500	500	500	500	500	500	500	500	500	500	500	500	500		
4.0	Minimum bending radius of cable (During installation)	x Cable OD	20	20	20	20	20	20	20	20	20	20	20	20	20		
(B) Electrical Parameters																	
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176		
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.494	0.343	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.050	0.040	0.033	0.029		
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.162	0.151	0.145	0.139	0.135	0.130	0.125	0.121	0.116	0.112	0.108	0.106	0.103		
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.520	0.375	0.286	0.240	0.209	0.182	0.159	0.145	0.132	0.123	0.115	0.111	0.107		
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	0.901	0.650	0.495	0.416	0.362	0.315	0.275	0.251	0.229	0.213	0.199	0.192	0.185		
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.15	0.16	0.18	0.20	0.21	0.23	0.25	0.27	0.30	0.33	0.37	0.42	0.46		
7.0	Approximate charging current per phase at $U_0=18$ kV and $f = 50$ Hz	mA/m	0.85	0.90	1.02	1.13	1.19	1.30	1.41	1.53	1.70	1.87	2.09	2.38	2.60		
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	193	234	278	315	349	391	446	495	551	593	646	693	731		
8.2	Drawn into ducts, ground temp. = 20°C , Thermal resistivity of soil = 1.5°C m/W and Thermal resistivity of Earthenware duct = 1.2°C m/W , depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	183	223	265	301	334	376	430	478	534	578	632	682	721		
8.3	Laid in air Ambient temp. 30°C	A	234	291	353	406	460	524	611	692	788	873	975	1074	1156		
9.0	Short circuit current rating of conductor for 1 second	kA	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20	71.50	90.09	114.40	143.00		

Aluminium Conductor**Aluminium Conductor**

1 Core, Lead Sheathed armoured Cables, 3.6/6 (7.2) kV to IEC 60502-2												(Also suitable for 3.8/6.6 (7.2) kV Effectively Earthed system)							
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000			
(A) Manufacturing Dimensions																			
1.0	Cable overall diameter (Approximate)	mm	24.0	25.0	26.5	28.0	30.0	32.5	34.0	36.0	39.0	41.5	46.5	50.5	54.5	60.0	65.0		
2.0	Cable weight (Approximate)	kg/km	1225	1325	1460	1640	1930	2200	2465	2720	3230	3735	4590	5380	6375	7620	8920		
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	500		500	500	500	500	500	500		
4.0	Minimum bending radius of cable (During installation)	x Cable OD	20	20	20	20	20	20	20	20		20	20	20	20	20	20		
(B) Electrical Parameters																			
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291		
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.540	1.110	0.823	0.569	0.411	0.325	0.265	0.212	0.162	0.130	0.102	0.080	0.064	0.051	0.043		
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.152	0.145	0.138	0.128	0.122	0.119	0.116	0.111	0.108	0.105	0.103	0.101	0.097	0.095	0.093		
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.550	1.120	0.834	0.583	0.429	0.346	0.289	0.239	0.195	0.167	0.145	0.129	0.116	0.108	0.102		
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	2.685	1.940	1.445	1.010	0.743	0.599	0.501	0.414	0.338	0.289	0.251	0.223	0.201	0.187	0.177		
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.29	0.32	0.36	0.41	0.47	0.52	0.56	0.61	0.66	0.68	0.72	0.75	0.84	0.97	1.07		
7.0	Approximate charging current per phase at Uo=3.6 kV and f = 50 Hz	mA/m	0.33	0.36	0.41	0.46	0.53	0.59	0.63	0.69	0.75	0.77	0.81	0.85	0.95	1.10	1.21		
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																		
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	107	127	150	182	217	246	274	309	355	397	448	494	549	601	648		
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	101	121	142	174	207	235	262	297	342	383	434	482	537	592	639		
8.3	Laid in air Ambient temp. 30°C	A	126	152	182	226	275	317	360	413	485	552	638	724	824	927	1020		
9.0	Short circuit current rating of conductor for 1 second	kA	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00		

Aluminium Conductor**Aluminium Conductor**

1 Core, Lead Sheathed armoured Cables, 6/10 (12) kV to IEC 60502-2												(Also suitable for 6.35/11 (12) kV Effectively Earthed system)							
Nominal Area of Conductor			25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000		
(A) Manufacturing Dimensions																			
1.0	Cable overall diameter (Approximate)	mm	25.5	26.5	28.0	30.0	32.5	34.5	36.0	38.0	40.5	44.0	47.5	51.0	55.0	60.5	65.0		
2.0	Cable weight (Approximate)	kg/km	1365	1480	1680	1890	2180	2455	2655	3025	3400	4015	5120	5460	6460	7690	8980		
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	1000	500	500	500	500	500	500	500		
4.0	Minimum bending radius of cable (During installation)	x Cable OD	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
(B) Electrical Parameters																			
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291		
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.540	1.110	0.823	0.569	0.411	0.325	0.265	0.211	0.162	0.130	0.102	0.080	0.064	0.051	0.043		
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.156	0.148	0.142	0.132	0.127	0.123	0.119	0.115	0.110	0.108	0.104	0.101	0.098	0.096	0.093		
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.550	1.120	0.835	0.584	0.430	0.347	0.290	0.240	0.196	0.169	0.146	0.129	0.117	0.109	0.102		
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	2.685	1.940	1.446	1.012	0.745	0.601	0.502	0.416	0.339	0.293	0.253	0.223	0.203	0.189	0.177		
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.22	0.25	0.28	0.32	0.36	0.39	0.42	0.46	0.52	0.57	0.64	0.71	0.79	0.91	1.01		
7.0	Approximate charging current per phase at Uo=6 kV and f = 50 Hz	mA/m	0.41	0.47	0.53	0.60	0.68	0.74	0.79	0.87	0.98	1.07	1.21	1.34	1.49	1.72	1.90		
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																		
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	107	127	150	182	217	246	274	309	355	397	448	494	549	601	648		
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	101	121	142	174	207	235	262	297	342	383	434	482	537	592	639		
8.3	Laid in air Ambient temp. 30°C	A	126	152	182	226	275	317	360	413	485	552	638	724	824	927	1020		
9.0	Short circuit current rating of conductor for 1 second	kA	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00		

Aluminium Conductor**Aluminium Conductor**

1 Core, Lead Sheathed armoured Cables, 8.7/15 (17.5) kV to IEC 60502-2																	
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000	
(A) Manufacturing Dimensions																	
1.0	Cable overall diameter (Approximate)	mm	28.0	29.0	31.0	33.0	35.0	37.0	38.5	40.0	44.0	46.5	50.0	53.0	57.5	63.0	67.5
2.0	Cable weight (Approximate)	kg/km	1625	1745	1955	2240	2465	2800	3010	3270	3895	4420	5130	5755	6795	8250	9575
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	1000	1000	1000	1000	1000	500	500	500		500	500	500	500	500	500
4.0	Minimum bending radius of cable (During installation)	x Cable OD	20	20	20	20	20	20	20	20		20	20	20	20	20	20
(B) Electrical Parameters																	
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.540	1.110	0.823	0.569	0.411	0.325	0.265	0.211	0.162	0.130	0.102	0.080	0.063	0.051	0.042
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.162	0.154	0.148	0.138	0.131	0.127	0.123	0.118	0.116	0.112	0.108	0.104	0.101	0.098	0.095
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.550	1.120	0.836	0.585	0.431	0.349	0.292	0.242	0.199	0.172	0.149	0.131	0.119	0.110	0.104
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	2.685	1.940	1.448	1.013	0.747	0.604	0.506	0.419	0.345	0.298	0.258	0.227	0.206	0.191	0.180
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.18	0.20	0.22	0.25	0.28	0.31	0.33	0.36	0.40	0.44	0.49	0.55	0.61	0.70	0.77
7.0	Approximate charging current per phase at $U_0=8.7$ kV and $f = 50$ Hz	mA/m	0.49	0.55	0.60	0.68	0.77	0.85	0.90	0.98	1.09	1.20	1.34	1.50	1.67	1.91	2.10
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	107	127	150	182	217	246	274	309	355	397	448	494	549	601	648
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	101	121	142	174	207	235	262	297	342	383	434	482	537	592	639
8.3	Laid in air Ambient temp. 30°C	A	126	152	182	226	275	317	360	413	485	552	638	724	824	927	1020
9.0	Short circuit current rating of conductor for 1 second	kA	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00

Aluminium Conductor**Aluminium Conductor**

1 Core, Lead Sheathed armoured Cables, 12/20 (24) kV to IEC 60502-2												(Also suitable for 12.7/22 (24) kV Effectively Earthed system)						
Nominal Area of Conductor			35	50	70	95	120	150	185	240	300	400	500	630	800	1000		
(A) Manufacturing Dimensions																		
1.0	Cable overall diameter (Approximate)	mm	32.0	33.5	35.0	37.0	39.0	40.5	43.5	46.0	48.5	52.0	55.5	59.5	65.0	69.5		
2.0	Cable weight (Approximate)	kg/km	2010	2225	2445	2795	3025	3330	3735	4275	4705	5400	6225	7260	8590	9900		
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	500	500	500	500	500	500	500	500	500	500		
4.0	Minimum bending radius of cable (During installation)	x Cable OD	20	20	20	20	20	20	20	20	20	20	20	20	20	20		
(B) Electrical Parameters																		
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291		
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.110	0.823	0.569	0.411	0.325	0.265	0.211	0.162	0.130	0.102	0.080	0.063	0.051	0.042		
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.160	0.153	0.142	0.135	0.130	0.127	0.123	0.118	0.115	0.110	0.107	0.103	0.100	0.097		
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.120	0.837	0.586	0.433	0.350	0.294	0.244	0.200	0.174	0.150	0.134	0.121	0.112	0.106		
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.940	1.450	1.015	0.750	0.606	0.509	0.423	0.346	0.301	0.260	0.232	0.210	0.194	0.184		
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.17	0.19	0.22	0.24	0.26	0.28	0.31	0.34	0.37	0.41	0.46	0.51	0.58	0.64		
7.0	Approximate charging current per phase at Uo=12 kV and f = 50 Hz	mA/m	0.64	0.72	0.83	0.90	0.98	1.06	1.17	1.28	1.39	1.55	1.73	1.92	2.19	2.41		
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																	
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	127	150	182	217	246	274	309	355	397	448	494	549	601	648		
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal r esistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	121	142	174	207	235	262	297	342	383	434	482	537	592	639		
8.3	Laid in air Ambient temp. 30°C	A	152	182	226	275	317	360	413	485	552	638	724	824	927	1020		
9.0	Short circuit current rating of conductor for 1 second	kA	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00		

Aluminium Conductor**Aluminium Conductor**

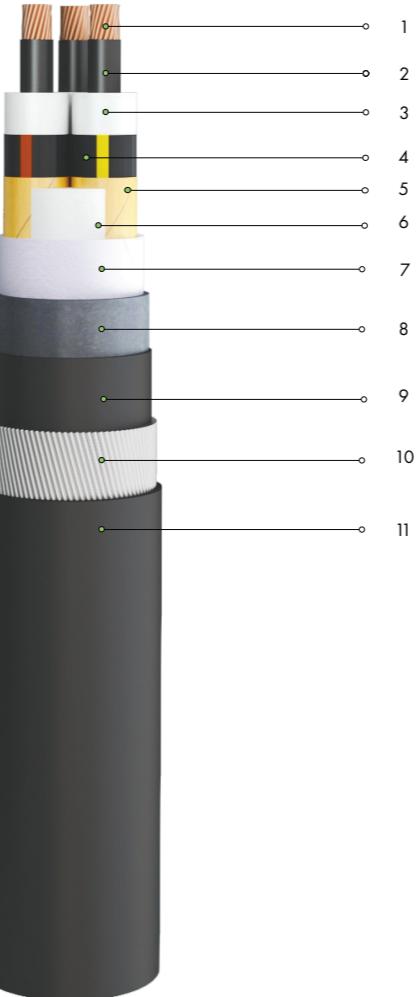
1 Core, Lead Sheathed armoured Cables, 18/30 (36) kV to IEC 60502-2												(Also suitable for 19/33 (36) kV Effectively Earthed system)					
Nominal Area of Conductor			50	70	95	120	150	185	240	300	400	500	630	800	1000		
(A) Manufacturing Dimensions																	
1.0	Cable overall diameter (Approximate)	mm	38.5	40.5	43.5	45.0	46.5	48.5	51.0	54.0	57.0	60.5	65.0	71.5	76.5		
2.0	Cable weight (Approximate)	kg/km	2865	3215	3600	3965	4205	4640	5090	5705	6455	7345	8455	10130	11555		
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	500	500	500	500	500	500	500	500	500	500	500	500	250		
4.0	Minimum bending radius of cable (During installation)	x Cable OD	20	20	20	20	20	20	20	20	20	20	20	20	20		
(B) Electrical Parameters																	
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291		
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.823	0.569	0.411	0.325	0.265	0.211	0.162	0.130	0.102	0.080	0.063	0.051	0.042		
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.162	0.151	0.145	0.139	0.135	0.130	0.125	0.121	0.116	0.112	0.108	0.106	0.103		
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.839	0.589	0.436	0.353	0.297	0.248	0.205	0.178	0.154	0.138	0.125	0.118	0.111		
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.453	1.020	0.755	0.611	0.514	0.430	0.355	0.308	0.267	0.239	0.217	0.204	0.192		
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.15	0.16	0.18	0.20	0.21	0.23	0.25	0.27	0.30	0.33	0.37	0.42	0.46		
7.0	Approximate charging current per phase at $U_0=18$ kV and $f = 50$ Hz	mA/m	0.85	0.90	1.02	1.13	1.19	1.30	1.41	1.53	1.70	1.87	2.09	2.38	2.60		
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	150	182	217	246	274	309	355	397	448	494	549	601	648		
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5°C m/W and Thermal resistivity of Earthenware duct = 1.2°C m/W , depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	142	174	207	235	262	297	342	383	434	482	537	592	639		
8.3	Laid in air Ambient temp. 30°C	A	182	226	275	317	360	413	485	552	638	724	824	927	1020		
9.0	Short circuit current rating of conductor for 1 second	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00		
(ii) Armour																	
1.0	DC resistance at 20 °C (Approximate)	ohm/km	0.270	0.249	0.194	0.183	0.178	0.168	0.155	0.148	0.138	0.127	0.117	0.085	0.080		
2.0	DC resistance at 80 °C (Approximate)	ohm/km	0.335	0.309	0.241	0.227	0.221	0.209	0.192	0.184	0.171	0.158	0.145	0.106	0.099		
3.0	Short circuit current rating of armour for 1 second (Approximate)	kA	9.60	10.40	13.34	14.17	14.59	15.42	16.67	17.50	18.75	20.42	22.09	30.44	32.42		

Application

Lead Sheathed Cables

Medium Voltage Cable

Up to 18/30 (36) kV, Multi Core

**Construction**

- Conductor Cu or Al
- Bare Copper/Aluminium stranded circular conductor according to class 2 of IEC 60228
- Conductor Screen semi conductive XLPE
- Insulation XLPE
- Insulation Screen Semi conductive XLPE
- Metallic Screen Copper Wire Screen (CWS) or Copper Tape (CUT)
- Filler (if required) PP yarns or Extruded filling
- Bedding/ Inner Covering Taped bedding/ Extruded Bedding
- Metallic Sheath Lead sheath
- Separation Sheath PVC or LSZH Extruded Separation sheath
- Armouring SWA Galvanized Steel Wire (SWA)
- Outer Sheath PVC or LSZH Flame retardant and/or Hydrocarbon resistant option available upon demand

Applicable Standards

IEC 60502-2	Design Specification
IEC 60228	Conductors
IEC 60332-1	Flame Retardant
IEC 60332-3-22 - Cat. A	Flame Retardant on Bunched Cables (if required)
IEC 60754-1, 2	Low Toxicity / Halogen Free Properties (if required)
IEC 61034-1, 2	Low Smoke Emission (if required)



Flame retardant
IEC 60332-1
IEC 60332-3-22 Cat. A (if required)



-5°C, 90 °C



Leaded



Standard Hydrocarbons
Resistance, GOOD



Excellent



LSZH/
FRLS PVC
(if required)



17 x Cable
OD (Min.)

Copper Conductor**Copper Conductor**

3 Core, Lead Sheathed armoured Cables, 3.6/6 (7.2) kV to IEC 60502-2												(Also suitable for 3.8/6.6 (7.2) kV Effectively Earthed system)	
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions													
1.0	Cable overall diameter (Approximate)	mm	42.5	45.0	48.5	52.5	56.5	60.0	63.5	67.5	75.0	81.5	89.5
2.0	Cable weight (Approximate)	kg/km	4745	5425	6275	7515	8970	10330	11565	13355	16985	20235	24535
3.0	Standard drum length (±5% Tolerance)	m	500	500	500	500	500	500	500	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters													
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.928	0.669	0.494	0.343	0.248	0.197	0.160	0.129	0.099	0.081	0.065
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.114	0.109	0.104	0.096	0.092	0.089	0.087	0.084	0.082	0.081	0.079
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.935	0.678	0.505	0.356	0.265	0.216	0.182	0.154	0.129	0.115	0.102
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.619	1.174	0.875	0.617	0.459	0.374	0.315	0.267	0.223	0.199	0.177
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.29	0.33	0.37	0.42	0.48	0.53	0.57	0.62	0.68	0.69	0.73
7.0	Approximate charging current per phase at Uo=3.6 kV and f = 50 Hz	mA/m	0.33	0.37	0.42	0.48	0.54	0.60	0.64	0.70	0.77	0.78	0.83
8.0	Sustained current ratings (Laid Singly):												
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	129	154	181	220	263	298	332	374	431	482	541
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	112	134	158	194	232	264	296	335	387	435	492
8.3	Laid in air Ambient temp. 30°C	A	143	172	205	253	307	352	397	453	529	599	683
9.0	Short circuit current rating of conductor for 1 second	kA	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Copper Conductor**Copper Conductor**

3 Core, Lead Sheathed armoured Cables, 6/10 (12) kV to IEC 60502-2													(Also suitable for 6.35/11 (12) kV Effectively Earthed system)	
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400		
(A) Manufacturing Dimensions														
1.0	Cable overall diameter (Approximate)	mm	47.0	49.5	52.5	56.5	60.5	64.5	69.0	73.0	78.5	84.0	91.5	
2.0	Cable weight (Approximate)	kg/km	5465	6165	7065	8320	9835	11245	13350	15250	18000	20860	24950	
3.0	Standard drum length (±5% Tolerance)	m	500	500	500	500	500	500	500	500	250	250	250	
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17	
(B) Electrical Parameters														
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470	
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.928	0.669	0.494	0.343	0.247	0.197	0.160	0.129	0.099	0.080	0.065	
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.122	0.116	0.111	0.102	0.098	0.094	0.092	0.089	0.086	0.083	0.081	
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.936	0.679	0.506	0.358	0.266	0.218	0.185	0.157	0.131	0.115	0.104	
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.621	1.176	0.876	0.620	0.461	0.378	0.320	0.272	0.227	0.199	0.180	
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.23	0.25	0.28	0.32	0.36	0.40	0.43	0.47	0.53	0.58	0.65	
7.0	Approximate charging current per phase at Uo = 6 kV and f = 50 Hz	mA/m	0.43	0.47	0.53	0.60	0.68	0.75	0.81	0.89	1.00	1.09	1.23	
8.0	Sustained current ratings (Laid Singly):													
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	129	154	181	220	263	298	332	374	431	482	541	
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	112	134	158	194	232	264	296	335	387	435	492	
8.3	Laid in air Ambient temp. 30°C	A	143	172	205	253	307	352	397	453	529	599	683	
9.0	Short circuit current rating of conductor for 1 second	kA	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20	

Copper Conductor**Copper Conductor****3 Core, Lead Sheathed armoured Cables, 8.7/15 (17.5) kV to IEC 60502-2**

Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions													
1.0	Cable overall diameter (Approximate)	mm	52.0	54.5	57.5	61.0	65.5	70.5	74.0	78.0	83.5	89.0	96.5
2.0	Cable weight (Approximate)	kg/km	6460	7110	8040	9320	10870	13040	14510	16460	19345	22535	26710
3.0	Standard drum length (±5% Tolerance)	m	500	500	500	500	500	500	250	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters													
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.928	0.669	0.494	0.343	0.247	0.197	0.160	0.129	0.099	0.080	0.064
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.130	0.124	0.118	0.109	0.104	0.100	0.097	0.094	0.090	0.088	0.085
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.937	0.680	0.508	0.360	0.268	0.221	0.187	0.160	0.134	0.119	0.106
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.623	1.178	0.880	0.624	0.464	0.383	0.324	0.277	0.232	0.206	0.184
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.19	0.20	0.23	0.26	0.29	0.31	0.34	0.37	0.41	0.45	0.50
7.0	Approximate charging current per phase at Uo=8.7 kV and f = 50 Hz	mA/m	0.52	0.55	0.63	0.71	0.79	0.85	0.93	1.01	1.12	1.23	1.37
8.0	Sustained current ratings (Laid Singly):												
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	129	154	181	220	263	298	332	374	431	482	541
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	112	134	158	194	232	264	296	335	387	435	492
8.3	Laid in air Ambient temp. 30°C	A	143	172	205	253	307	352	397	453	529	599	683
9.0	Short circuit current rating of conductor for 1 second	kA	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Copper Conductor**Copper Conductor**

3 Core, Lead Sheathed armoured Cables, 12/20 (24) kV to IEC 60502-2												(Also suitable for 12.7/22 (24) kV Effectively Earthed system)
Nominal Area of Conductor		35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions												
1.0	Cable overall diameter (Approximate)	mm	59.0	62.0	66.0	71.5	75.0	78.5	82.5	88.5	94.0	101.0
2.0	Cable weight (Approximate)	kg/km	8150	9155	10530	12760	14150	15750	17725	20870	23905	28235
3.0	Standard drum length (±5% Tolerance)	m	500	500	500	500	250	250	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters												
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.669	0.494	0.343	0.247	0.196	0.160	0.128	0.099	0.080	0.064
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.130	0.124	0.114	0.109	0.105	0.102	0.098	0.094	0.091	0.088
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.682	0.509	0.361	0.270	0.222	0.190	0.161	0.137	0.121	0.109
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.181	0.882	0.625	0.468	0.385	0.329	0.279	0.237	0.210	0.189
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.18	0.20	0.22	0.25	0.27	0.29	0.31	0.35	0.38	0.42
7.0	Approximate charging current per phase at Uo=12 kV and f = 50 Hz	mA/m	0.68	0.75	0.83	0.94	1.02	1.09	1.17	1.32	1.43	1.58
8.0	Sustained current ratings (Laid Singly):											
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	154	181	220	263	298	332	374	431	482	541
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	134	158	194	232	264	296	335	387	435	492
8.3	Laid in air Ambient temp. 30°C	A	172	205	253	307	352	397	453	529	599	683
9.0	Short circuit current rating of conductor for 1 second	kA	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Copper Conductor

3 Core, Lead Sheathed armoured Cables, 18/30 (36) kV to IEC 60502-2 (Also suitable for 19/33 (36) kV Effectively Earthed system)											
Nominal Area of Conductor		50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions											
1.0	Cable overall diameter (Approximate)	mm	74.5	78.5	83.0	86.5	90.0	94.0	99.5	105.0	112.5
2.0	Cable weight (Approximate)	kg/km	12580	14120	15925	17605	19295	21385	24540	27710	32245
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	250	250	250	250	250	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters											
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.494	0.343	0.247	0.196	0.160	0.128	0.098	0.080	0.064
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.137	0.126	0.120	0.115	0.112	0.107	0.103	0.100	0.096
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.513	0.365	0.275	0.227	0.195	0.167	0.142	0.128	0.115
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	0.889	0.632	0.476	0.393	0.338	0.289	0.246	0.222	0.199
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.15	0.17	0.19	0.20	0.22	0.23	0.26	0.28	0.31
7.0	Approximate charging current per phase at $U_0=18$ kV and $f = 50$ Hz	mA/m	0.85	0.96	1.07	1.13	1.24	1.30	1.47	1.58	1.75
8.0	Sustained current ratings (Laid Singly):										
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	181	220	263	298	332	374	431	482	541
8.2	Drawn into ducts, ground temp. = 20°C , Thermal resistivity of soil = 1.5°C m/W and Thermal resistivity of Earthenware duct = 1.2°C m/W , depth of laying = 0.8 m	A	158	194	232	264	296	335	387	435	492
8.3	Laid in air Ambient temp. 30°C	A	205	253	307	352	397	453	529	599	683
9.0	Short circuit current rating of conductor for 1 second	kA	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Aluminium Conductor**Aluminium Conductor**

3 Core, Lead Sheathed armoured Cables, 3.6/6 (7.2) kV to IEC 60502-2												(Also suitable for 3.8/6.6 (7.2) kV Effectively Earthed system)	
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions													
1.0	Cable overall diameter (Approximate)	mm	42.5	45.0	48.5	52.5	56.5	60.0	63.5	67.5	75.0	81.5	89.5
2.0	Cable weight (Approximate)	kg/km	4290	4790	5420	6295	7250	8150	8880	10000	12545	14670	17445
3.0	Standard drum length (±5% Tolerance)	m	500	500	500	500	500	500	500	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters													
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.540	1.110	0.823	0.569	0.411	0.326	0.266	0.212	0.162	0.131	0.103
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.114	0.109	0.104	0.096	0.092	0.089	0.087	0.084	0.082	0.081	0.079
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.540	1.120	0.830	0.577	0.421	0.338	0.280	0.228	0.182	0.154	0.130
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	2.667	1.940	1.438	0.999	0.729	0.585	0.485	0.395	0.315	0.267	0.225
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.29	0.33	0.37	0.42	0.48	0.53	0.57	0.62	0.68	0.69	0.73
7.0	Approximate charging current per phase at Uo=3.6 kV and f = 50 Hz	mA/m	0.33	0.37	0.42	0.48	0.54	0.60	0.64	0.70	0.77	0.78	0.83
8.0	Sustained current ratings (Laid Singly):												
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	100	119	140	171	204	232	259	293	338	380	432
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal r esistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	87	104	123	150	180	206	231	262	304	343	393
8.3	Laid in air Ambient temp. 30°C	A	111	133	159	196	238	274	309	354	415	472	545
9.0	Short circuit current rating of conductor for 1 second	kA	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

Aluminium Conductor**Aluminium Conductor**

3 Core, Lead Sheathed armoured Cables, 6/10 (12) kV to IEC 60502-2												(Also suitable for 6.35/11 (12) kV Effectively Earthed system)	
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions													
1.0	Cable overall diameter (Approximate)	mm	47.0	49.5	52.5	56.5	60.5	64.5	69.0	73.0	78.5	84.0	91.5
2.0	Cable weight (Approximate)	kg/km	5010	5530	6215	7095	8110	9060	10660	11895	13560	15295	17860
3.0	Standard drum length (±5% Tolerance)	m	500	500	500	500	500	500	500	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters													
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.540	1.110	0.823	0.569	0.411	0.326	0.266	0.212	0.162	0.131	0.103
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.122	0.116	0.111	0.102	0.098	0.094	0.092	0.089	0.086	0.083	0.081
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.540	1.120	0.830	0.578	0.423	0.339	0.281	0.230	0.183	0.155	0.131
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	2.667	1.940	1.438	1.001	0.733	0.587	0.487	0.398	0.317	0.268	0.227
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.23	0.25	0.28	0.32	0.36	0.40	0.43	0.47	0.53	0.58	0.65
7.0	Approximate charging current per phase at Uo=6 kV and f = 50 Hz	mA/m	0.43	0.47	0.53	0.60	0.68	0.75	0.81	0.89	1.00	1.09	1.23
8.0	Sustained current ratings (Laid Singly):												
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	100	119	140	171	204	232	259	293	338	380	432
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	87	104	123	150	180	206	231	262	304	343	393
8.3	Laid in air Ambient temp. 30°C	A	111	133	159	196	238	274	309	354	415	472	545
9.0	Short circuit current rating of conductor for 1 second	kA	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

Aluminium Conductor**Aluminium Conductor****3 Core, Lead Sheathed armoured Cables, 8.7/15 (17.5) kV to IEC 60502-2**

Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions													
1.0	Cable overall diameter (Approximate)	mm	52.0	54.5	57.5	61.0	65.5	70.5	74.0	78.0	83.5	89.0	96.5
2.0	Cable weight (Approximate)	kg/km	6005	6475	7185	8095	9150	10860	11820	13105	14910	16970	19625
3.0	Standard drum length (±5% Tolerance)	m	500	500	500	500	500	500	250	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters													
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.540	1.110	0.823	0.569	0.411	0.326	0.265	0.212	0.162	0.131	0.103
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.130	0.124	0.118	0.109	0.104	0.100	0.097	0.094	0.090	0.088	0.085
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.550	1.120	0.831	0.579	0.424	0.341	0.282	0.232	0.185	0.158	0.134
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	2.685	1.940	1.439	1.003	0.734	0.591	0.488	0.402	0.320	0.274	0.232
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.19	0.20	0.23	0.26	0.29	0.31	0.34	0.37	0.41	0.45	0.50
7.0	Approximate charging current per phase at Uo=8.7 kV and f = 50 Hz	mA/m	0.52	0.55	0.63	0.71	0.79	0.85	0.93	1.01	1.12	1.23	1.37
8.0	Sustained current ratings (Laid Singly):												
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	100	119	140	171	204	232	259	293	338	380	432
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	87	104	123	150	180	206	231	262	304	343	393
8.3	Laid in air Ambient temp. 30°C	A	111	133	159	196	238	274	309	354	415	472	545
9.0	Short circuit current rating of conductor for 1 second	kA	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

Aluminium Conductor

3 Core, Lead Sheathed armoured Cables, 12/20 (24) kV to IEC 60502-2 (Also suitable for 12.7/22 (24) kV Effectively Earthed system)												
Nominal Area of Conductor		35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions												
1.0	Cable overall diameter (Approximate)	mm	59.0	62.0	66.0	71.5	75.0	78.5	82.5	88.5	94.0	101.0
2.0	Cable weight (Approximate)	kg/km	7515	8300	9310	11035	11970	13060	14370	16435	18340	21145
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	500	500	500	500	250	250	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters												
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.110	0.823	0.569	0.411	0.325	0.265	0.212	0.162	0.130	0.103
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.130	0.124	0.114	0.109	0.105	0.102	0.098	0.094	0.091	0.088
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.120	0.832	0.580	0.425	0.342	0.284	0.234	0.187	0.159	0.135
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.940	1.441	1.005	0.736	0.592	0.492	0.405	0.324	0.275	0.234
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.18	0.20	0.22	0.25	0.27	0.29	0.31	0.35	0.38	0.42
7.0	Approximate charging current per phase at $U_0=12$ kV and $f = 50$ Hz	mA/m	0.68	0.75	0.83	0.94	1.02	1.09	1.17	1.32	1.43	1.58
8.0	Sustained current ratings (Laid Singly):											
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	119	140	171	204	232	259	293	338	380	432
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	104	123	150	180	206	231	262	304	343	393
8.3	Laid in air Ambient temp. 30°C	A	133	159	196	238	274	309	354	415	472	545
9.0	Short circuit current rating of conductor for 1 second	kA	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

Aluminium Conductor

3 Core, Lead Sheathed armoured Cables, 18/30 (36) kV to IEC 60502-2 (Also suitable for 19/33 (36) kV Effectively Earthed system)												
Nominal Area of Conductor		50	70	95	120	150	185	240	300	400		
(A) Manufacturing Dimensions												
1.0	Cable overall diameter (Approximate)	mm	74.5	78.5	83.0	86.5	90.0	94.0	99.5	105.0	112.5	
2.0	Cable weight (Approximate)	kg/km	11725	12895	14200	15425	16605	18025	20105	22145	25160	
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	250	250	250	250	250	250	250	250	250	
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	
(B) Electrical Parameters												
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778	
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.823	0.569	0.411	0.325	0.265	0.212	0.162	0.130	0.102	
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.137	0.126	0.120	0.115	0.112	0.107	0.103	0.100	0.096	
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.834	0.583	0.428	0.345	0.288	0.237	0.192	0.164	0.140	
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.445	1.010	0.741	0.598	0.499	0.410	0.333	0.284	0.242	
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.15	0.17	0.19	0.20	0.22	0.23	0.26	0.28	0.31	
7.0	Approximate charging current per phase at $U_0=18$ kV and $f = 50$ Hz	mA/m	0.85	0.96	1.07	1.13	1.24	1.30	1.47	1.58	1.75	
8.0	Sustained current ratings (Laid Singly):											
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	140	171	204	232	259	293	338	380	432	
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	123	150	180	206	231	262	304	343	393	
8.3	Laid in air Ambient temp. 30°C	A	159	196	238	274	309	354	415	472	545	
9.0	Short circuit current rating of conductor for 1 second	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	

Lead Sheathed Cables

Cable Line-up

Lead Sheathed Cables



Control Cable

Low Voltage
Single Core

Low Voltage
Multi Core

Medium Voltage
Single Core

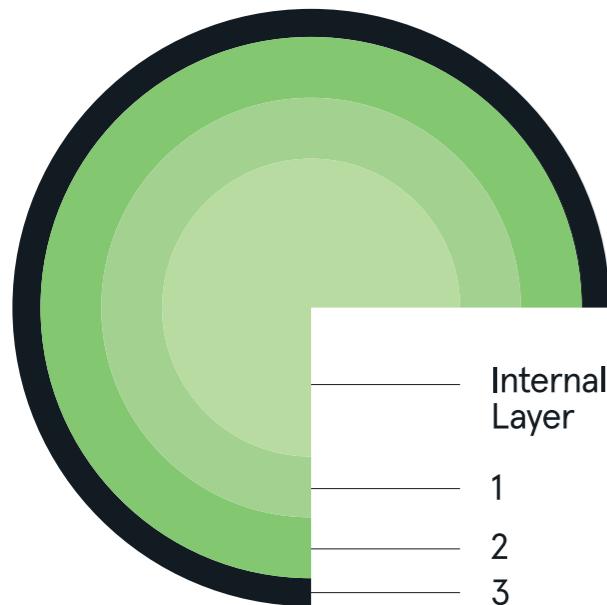
Medium Voltage
Multi Core

DRYLAM™ Cables

2

DRYLAM™ Cables

The following section will provide some specifications and explanations for the **DRYLAM™** Sheathing System alternative to lead.



Design of DRYLAM™ Cables

DRYLAM™ Sheathing System is the smart combination of three main layers, described below and represents an innovative solution to protect cables installed in harsh petrochemical environments:

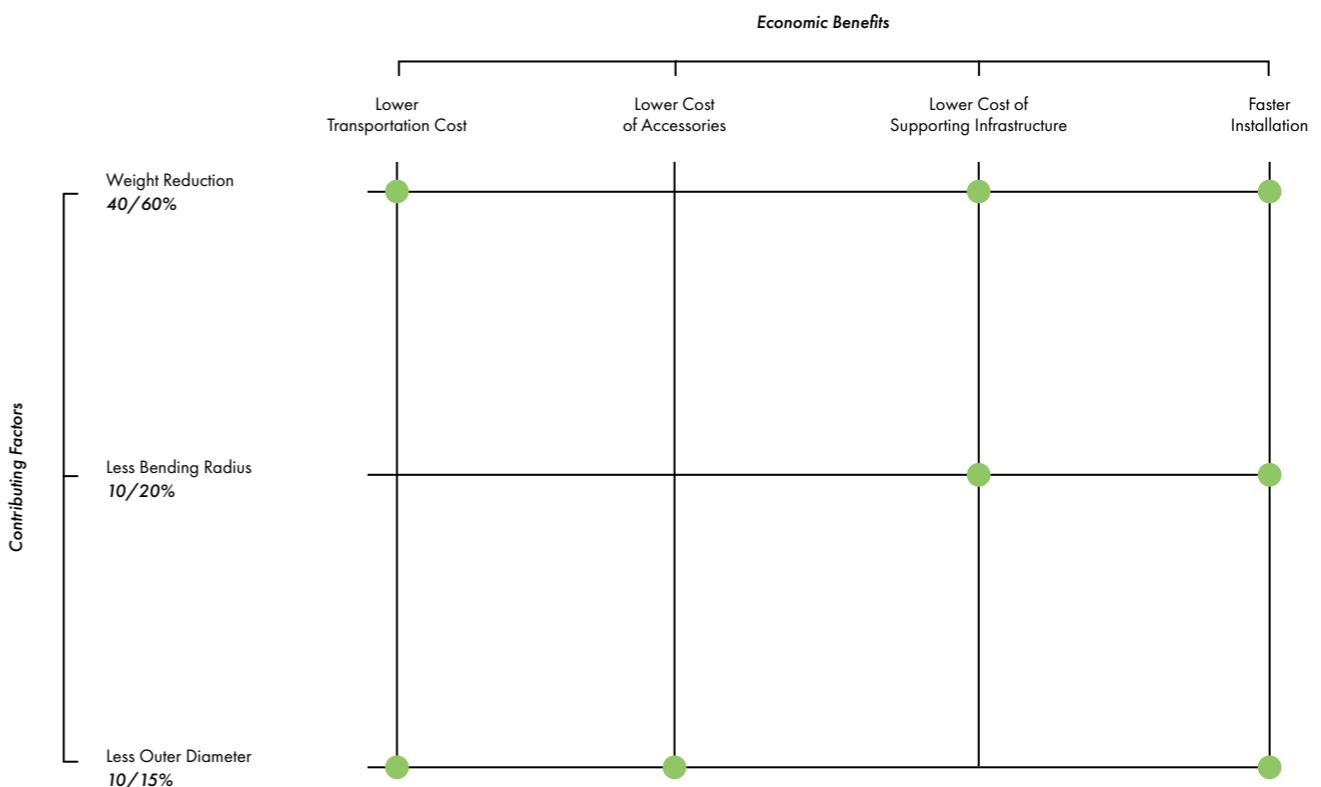
1. Longitudinal polyethylene aluminum tape (PE-AL-PE).
2. Extruded polyethylene (PE) jacket that prevents moisture penetration (in combination with PE-AL-PE Layer) into the cable cores and avoids the occurrence of water treeing effect. This layer is bonded to the PE-AL-PE and provides the necessary protection to the cable cores from any inorganic chemicals such as bases and acids. In addition, the Aluminium tape provides protection against Electro Magnetic Interference.
3. Modified polyamide (MPA)
This thermoplastic MPA is extruded and adheres to the overlaying layers. This material is highly resistant to organic chemicals such as hydro-carbons and solvents providing also termite proof and rodent resistant properties in case of non armoured cables.

Main features

- Corrosion Resistance
- Mechanical Properties
Bonded PE jacket to PE/AL/PE tape generates a synergistic effect where strength of shielding tape is combined with flexibility of polyethylene. Results are: improved bend performance, superior resistance to thermal shrinkage, increased crush resistance, higher flexural strength and greater tensile strength.
- Electrical Properties
Aluminium tape closely matches screening effectiveness of 2 mm thick lead and provides protection against Electro Magnetic Interference, while external steel armour improves reduction factor values. These cables can be low smoke and sometimes zero halogen with addition of the LSZH outer sheath and can be defined as environmentally friendly cables as they are lead free and without toxicological effect.

Benefits

Compared to conventional lead sheathed cables the **DRYLAM™** Sheathing System allows considerable direct savings, approximately - 15/20% compared to lead sheathed cables. Additional TCO saving impacts are granted as a consequence of design characteristics, such as smaller cables diameter and weight allowing for longer drum lengths and hence a less number of joints.



Visual representation of different Oil & Gas environments and the appropriate design of the alternative protection layer of the alternative lead cable.

Agent		Solution
	Moisture	The presence of water molecules in this environment
	Acids & Bases	H ₂ SO ₄ , HCl, NaOH
	Hydrocarbons	Toluene, IRM Oils (902, 903), Oil Type I & II (UL1581)
		Laminated Foil PE-AL-PE foil layer
		HDPE High density polyethylene layer
		Modified Polyamide MPA

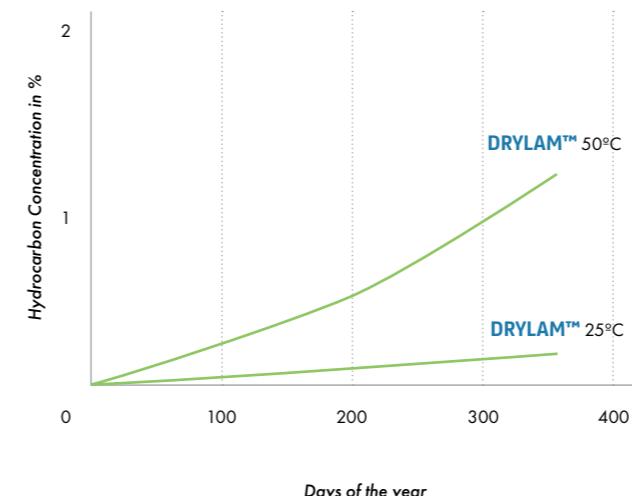
Agent	Impact	Application	Solution
	Reduction of Electrical Properties	Plants in Wet Environment	
	Temp < 60°C no big effect even on PVC	Oil & Gas plants with hydrocarbons presence with temp < 60°C	+
	Temp > 60°C -Swelling of PE -Sponge Fragility	Oil & Gas plants with hydrocarbons presence with temp > 60°C	+
	Weight Loss Degradation Dicolouration	Chemical Plants (fertilizers, ammonia, etc)	+
	All of the Above	All types of Plants	+ +

Tests

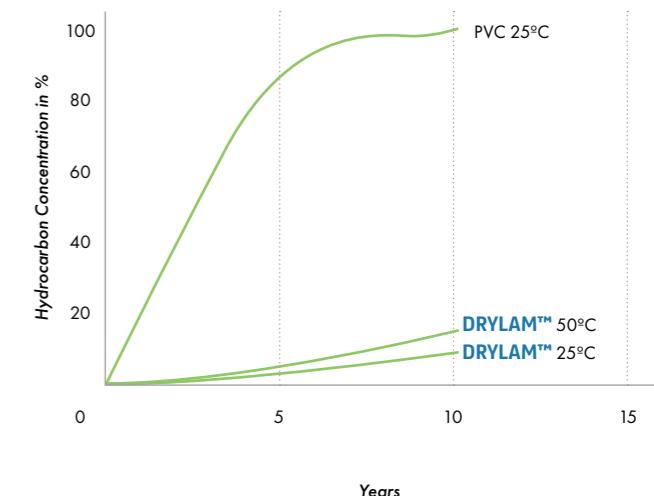
A comprehensive number of tests have ensured the high performance of the **DRYLAM™** Sheathing System in Oil & Gas applications, as an alternative to the conventional lead sheathing system, and they are as follow:

- Flame Retardant test, achieved by IEC 60332-3-22 Category A.
- Hydrocarbons concentration immersion test.

Hydrocarbon Concentration Inside Cable (First Year)



Hydrocarbon Concentration Inside Cable DRYLAM™ vs PVC



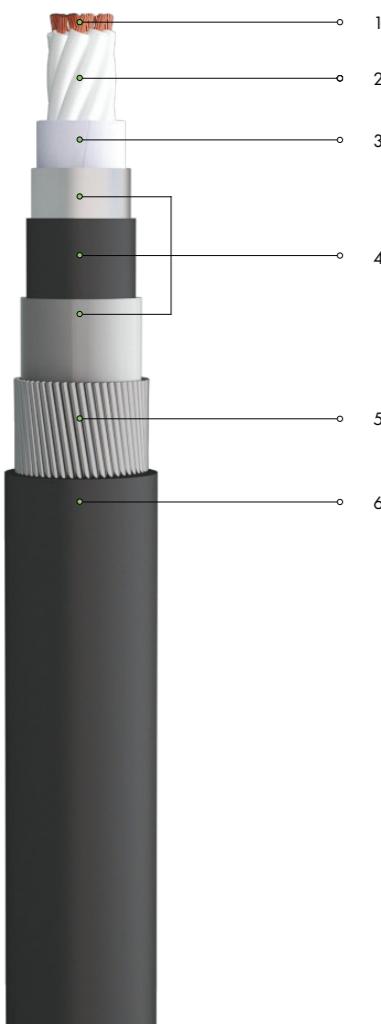
Hydrocarbons Resistance

Immersion Time	Concentration inside cable core	
	at 25°C	at 50°C
1 Week	0%	0%
1 Month	0%	0%
1 Year	0.04%	0.90%
10 Years	1.40%	7.50%

(Calculated Data)

DRYLAM™ Control Cable

(0.6/1 kV)



Application

DRYLAM is Lead free solution of Lead Sheathed Cables and its application is similar to the Lead sheathed cables for underground application in the oil, gas, petroleum and chemical industries. DRYLAM Layer protects the cables insulation from sulfides, water, Oils, hydrocarbon and any corrosive chemicals found in the ground water. For carrying signals from electrical devices, switchgears, etc. to control room (Up to 1 KV).

Construction

- Conductor Cu**
Bare copper stranded circular conductor
- Insulation XLPE**
- Bedding/ Inner Covering**
Taped bedding / Extruded Bedding
- DRYLAM™ Sheathing Layer**
(PE-AL-PE + PE + MPA)
- Armouring SWA**
Galvanized Steel Wire (SWA)
- Outer Sheath PVC or LSZH**
Flame retardant and/or Hydrocarbon resistant option available upon demand

Applicable Standards

IEC 60502-1	Design Specification Conductors
IEC 60228	
IEC 60332-1	Flame Retardant
IEC 60332-3-22 - Cat. A	Flame Retardant on Bunched Cables (if required)
IEC 60754-1, 2	Low Toxicity / Halogen Free Properties (if required)
IEC 61034-1, 2	Low Smoke Emission (if required)

Copper Conductor

1.5 mm², Drylam Control armoured Cables, 0.6/1 kV to IEC 60502-1

Number of cores	6	7	9	12	19	21	27	37	48	
(A) Manufacturing Dimensions										
1.0 Cable overall diameter (Approximate)	mm	19.5	19.5	22.0	23.5	26.5	28.0	30.5	33.0	37.0
2.0 Cable weight (Approximate)	kg/km	565	575	780	875	1110	1310	1520	1805	2175
3.0 Standard drum length ($\pm 5\%$ Tolerance)	m	1000	1000	1000	1000	1000	1000	500	500	500
4.0 Minimum bending radius of cable (During installation)	x Cable OD	13	13	13	13	13	13	13	13	13
(B) Electrical Parameters										
1.0 DC resistance of conductor at 20°C (Max)	ohm/km	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1
2.0 AC resistance of conductor at 90°C (Approximate)	ohm/km	15.430	15.430	15.430	15.430	15.430	15.430	15.430	15.430	15.430
3.0 Reactance at 50 Hz (Approximate)	ohm/km	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108
4.0 Impedance at 50 Hz (Approximate)	ohm/km	15.43	15.43	15.43	15.43	15.43	15.43	15.43	15.43	15.43
5.0 Voltage drop (Approximate for 1 phase system)	v/amp/km	30.86	30.86	30.86	30.86	30.86	30.86	30.86	30.86	30.86
6.0 Sustained current ratings: (Laid Singly)										
6.1 Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	22	21	19	17	15	14	13	11	10
6.2 Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	18	17	15	14	12	11	10	9	8
6.3 Laid in air Ambient temp. 50°C	A	16	15	14	12	11	10	9	8	7
7.0 Short circuit current rating of conductor for 1 second	kA	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22



Flame retardant
IEC 60332-1



-5°C, 90 °C



Lead Free



Standard Hydrocarbons
Resistance, GOOD



Excellent



LSZH/
FRLS PVC
(If required)



13 x Cable
OD (Min.)

IEC 60332-3-22 Cat. A (if required)

Copper Conductor

2.5 mm ² , Drylam Control armoured Cables, 0.6/1 kV to IEC 60502-1											
Number of cores		6	7	9	12	19	21	27	37	48	
(A) Manufacturing Dimensions											
1.0	Cable overall diameter (Approximate)	mm	21.5	21.5	24.0	25.5	29.0	30.5	33.0	36.5	41.5
2.0	Cable weight (Approximate)	kg/km	750	770	915	1055	1490	1600	1865	2280	3015
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	500	500	500	500	500
4.0	Minimum bending radius of cable (During installation)	x Cable OD	13	13	13	13	13	13	13	13	13
(B) Electrical Parameters											
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	7.41	7.41	7.41	7.41	7.41	7.41	7.41	7.41	7.41
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	9.45	9.45	9.45	9.45	9.45	9.45	9.45	9.45	9.45
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101
4.0	Impedance at 50 Hz (Approximate)	ohm/km	9.45	9.45	9.45	9.45	9.45	9.45	9.45	9.45	9.45
5.0	Voltage drop (Approximate for 1 phase system)	v/amp/km	18.90	18.90	18.90	18.90	18.90	18.90	18.90	18.90	18.90
6.0	Sustained current ratings (Laid Singly):										
6.1	Laid direct, Ground temp. = 35 °C & Thermal resistivity of soil = 1.2 °C m/W, depth of laying = 0.5 m,	A	28	26	24	22	18	18	16	14	13
6.2	Drawn into earthenware ducts, ground temp. = 35 °C, Thermal resistivity of soil = 1.2 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.5 m	A	23	22	20	18	15	15	13	12	11
6.3	Laid in air, Ambient temp. = 50 °C	A	21	20	18	17	14	14	12	11	10
7.0	Short circuit current rating of conductor for 1 second	kA	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36

Copper Conductor

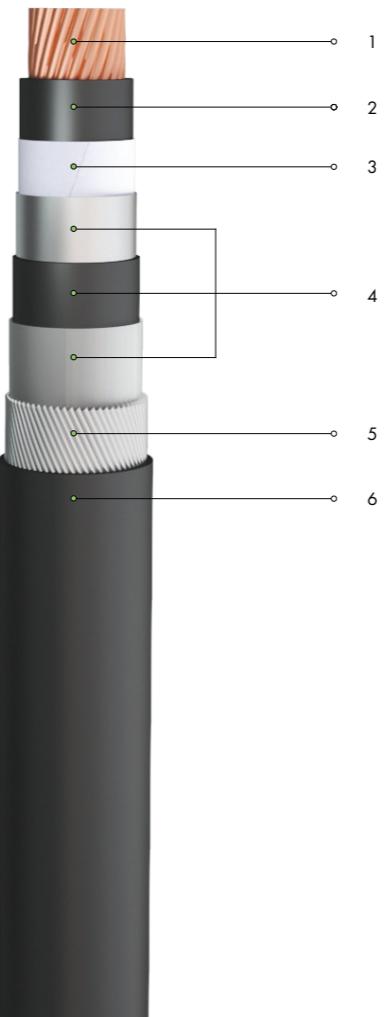
4 mm ² , Drylam Control armoured Cables, 0.6/1 kV to IEC 60502-1											
Number of cores		6	7	9	12	19	21	27	37	48	
(A) Manufacturing Dimensions											
1.0	Cable overall diameter (Approximate)	mm	23.0	23.0	25.5	28.5	31.5	33.0	36.5	41.0	46.5
2.0	Cable weight (Approximate)	kg/km	890	920	1120	1420	1860	2005	2385	3200	3940
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	500	500	500	500	500
4.0	Minimum bending radius of cable (During installation)	x Cable OD	13	13	13	13	13	13	13	13	13
(B) Electrical Parameters											
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
4.0	Impedance at 50 Hz (Approximate)	ohm/km	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88	5.88
5.0	Voltage drop (Approximate for 1 phase system)	v/amp/km	11.76	11.76	11.76	11.76	11.76	11.76	11.76	11.76	11.76
6.0	Sustained current ratings (Laid Singly):										
6.1	Laid direct, Ground temp. = 35 °C & Thermal resistivity of soil = 1.2 °C m/W, depth of laying = 0.5 m,	A	38	35	32	29	25	24	21	19	17
6.2	Drawn into earthenware ducts, ground temp. = 35 °C, Thermal resistivity of soil = 1.2 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.5 m	A	31	29	26	24	20	20	17	16	14
6.3	Laid in air, Ambient temp. = 50 °C	A	29	27	25	22	19	18	16	15	13
7.0	Short circuit current rating of conductor for 1 second	kA	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57

Application

DRYLAM is Lead free solution of Lead Sheathed Cables and its application is similar to the Lead sheathed cables for underground application in the oil, gas, petroleum and chemical industries. DRYLAM Layer protects the cables insulation from sulfides, water, Oils, hydrocarbon and any corrosive chemicals found in the ground water. For power distribution substations, industrial applications to distribution electric panels, etc. (Up to 1 KV)

DRYLAM™ Low Voltage Cable

(0.6/1 kV), Single Core



Construction

1. **Conductor Cu or Al**
Bare Copper/Aluminium stranded circular conductor according to class 2 of IEC 60228
2. **Insulation XLPE**
3. **Bedding/ Inner Covering**
Taped bedding/ Extruded Bedding
4. **DRYLAM™ Sheathing Layer**
(PE-AL-PE + PE + MPA)
5. **Armouring AWA**
Aluminium Wire Armour (AWA)
6. **Outer Sheath PVC or LSZH**
Flame retardant and/or Hydrocarbon resistant option available upon demand

Applicable Standards

IEC 60502-1	Design Specification
IEC 60228	Conductors
IEC 60332-1	Flame Retardant
IEC 60332-3-22 - Cat. A	Flame Retardant on Bunched Cables (if required)
IEC 60754-1, 2	Low Toxicity / Halogen Free Properties (if required)
IEC 61034-1, 2	Low Smoke Emission (if required)



Copper Conductor**Copper Conductor**

1 Core, Drylam armoured Cables, 0.6/1 kV to IEC 60502-1																			
Nominal Area of Conductor		10	16	25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000	
(A) Manufacturing Dimensions																			
1.0	Cable overall diameter (Approximate)	mm	15.0	16.0	17.5	18.5	20.5	22.5	24.5	27	28.5	31	33.5	36	40.5	44.5	49	54.5	59.5
2.0	Cable weight (Approximate)	kg/km	305	375	490	595	775	1000	1285	1610	1900	2300	2895	3505	4450	5600	7055	9025	11085
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	1000	1000	500	500	500	500	500	500	500	500
4.0	Minimum bending radius of cable (During installation)	x Cable OD	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
(B) Electrical Parameters																			
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.8300	1.1500	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	2.330	1.470	0.928	0.669	0.494	0.343	0.247	0.196	0.160	0.128	0.099	0.080	0.064	0.051	0.042	0.035	0.030
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.146	0.139	0.132	0.126	0.122	0.114	0.109	0.107	0.105	0.102	0.098	0.096	0.094	0.093	0.091	0.089	0.088
4.0	Impedance at 50 Hz (Approximate)	ohm/km	2.330	1.480	0.937	0.681	0.509	0.361	0.270	0.223	0.191	0.164	0.139	0.125	0.114	0.106	0.100	0.096	0.093
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	4.036	2.563	1.623	1.180	0.882	0.625	0.468	0.386	0.331	0.284	0.241	0.217	0.197	0.184	0.173	0.166	0.161
6.0	Sustained current ratings: (Three single core cables laid in trefoil formation)																		
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	82	108	139	165	199	244	292	332	371	417	480	536	594	658	723	764	810
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	78	101	134	154	199	239	281	315	341	376	421	459	488	529	571	595	632
6.3	Laid in air Ambient temp. 50°C	A	67	92	123	146	180	230	282	328	377	433	510	581	664	751	846	919	997
7.0	Short circuit current rating of conductor for 1 second	kA	1.43	2.29	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20	71.50	90.09	114.40	143.00

Aluminium Conductor**Aluminium Conductor**

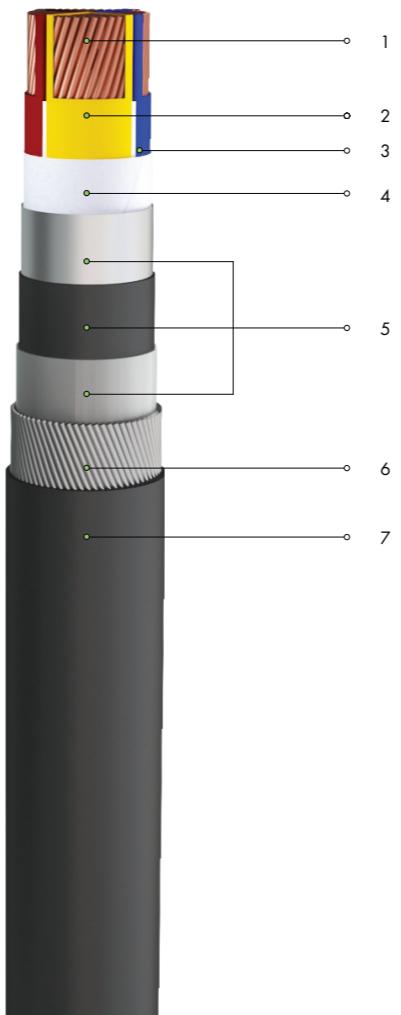
1 Core, Drylam armoured Cables, 0.6/1 kV to IEC 60502-1																		
Nominal Area of Conductor		16	25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000	
(A) Manufacturing Dimensions																		
1.0	Cable overall diameter (Approximate)	mm	16	17.5	18.5	20.5	22.5	24.5	27	28.5	31	33.5	36	40.5	44.5	49	54.5	59.5
2.0	Cable weight (Approximate)	kg/km	275	340	385	495	595	715	890	1010	1190	1425	1660	2105	2570	3145	3980	4775
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	500	500	500	500	500	500	500	500	
4.0	Minimum bending radius of cable (During installation)	x Cable OD	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
(B) Electrical Parameters																		
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.9100	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	2.450	1.540	1.110	0.823	0.569	0.411	0.325	0.265	0.212	0.162	0.130	0.102	0.081	0.064	0.052	0.043
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.139	0.132	0.126	0.122	0.114	0.109	0.107	0.105	0.102	0.098	0.096	0.094	0.093	0.091	0.089	0.088
4.0	Impedance at 50 Hz (Approximate)	ohm/km	2.450	1.550	1.120	0.832	0.580	0.425	0.342	0.285	0.235	0.189	0.162	0.139	0.123	0.111	0.103	0.098
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	4.244	2.685	1.940	1.441	1.005	0.736	0.592	0.494	0.407	0.327	0.281	0.241	0.213	0.192	0.178	0.170
6.0	Sustained current ratings: (Three single core cables laid in trefoil formation)																	
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	84	109	127	152	187	224	255	285	322	372	418	481	534	589	649	706
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	79	103	123	153	186	219	248	271	301	341	377	415	451	485	520	559
6.3	Laid in air Ambient temp. 50°C	A	72	94	118	135	172	211	245	282	325	385	441	526	595	672	760	843
7.0	Short circuit current rating of conductor for 1 second	kA	1.50	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00

DRYLAM™ Low Voltage Cable

(0.6/1 kV), Multi Core

Application

DRYLAM is Lead free solution of Lead Sheathed Cables and its application is similar to the Lead sheathed cables for underground application in the oil, gas, petroleum and chemical industries. DRYLAM Layer protects the cables insulation from sulfides, water, Oils, hydrocarbon and any corrosive chemicals found in the ground water. For power distribution substations, industrial applications to distribution electric panels, etc. (Up to 1 KV)



Construction

1. **Conductor Cu or Al**
Bare Copper/Aluminium stranded circular or sector shaped conductor according to class 2 of IEC 60228
2. **Insulation XLPE**
3. **Filler (if required)**
PP yarns or Extruded filling
4. **Bedding/ Inner Covering**
Taped bedding/ Extruded Bedding
5. **DRYLAM™ Sheathing Layer**
(PE-AL-PE + PE + MPA)
6. **Armouring SWA**
Galvanized Steel Wire (SWA)
7. **Outer Sheath PVC or LSZH**
Flame retardant and/or Hydrocarbon resistant option available upon demand

Applicable Standards

IEC 60502-1	Design Specification
IEC 60228	Conductors
IEC 60332-1	Flame Retardant
IEC 60332-3-22 - Cat. A	Flame Retardant on Bunched Cables (if required)
IEC 60754-1, 2	Low Toxicity / Halogen Free Properties (if required)
IEC 61034-1, 2	Low Smoke Emission (if required)



Flame retardant
IEC 60332-1
IEC 60332-3-22 Cat. A (if required)



-5°C, 90 °C



Lead Free



Standard Hydrocarbons
Resistance, GOOD



Excellent



LSZH/
FRLS PVC
(if required)

13 x Cable
OD (Min.)

Copper Conductor**Copper Conductor**

2 Core, Drylam armoured Cables, 0.6/1 kV to IEC 60502-1																			
Nominal Area of Conductor		1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions																			
1.0	Cable overall diameter (Approximate)	mm	16.5	17.0	18.0	19.5	22.0	23.5	23.5	25.5	28.0	31.0	34.5	37.5	41.0	44.5	51.0	55.0	60.5
2.0	Cable weight (Approximate)	kg/km	405	450	515	590	830	1000	1220	1480	1805	2320	3100	3715	4420	5535	7020	8400	10345
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	1000	1000	500	500	500	500	500	500	250	
4.0	Minimum bending radius of cable (During installation)	x Cable OD	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
(B) Electrical Parameters																			
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	12.1000	7.4100	4.6100	3.0800	1.8300	1.1500	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	15.430	9.450	5.880	3.930	2.330	1.470	0.928	0.669	0.495	0.343	0.248	0.197	0.161	0.130	0.100	0.082	0.066
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.108	0.101	0.095	0.090	0.085	0.082	0.082	0.080	0.079	0.075	0.073	0.073	0.073	0.072	0.071	0.071	
4.0	Impedance at 50 Hz (Approximate)	ohm/km	15.430	9.450	5.880	3.930	2.330	1.470	0.932	0.674	0.501	0.351	0.259	0.210	0.177	0.149	0.123	0.108	0.097
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	30.860	18.900	11.760	7.860	4.660	2.940	1.864	1.348	1.002	0.702	0.518	0.420	0.354	0.298	0.246	0.216	0.194
6.0	Sustained current ratings: (Laid Singly)	A	33	42	56	70	94	121	157	188	223	273	328	372	417	470	544	609	687
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	27	35	46	58	77	99	127	153	181	224	269	307	345	391	453	509	575
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	24	32	43	55	74	98	128	158	190	239	295	341	389	449	530	605	696
7.0	Short circuit current rating of conductor for 1 second	kA	0.22	0.36	0.57	0.86	1.43	2.29	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Copper Conductor**Copper Conductor**

3 Core, Drylam armoured Cables, 0.6/1 kV to IEC 60502-1																			
Nominal Area of Conductor		1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions																			
1.0	Cable overall diameter (Approximate)	mm	17.0	18.0	19.0	20.0	23.0	24.5	26.0	28.5	31.0	35.5	38.5	43.0	48.0	50.5	56.5	62.5	66.5
2.0	Cable weight (Approximate)	kg/km	430	495	570	670	935	1180	1550	1915	2390	3300	4190	5110	6450	7615	9580	11655	14330
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	500	500	500	500	500	500	250	250		
4.0	Minimum bending radius of cable (During installation)	x Cable OD	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
(B) Electrical Parameters																			
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	12.1000	7.4100	4.6100	3.0800	1.8300	1.1500	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	15.430	9.450	5.880	3.930	2.330	1.470	0.928	0.669	0.495	0.343	0.248	0.197	0.161	0.130	0.100	0.082	0.066
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.108	0.101	0.095	0.090	0.085	0.082	0.082	0.080	0.079	0.075	0.073	0.073	0.073	0.072	0.071	0.071	
4.0	Impedance at 50 Hz (Approximate)	ohm/km	15.430	9.450	5.880	3.930	2.330	1.470	0.932	0.674	0.501	0.351	0.259	0.210	0.177	0.149	0.123	0.108	0.097
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	26.726	16.368	10.184	6.807	4.036	2.546	1.614	1.167	0.868	0.608	0.449	0.364	0.307	0.258	0.213	0.187	0.168
6.0	Sustained current ratings: (Laid Singly)	A	28	36	47	59	79	102	131	157	187	229	274	312	349	394	455	509	574
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A																	
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	22	29	39	48	65	83	107	128	152	187	226	258	291	329	380	427	490
6.3	Laid in air Ambient temp. 50°C	A	20	27	37	46	64	83	109	134	163	205	253	293	335	386	456	519	597
7.0	Short circuit current rating of conductor for 1 second	kA	0.22	0.36	0.57	0.86	1.43	2.29	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Copper Conductor**Copper Conductor**

4 Core, Drylam armoured Cables, 0.6/1 kV to IEC 60502-1																			
Nominal Area of Conductor		1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions																			
1.0	Cable overall diameter (Approximate)	mm	17.5	18.5	20.0	22.0	24.0	27.0	29.0	31.5	34.0	39.0	43.5	49.5	54.0	59.0	64.5	70.0	79.5
2.0	Cable weight (Approximate)	kg/km	475	540	650	855	1090	1510	1940	2385	2955	4120	5305	6870	8180	9875	12325	14935	19405
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	500	500	500	500	500	500	250	250	250	250	
4.0	Minimum bending radius of cable (During installation)	x Cable OD	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
(B) Electrical Parameters																			
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	12.1000	7.4100	4.6100	3.0800	1.8300	1.1500	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	15.43	9.45	5.88	3.93	2.33	1.47	0.928	0.669	0.495	0.343	0.248	0.197	0.161	0.13	0.1	0.082	0.066
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.108	0.101	0.095	0.09	0.085	0.082	0.082	0.08	0.079	0.075	0.073	0.073	0.073	0.072	0.071	0.071	0.071
4.0	Impedance at 50 Hz (Approximate)	ohm/km	15.43	9.45	5.88	3.93	2.33	1.47	0.932	0.674	0.501	0.351	0.259	0.21	0.177	0.149	0.123	0.108	0.097
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	26.726	16.368	10.184	6.807	4.036	2.546	1.614	1.167	0.868	0.608	0.449	0.364	0.307	0.258	0.213	0.187	0.168
6.0	Sustained current ratings: (Laid Singly)	A	28	36	47	59	79	102	131	157	187	229	274	312	349	394	455	509	574
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	22	29	39	48	65	83	107	128	152	187	226	258	291	329	380	427	490
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	20	27	37	46	64	83	109	134	163	205	253	293	335	386	456	519	597
7.0	Short circuit current rating of conductor for 1 second	kA	0.22	0.36	0.57	0.86	1.43	2.29	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Copper Conductor**Copper Conductor**

5 Core, Drylam armoured Cables, 0.6/1 kV to IEC 60502-1																			
Nominal Area of Conductor		1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions																			
1.0	Cable overall diameter (Approximate)	mm	18.5	19.5	21.5	23.5	26.0	28.5	33.0	36.0	40.5	46.5	52.0	57.0	62.0	68.0	75.0	83.0	92.5
2.0	Cable weight (Approximate)	kg/km	530	610	810	965	1230	1710	2330	2885	3965	5280	7155	8700	10375	12545	15800	19985	24750
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	500	500	500	500	500	500	250	250	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
(B) Electrical Parameters																			
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	12.1000	7.4100	4.6100	3.0800	1.8300	1.1500	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	15.43	9.45	5.88	3.93	2.33	1.47	0.928	0.669	0.495	0.343	0.248	0.197	0.161	0.129	0.100	0.081	0.066
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.108	0.101	0.095	0.090	0.085	0.082	0.084	0.081	0.080	0.076	0.074	0.074	0.074	0.073	0.072	0.072	0.072
4.0	Impedance at 50 Hz (Approximate)	ohm/km	15.430	9.450	5.880	3.930	2.330	1.470	0.932	0.674	0.501	0.351	0.259	0.210	0.177	0.149	0.124	0.108	0.098
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	26.726	16.368	10.184	6.807	4.036	2.546	1.614	1.167	0.868	0.608	0.449	0.364	0.307	0.258	0.215	0.187	0.170
6.0	Sustained current ratings: (Laid Singly)																		
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	24	30	40	50	68	87	113	135	161	197	236	268	300	338	392	438	495
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	19	25	33	42	55	71	91	110	130	161	194	221	248	282	326	366	414
6.3	Laid in air Ambient temp. 50°C	A	17	23	31	40	53	71	92	114	137	172	212	246	280	323	382	436	501
7.0	Short circuit current rating of conductor for 1 second	kA	0.22	0.36	0.57	0.86	1.43	2.29	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Aluminium Conductor**Aluminium Conductor**

2 Core, Drylam armoured Cables, 0.6/1 kV to IEC 60502-1														
Nominal Area of Conductor		16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions														
1.0	Cable overall diameter (Approximate)	mm	23.5	23.5	25.5	28.0	31.0	34.5	37.5	41.0	44.5	51.0	55.0	60.5
2.0	Cable weight (Approximate)	kg/km	805	910	1050	1230	1490	1950	2260	2605	3285	4065	4675	5545
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	500	500	500	500	500	500	500	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	13	13	13	13	13	13	13	13	13	13	13	13
(B) Electrical Parameters														
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.9100	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	2.450	1.540	1.110	0.823	0.569	0.412	0.326	0.266	0.212	0.163	0.131	0.104
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.082	0.082	0.080	0.079	0.075	0.073	0.073	0.073	0.073	0.072	0.071	0.071
4.0	Impedance at 50 Hz (Approximate)	ohm/km	2.450	1.540	1.110	0.827	0.574	0.418	0.334	0.276	0.224	0.178	0.149	0.126
5.0	Voltage drop (Approximate for 1 phase system)	v/amp/km	4.900	3.080	2.220	1.654	1.148	0.836	0.668	0.552	0.448	0.356	0.298	0.252
6.0	Sustained current ratings: (Laid Singly)													
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	93	119	142	169	207	248	266	304	349	406	450	492
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	76	96	116	138	169	204	232	256	293	336	372	425
6.3	Laid in air Ambient temp. 50°C	A	74	95	116	140	177	218	235	269	308	364	409	470
7.0	Short circuit current rating of conductor for 1 second	kA	1.50	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

Aluminium Conductor**Aluminium Conductor**

3 Core, Drylam armoured Cables, 0.6/1 kV to IEC 60502-1														
Nominal Area of Conductor		16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions														
1.0	Cable overall diameter (Approximate)	mm	24.5	26.0	28.5	31.0	35.5	38.5	43.0	48.0	50.5	56.5	62.5	66.5
2.0	Cable weight (Approximate)	kg/km	895	1090	1275	1530	2050	2460	2920	3730	4240	5155	6070	7125
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	500	500	500	500	500	500	500	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	13	13	13	13	13	13	13	13	13	13	13	13
(B) Electrical Parameters														
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.9100	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	2.450	1.540	1.110	0.823	0.569	0.412	0.326	0.266	0.212	0.163	0.131	0.104
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.082	0.082	0.080	0.079	0.075	0.073	0.073	0.073	0.073	0.072	0.071	0.071
4.0	Impedance at 50 Hz (Approximate)	ohm/km	2.450	1.540	1.110	0.827	0.574	0.418	0.334	0.276	0.224	0.178	0.149	0.126
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	4.244	2.667	1.923	1.432	0.994	0.724	0.579	0.478	0.388	0.308	0.258	0.218
6.0	Sustained current ratings: (Laid Singly)													
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	78	100	120	142	175	210	239	267	304	352	396	428
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	64	82	97	116	144	173	198	223	253	294	332	357
6.3	Laid in air Ambient temp. 50°C	A	63	83	101	122	154	190	221	253	293	346	396	420
7.0	Short circuit current rating of conductor for 1 second	kA	1.50	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

Aluminium Conductor**Aluminium Conductor**

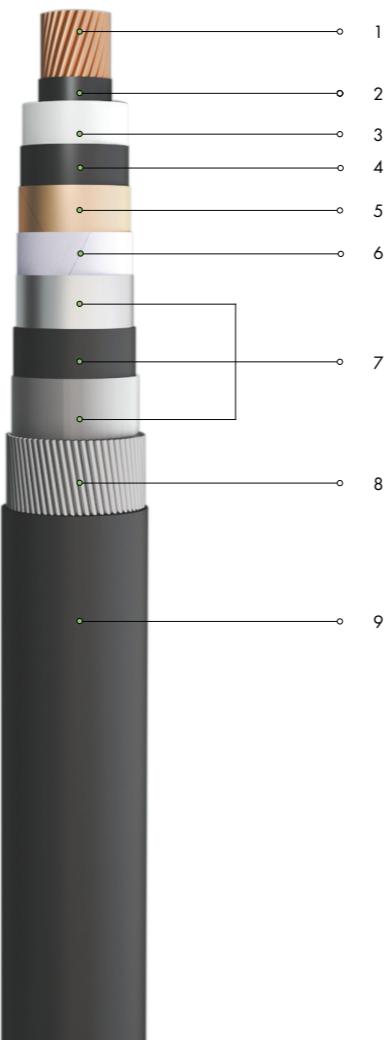
4 Core, Drylam armoured Cables, 0.6/1 kV to IEC 60502-1														
Nominal Area of Conductor		16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions														
1.0	Cable overall diameter (Approximate)	mm	27.0	29.0	31.5	34.0	39.0	43.5	49.5	54.0	59.0	64.5	70.0	79.5
2.0	Cable weight (Approximate)	kg/km	1125	1325	1530	1805	2460	3000	3955	4555	5370	6420	7485	9795
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	500	500	500	500	500	500	250	250	250	
4.0	Minimum bending radius of cable (During installation)	x Cable OD	13	13	13	13	13	13	13	13	13	13	13	13
(B) Electrical Parameters														
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.9100	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	2.450	1.540	1.110	0.823	0.569	0.412	0.326	0.266	0.212	0.163	0.131	0.104
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.082	0.082	0.080	0.079	0.075	0.073	0.073	0.073	0.073	0.072	0.071	0.071
4.0	Impedance at 50 Hz (Approximate)	ohm/km	2.450	1.540	1.110	0.827	0.574	0.418	0.334	0.276	0.224	0.178	0.149	0.126
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	4.244	2.667	1.923	1.432	0.994	0.724	0.579	0.478	0.388	0.308	0.258	0.218
6.0	Sustained current ratings: (Laid Singly)	A	78	100	120	142	175	210	239	267	304	352	396	428
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	64	82	97	116	144	173	198	223	253	294	332	357
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	63	83	101	122	154	190	221	253	293	346	396	420
7.0	Short circuit current rating of conductor for 1 second	kA	1.50	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

Aluminium Conductor**Aluminium Conductor**

5 Core, Drylam armoured Cables, 0.6/1 kV to IEC 60502-1														
Nominal Area of Conductor		16	25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions														
1.0	Cable overall diameter (Approximate)	mm	28.5	33.0	36.0	40.5	46.5	52.0	57.0	62.0	68.0	75.0	83.0	92.5
2.0	Cable weight (Approximate)	kg/km	1230	1570	1825	2540	3245	4285	5065	5890	6955	8405	10710	12940
3.0	Standard drum length (±5% Tolerance)	m	1000	500	500	500	500	500	250	250	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	13	13	13	13	13	13	13	13	13	13	13	13
(B) Electrical Parameters														
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.9100	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	2.450	1.540	1.110	0.823	0.569	0.412	0.326	0.266	0.212	0.163	0.131	0.104
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.082	0.084	0.081	0.080	0.076	0.074	0.074	0.074	0.074	0.073	0.072	0.072
4.0	Impedance at 50 Hz (Approximate)	ohm/km	2.450	1.540	1.110	0.827	0.574	0.419	0.334	0.276	0.225	0.179	0.149	0.126
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	4.244	2.667	1.923	1.432	0.994	0.726	0.579	0.478	0.390	0.310	0.258	0.218
6.0	Sustained current ratings: (Laid Singly)	A	67	86	102	122	149	179	192	219	251	292	324	354
6.1	Laid direct Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Depth of laying 0.5 m	A	55	69	84	99	122	147	167	184	211	242	268	306
6.2	Drawn into earthenware ducts Ground temp. 35°C Thermal resistivity of soil 1.2°C m/W Thermal resistivity of Earthenware duct 1.2°C m/W Depth of laying 0.5 m	A	53	68	84	101	127	157	169	194	222	262	294	338
7.0	Short circuit current rating of conductor for 1 second	kA	1.50	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

DRYLAM™ Medium Voltage Cable

Up to 18/30 (36) kV , Single Core



Application

DRYLAM is Lead free solution of Lead Sheathed Cables and its application is similar to the Lead sheathed cables for underground application in the oil, gas, petroleum and chemical industries. DRYLAM Layer protects the cables insulation from sulfides, water, Oils, hydrocarbon and any corrosive chemicals found in the ground water. For power distribution between high voltage mains power supply and low voltage applications at different voltage (1 KV up to 33 KV)

Construction

1. Conductor Cu or Al
Bare Copper/Aluminium stranded circular conductor according to class 2 of IEC 60228
2. Conductor Screen
semi conductive XLPE
3. Insulation XLPE
4. Insulation Screen
semi conductive XLPE
5. Metallic Screen
Copper Wire Screen (CWS) or Copper Tape (CUT)
6. Bedding/ Inner Covering
Taped bedding/ Extruded Bedding
7. DRYLAM™ Sheathing Layer
(PE-AL-PE + PE + MPA)
8. Armouring AWA
Aluminium Wire Armour (AWA)
9. Outer Sheath PVC or LSZH
Flame retardant and/or Hydrocarbon resistant option available upon demand

Applicable Standards

IEC 60502-2	Design Specification
IEC 60228	Conductors
IEC 60332-1	Flame Retardant
IEC 60332-3-22 - Cat. A	Flame Retardant on Bunched Cables (if required)
IEC 60754-1, 2	Low Toxicity / Halogen Free Properties (if required)
IEC 61034-1, 2	Low Smoke Emission (if required)



Flame retardant
IEC 60332-1
IEC 60332-3-22 Cat. A (if required)



-5°C, 90 °C



Lead Free



Standard Hydrocarbons
Resistance, GOOD



Excellent



LSZH/
FRLS PVC
(if required)



17 x Cable
OD (Min.)

Copper Conductor**Copper Conductor**

1 Core, Drylam armoured Cables, 3.6/6 (7.2) kV to IEC 60502-2													(Also suitable for 3.8/6.6 (7.2) kV Effectively Earthed system)							
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000				
(A) Manufacturing Dimensions																				
1.0	Cable overall diameter (Approximate)	mm	23.5	25.0	26.5	28.0	30.0	31.5	33.0	34.5	38.0		41.0	45.0	49.5	53.0	58.5	62.5		
2.0	Cable weight (Approximate)	kg/km	735	910	1060	1290	1595	1875	2165	2560	3250		3905	4835	6090	7565	9455	11500		
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	1000		500	500	500	500	500	500			
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17		17	17	17	17	17	17			
(B) Electrical Parameters																				
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754		0.0601	0.0470	0.0366	0.0283	0.0221	0.0176		
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.928	0.669	0.494	0.343	0.247	0.196	0.160	0.128	0.098		0.079	0.063	0.051	0.041	0.034	0.030		
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.151	0.145	0.138	0.128	0.122	0.117	0.114	0.109	0.106		0.104	0.101	0.099	0.095	0.094	0.091		
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.940	0.685	0.513	0.366	0.275	0.228	0.196	0.168	0.144		0.131	0.119	0.111	0.103	0.100	0.096		
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.628	1.186	0.889	0.634	0.476	0.395	0.339	0.291	0.249		0.227	0.206	0.192	0.178	0.173	0.166		
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.29	0.32	0.36	0.41	0.47	0.52	0.56	0.61	0.66		0.68	0.72	0.75	0.84	0.97	1.07		
7.0	Approximate charging current per phase at Uo=3.6 kV and f = 50 Hz	mA/m	0.33	0.36	0.41	0.46	0.53	0.59	0.63	0.69	0.75		0.77	0.81	0.85	0.95	1.10	1.21		
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																			
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	137	164	193	234	278	315	349	391	446		495	551	593	646	693	731		
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	131	155	183	223	265	301	334	376	430		478	534	578	632	682	721		
8.3	Laid in air Ambient temp. 30°C	A	162	196	234	291	353	406	460	524	611		692	788	873	975	1074	1156		
9.0	Short circuit current rating of conductor for 1 second	kA	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32		42.90	57.20	71.50	90.09	114.40	143.00		

Copper Conductor**Copper Conductor**

1 Core, Drylam armoured Cables, 6/10 (12) kV to IEC 60502-2												(Also suitable for 6.35/11 (12) kV Effectively Earthed system)							
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000			
(A) Manufacturing Dimensions																			
1.0	Cable overall diameter (Approximate)	mm	25.5	26.5	28.0	29.5	31.5	33.0	34.5	37.0	39.5	42.5	45.5	49.5	53.5	59.0	63.0		
2.0	Cable weight (Approximate)	kg/km	865	980	1145	1385	1690	1970	2275	2730	3350	4035	4895	6135	7590	9485	11550		
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	500	500	500	500	500	500	500			
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17		
(B) Electrical Parameters																			
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176		
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.928	0.669	0.494	0.343	0.247	0.196	0.160	0.128	0.098	0.079	0.063	0.051	0.041	0.034	0.030		
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.156	0.148	0.142	0.131	0.125	0.120	0.117	0.113	0.109	0.106	0.102	0.099	0.096	0.094	0.091		
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.941	0.685	0.514	0.367	0.277	0.230	0.198	0.171	0.147	0.132	0.120	0.111	0.104	0.100	0.096		
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.630	1.186	0.890	0.636	0.480	0.398	0.343	0.296	0.255	0.229	0.208	0.192	0.180	0.173	0.166		
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.22	0.25	0.28	0.32	0.36	0.39	0.42	0.46	0.52	0.57	0.64	0.71	0.79	0.91	1.01		
7.0	Approximate charging current per phase at $U_{ot}=6$ kV and $f = 50$ Hz	mA/m	0.41	0.47	0.53	0.60	0.68	0.74	0.79	0.87	0.98	1.07	1.21	1.34	1.49	1.72	1.90		
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																		
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	137	164	193	234	278	315	349	391	446	495	551	593	646	693	731		
8.2	Drawn into ducts, ground temp. = 20°C , Thermal resistivity of soil = 1.5°C m/W and Thermal resistivity of Earthenware duct = 1.2°C m/W , depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	131	155	183	223	265	301	334	376	430	478	534	578	632	682	721		
8.3	Laid in air Ambient temp. 30°C	A	162	196	234	291	353	406	460	524	611	692	788	873	975	1074	1156		
9.0	Short circuit current rating of conductor for 1 second	kA	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20	71.50	90.09	114.40	143.00		

Copper Conductor**Copper Conductor****1 Core, Drylam armoured Cables, 8.7/15 (17.5) kV to IEC 60502-2**

Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000	
(A) Manufacturing Dimensions																	
1.0	Cable overall diameter (Approximate)	mm	28.0	29.0	30.0	32.0	33.5	36.0	37.5	39.0	42.0	44.5	48.5	52.0	55.5	61.0	65.0
2.0	Cable weight (Approximate)	kg/km	970	1090	1245	1500	1805	2170	2485	2880	3540	4190	5195	6325	7790	9705	11785
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	1000	1000	1000	1000	1000	1000	500	500		500	500	500	500	500	500
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17		17	17	17	17	17	17
(B) Electrical Parameters																	
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.928	0.669	0.494	0.343	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.051	0.041	0.034	0.029
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.162	0.154	0.146	0.136	0.129	0.125	0.122	0.117	0.113	0.109	0.106	0.103	0.098	0.096	0.093
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.942	0.686	0.515	0.369	0.279	0.232	0.200	0.173	0.150	0.135	0.123	0.115	0.106	0.102	0.097
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.632	1.188	0.892	0.639	0.483	0.402	0.346	0.300	0.260	0.234	0.213	0.199	0.184	0.177	0.168
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.18	0.20	0.22	0.25	0.28	0.31	0.33	0.36	0.40	0.44	0.49	0.55	0.61	0.70	0.77
7.0	Approximate charging current per phase at $U_0 = 8.7$ kV and $f = 50$ Hz	mA/m	0.49	0.55	0.60	0.68	0.77	0.85	0.90	0.98	1.09	1.20	1.34	1.50	1.67	1.91	2.10
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	137	164	193	234	278	315	349	391	446	495	551	593	646	693	731
8.2	Drawn into ducts, ground temp. = 20°C , Thermal resistivity of soil = 1.5°C m/W and Thermal resistivity of Earthenware duct = 1.2°C m/W , depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	131	155	183	223	265	301	334	376	430	478	534	578	632	682	721
8.3	Laid in air Ambient temp. 30°C	A	162	196	234	291	353	406	460	524	611	692	788	873	975	1074	1156
9.0	Short circuit current rating of conductor for 1 second	kA	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20	71.50	90.09	114.40	143.00

Copper Conductor**Copper Conductor**

1 Core, Drylam armoured Cables, 12/20 (24) kV to IEC 60502-2												(Also suitable for 12.7/22 (24) kV Effectively Earthed system)						
Nominal Area of Conductor			35	50	70	95	120	150	185	240	300	400	500	630	800	1000		
(A) Manufacturing Dimensions																		
1.0	Cable overall diameter (Approximate)	mm	31.0	32.0	34.0	36.5	38.0	39.5	41.5	44.0	46.5	50.5	54.0	57.5	62.5	67.0		
2.0	Cable weight (Approximate)	kg/km	1200	1360	1620	2000	2300	2605	3060	3695	4330	5370	6505	7985	9895	11995		
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	1000	1000	1000	1000	1000	500	500	500	500	500	500	500	500	500		
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17	17	17	17		
(B) Electrical Parameters																		
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176		
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.669	0.494	0.343	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.050	0.041	0.034	0.029		
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.158	0.150	0.140	0.134	0.129	0.125	0.120	0.116	0.112	0.108	0.105	0.101	0.098	0.095		
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.687	0.516	0.370	0.281	0.235	0.202	0.175	0.152	0.137	0.125	0.116	0.109	0.104	0.099		
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.190	0.894	0.641	0.487	0.407	0.350	0.303	0.263	0.237	0.217	0.201	0.189	0.180	0.171		
6.0	Capacitance at 50 Hz (Approximate)	μ F/km	0.17	0.19	0.22	0.24	0.26	0.28	0.31	0.34	0.37	0.41	0.46	0.51	0.58	0.64		
7.0	Approximate charging current per phase at $U_0=12$ kV and $f = 50$ Hz	mA/m	0.64	0.72	0.83	0.90	0.98	1.06	1.17	1.28	1.39	1.55	1.73	1.92	2.19	2.41		
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																	
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	164	193	234	278	315	349	391	446	495	551	593	646	693	731		
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5°C m/W and Thermal resistivity of Earthenware duct = 1.2°C m/W , depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	155	183	223	265	301	334	376	430	478	534	578	632	682	721		
8.3	Laid in air Ambient temp. 30°C	A	196	234	291	353	406	460	524	611	692	788	873	975	1074	1156		
9.0	Short circuit current rating of conductor for 1 second	kA	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20	71.50	90.09	114.40	143.00		

Copper Conductor**Copper Conductor****1 Core, Drylam armoured Cables, 18/30 (36) kV to IEC 60502-2****(Also suitable for 19/33 (36) kV Effectively Earthed system)**

Nominal Area of Conductor		50	70	95	120	150	185	240	300	400	500	630	800	1000	
(A) Manufacturing Dimensions															
1.0	Cable overall diameter (Approximate)	mm	37.5	39.5	41.5	43.5	44.5	46.5	50.0	52.5	55.5	58.5	62.5	67.5	72.0
2.0	Cable weight (Approximate)	kg/km	1730	2005	2375	2680	3000	3425	4210	4890	5805	6965	8485	10435	12540
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	1000	500	500	500	500	500	500	500	500	500	500	500	500
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters															
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	0.0221	0.0176
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.494	0.343	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.050	0.041	0.034	0.029
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.160	0.149	0.142	0.137	0.133	0.128	0.124	0.120	0.114	0.110	0.106	0.103	0.100
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.519	0.374	0.285	0.239	0.207	0.181	0.158	0.144	0.130	0.121	0.114	0.108	0.104
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	0.899	0.648	0.494	0.414	0.359	0.314	0.274	0.249	0.225	0.210	0.197	0.187	0.180
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.15	0.16	0.18	0.20	0.21	0.23	0.25	0.27	0.30	0.33	0.37	0.42	0.46
7.0	Approximate charging current per phase at $U_0=18$ kV and $f = 50$ Hz	mA/m	0.85	0.90	1.02	1.13	1.19	1.30	1.41	1.53	1.70	1.87	2.09	2.38	2.60
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):														
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	193	234	278	315	349	391	446	495	551	593	646	693	731
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5°C m/W and Thermal resistivity of Earthenware duct = 1.2°C m/W , depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	183	223	265	301	334	376	430	478	534	578	632	682	721
8.3	Laid in air Ambient temp. 30°C	A	234	291	353	406	460	524	611	692	788	873	975	1074	1156
9.0	Short circuit current rating of conductor for 1 second	kA	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20	71.50	90.09	114.40	143.00

Aluminium Conductor**Aluminium Conductor**

1 Core, Drylam armoured Cables, 3.6/6 (7.2) kV to IEC 60502-2												(Also suitable for 3.8/6.6 (7.2) kV Effectively Earthed system)							
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000			
(A) Manufacturing Dimensions																			
1.0	Cable overall diameter (Approximate)	mm	23.5	25.0	26.5	28.0	30.0	31.5	33.0	34.5	38.0	41.0	45.0	49.5	53.0	58.5	62.5		
2.0	Cable weight (Approximate)	kg/km	585	700	775	885	1025	1155	1275	1450	1780	2065	2490	3060	3655	4415	5185		
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	1000	1000	500	500	500	500	500	500		
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	
(B) Electrical Parameters																			
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291		
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.540	1.110	0.823	0.569	0.411	0.325	0.265	0.212	0.162	0.130	0.102	0.080	0.064	0.052	0.043		
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.151	0.145	0.138	0.128	0.122	0.117	0.114	0.109	0.106	0.104	0.101	0.099	0.095	0.094	0.091		
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.550	1.120	0.834	0.583	0.429	0.345	0.288	0.238	0.194	0.166	0.144	0.127	0.115	0.107	0.101		
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	2.685	1.940	1.445	1.010	0.743	0.598	0.499	0.412	0.336	0.288	0.249	0.220	0.199	0.185	0.175		
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.29	0.32	0.36	0.41	0.47	0.52	0.56	0.61	0.66	0.68	0.72	0.75	0.84	0.97	1.07		
7.0	Approximate charging current per phase at Uo=3.6 kV and f = 50 Hz	mA/m	0.33	0.36	0.41	0.46	0.53	0.59	0.63	0.69	0.75	0.77	0.81	0.85	0.95	1.10	1.21		
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																		
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	107	127	150	182	217	246	274	309	355	397	448	494	549	601	648		
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	101	121	142	174	207	235	262	297	342	383	434	482	537	592	639		
8.3	Laid in air Ambient temp. 30°C	A	126	152	182	226	275	317	360	413	485	552	638	724	824	927	1020		
9.0	Short circuit current rating of conductor for 1 second	kA	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00		

Aluminium Conductor**Aluminium Conductor****1 Core, Drylam armoured Cables, 6/10 (12) kV to IEC 60502-2****(Also suitable for 6.35/11 (12) kV Effectively Earthed system**

Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000	
(A) Manufacturing Dimensions																	
1.0	Cable overall diameter (Approximate)	mm	25.5	26.5	28.0	29.5	31.5	33.0	34.5	37.0	39.5	42.5	45.5	49.5	53.5	59.0	63.0
2.0	Cable weight (Approximate)	kg/km	715	770	860	980	1120	1250	1385	1620	1880	2190	2550	3105	3680	4445	5235
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	1000	1000	1000	1000	1000	1000	1000	500	500	500	500	500	500	500	
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17	17	17	17	
(B) Electrical Parameters																	
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.540	1.110	0.823	0.569	0.411	0.325	0.265	0.211	0.162	0.130	0.102	0.080	0.064	0.052	0.043
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.156	0.148	0.142	0.131	0.125	0.120	0.117	0.113	0.109	0.106	0.102	0.099	0.096	0.094	0.091
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.550	1.120	0.835	0.584	0.430	0.346	0.290	0.239	0.195	0.168	0.144	0.127	0.115	0.107	0.101
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	2.685	1.940	1.446	1.012	0.745	0.599	0.502	0.414	0.338	0.291	0.249	0.220	0.199	0.185	0.175
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.22	0.25	0.28	0.32	0.36	0.39	0.42	0.46	0.52	0.57	0.64	0.71	0.79	0.91	1.01
7.0	Approximate charging current per phase at $U_0=6$ kV and $f = 50$ Hz	mA/m	0.41	0.47	0.53	0.60	0.68	0.74	0.79	0.87	0.98	1.07	1.21	1.34	1.49	1.72	1.90
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	107	127	150	182	217	246	274	309	355	397	448	494	549	601	648
8.2	Drawn into ducts, ground temp. = 20°C , Thermal resistivity of soil = 1.5°C m/W and Thermal resistivity of Earthenware duct = 1.2°C m/W , depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	101	121	142	174	207	235	262	297	342	383	434	482	537	592	639
8.3	Laid in air Ambient temp. 30°C	A	126	152	182	226	275	317	360	413	485	552	638	724	824	927	1020
9.0	Short circuit current rating of conductor for 1 second	kA	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00

Aluminium Conductor**Aluminium Conductor****1 Core, Drylam armoured Cables, 8.7/15 (17.5) kV to IEC 60502-2**

Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	500	630	800	1000	
(A) Manufacturing Dimensions																	
1.0	Cable overall diameter (Approximate)	mm	28.0	29.0	30.0	32.0	33.5	36.0	37.5	39.0	42.0	44.5	48.5	52.0	55.5	61.0	65.0
2.0	Cable weight (Approximate)	kg/km	820	880	960	1100	1235	1450	1595	1770	2070	2350	2850	3290	3880	4665	5470
3.0	Standard drum length (±5% Tolerance)	m	1000	1000	1000	1000	1000	1000	500	500		500	500	500	500	500	500
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17		17	17	17	17	17	17
(B) Electrical Parameters																	
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.540	1.110	0.823	0.569	0.411	0.325	0.265	0.211	0.162	0.130	0.102	0.080	0.064	0.051	0.043
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.162	0.154	0.146	0.136	0.129	0.125	0.122	0.117	0.113	0.109	0.106	0.103	0.098	0.096	0.093
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.550	1.120	0.836	0.585	0.431	0.348	0.292	0.241	0.198	0.170	0.147	0.130	0.117	0.109	0.102
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	2.685	1.940	1.448	1.013	0.747	0.603	0.506	0.417	0.343	0.294	0.255	0.225	0.203	0.189	0.177
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.18	0.20	0.22	0.25	0.28	0.31	0.33	0.36	0.40	0.44	0.49	0.55	0.61	0.70	0.77
7.0	Approximate charging current per phase at Uo=8.7 kV and f = 50 Hz	mA/m	0.49	0.55	0.60	0.68	0.77	0.85	0.90	0.98	1.09	1.20	1.34	1.50	1.67	1.91	2.10
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	107	127	150	182	217	246	274	309	355	397	448	494	549	601	648
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	101	121	142	174	207	235	262	297	342	383	434	482	537	592	639
8.3	Laid in air Ambient temp. 30°C	A	126	152	182	226	275	317	360	413	485	552	638	724	824	927	1020
9.0	Short circuit current rating of conductor for 1 second	kA	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00

Aluminium Conductor**Aluminium Conductor**

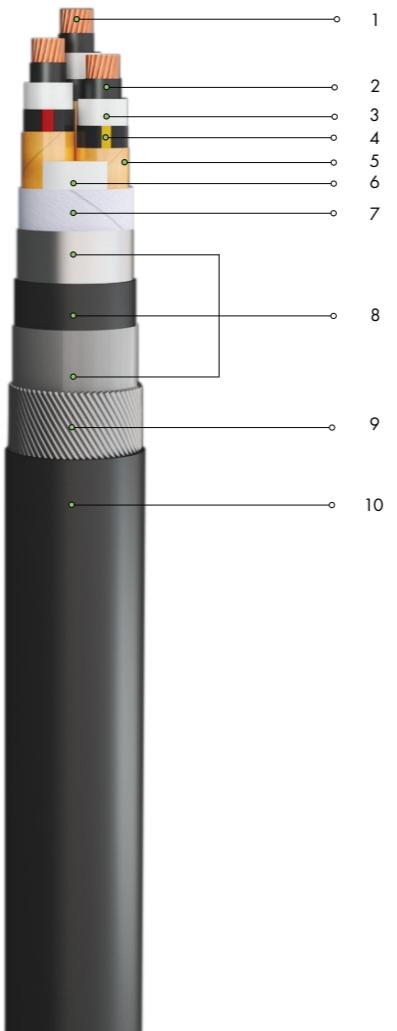
1 Core, Drylam armoured Cables, 12/20 (24) kV to IEC 60502-2												(Also suitable for 12.7/22 (24) kV Effectively Earthed system)						
Nominal Area of Conductor			35	50	70	95	120	150	185	240	300	400	500	630	800	1000		
(A) Manufacturing Dimensions																		
1.0	Cable overall diameter (Approximate)	mm	31.0	32.0	34.0	36.5	38.0	39.5	41.5	44.0	46.5	50.5	54.0	57.5	62.5	67.0		
2.0	Cable weight (Approximate)	kg/km	990	1075	1215	1430	1580	1715	1950	2225	2485	3025	3475	4075	4850	5680		
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	1000	1000	1000	1000	1000	500	500	500	500	500	500	500	500	500		
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17	17	17	17		
(B) Electrical Parameters																		
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291		
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.110	0.823	0.569	0.411	0.325	0.265	0.211	0.162	0.130	0.102	0.080	0.063	0.051	0.042		
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.158	0.150	0.140	0.134	0.129	0.125	0.120	0.116	0.112	0.108	0.105	0.101	0.098	0.095		
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.120	0.837	0.586	0.432	0.350	0.293	0.243	0.199	0.172	0.149	0.132	0.119	0.110	0.104		
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.940	1.450	1.015	0.748	0.606	0.507	0.421	0.345	0.298	0.258	0.229	0.206	0.191	0.180		
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.17	0.19	0.22	0.24	0.26	0.28	0.31	0.34	0.37	0.41	0.46	0.51	0.58	0.64		
7.0	Approximate charging current per phase at $U_0=12$ kV and $f = 50$ Hz	mA/m	0.64	0.72	0.83	0.90	0.98	1.06	1.17	1.28	1.39	1.55	1.73	1.92	2.19	2.41		
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):																	
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	127	150	182	217	246	274	309	355	397	448	494	549	601	648		
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5°C m/W and Thermal resistivity of Earthenware duct = 1.2°C m/W , depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	121	142	174	207	235	262	297	342	383	434	482	537	592	639		
8.3	Laid in air Ambient temp. 30°C	A	152	182	226	275	317	360	413	485	552	638	724	824	927	1020		
9.0	Short circuit current rating of conductor for 1 second	kA	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00		

Aluminium Conductor**Aluminium Conductor****1 Core, Drylam armoured Cables, 18/30 (36) kV to IEC 60502-2****(Also suitable for 19/33 (36) kV Effectively Earthed system)**

Nominal Area of Conductor		50	70	95	120	150	185	240	300	400	500	630	800	1000	
(A) Manufacturing Dimensions															
1.0	Cable overall diameter (Approximate)	mm	37.5	39.5	41.5	43.5	44.5	46.5	50.0	52.5	55.5	58.5	62.5	67.5	72.0
2.0	Cable weight (Approximate)	kg/km	1445	1600	1805	1960	2110	2315	2740	3045	3460	3935	4575	5395	6225
3.0	Standard drum length (±5% Tolerance)	m	1000	500	500	500	500	500	500	500	500	500	500	500	500
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters															
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469	0.0367	0.0291
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.823	0.569	0.411	0.325	0.265	0.211	0.162	0.130	0.102	0.080	0.063	0.051	0.042
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.160	0.149	0.142	0.137	0.133	0.128	0.124	0.120	0.114	0.110	0.106	0.103	0.100
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.838	0.588	0.435	0.353	0.297	0.247	0.204	0.177	0.153	0.136	0.123	0.115	0.108
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.451	1.018	0.753	0.611	0.514	0.428	0.353	0.307	0.265	0.236	0.213	0.199	0.187
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.15	0.16	0.18	0.20	0.21	0.23	0.25	0.27	0.30	0.33	0.37	0.42	0.46
7.0	Approximate charging current per phase at U _o =18 kV and f = 50 Hz	mA/m	0.85	0.90	1.02	1.13	1.19	1.30	1.41	1.53	1.70	1.87	2.09	2.38	2.60
8.0	Sustained current ratings (Three single Core cables laid in trefoil formation):														
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	150	182	217	246	274	309	355	397	448	494	549	601	648
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m (Three single Core cables laid in trefoil formation in one common duct)	A	142	174	207	235	262	297	342	383	434	482	537	592	639
8.3	Laid in air Ambient temp. 30°C	A	182	226	275	317	360	413	485	552	638	724	824	927	1020
9.0	Short circuit current rating of conductor for 1 second	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60	47.00	59.22	75.20	94.00

DRYLAM™ Medium Voltage Cable

Up to 18/30 (36) kV , Multi Core



Application

DRYLAM is Lead free solution of Lead Sheathed Cables and its application is similar to the Lead sheathed cables for underground application in the oil, gas, petroleum and chemical industries. DRYLAM Layer protects the cables insulation from sulfides, water, Oils, hydrocarbon and any corrosive chemicals found in the ground water. For power distribution between high voltage mains power supply and low voltage applications at different voltage (above 1 KV up to 33 KV)

Construction

- 1. Conductor Cu or Al**
Bare Copper/Aluminium stranded circular conductor according to class 2 of IEC 60228
- 2. Conductor Screen**
semi conductive XLPE
- 3. Insulation XLPE**
- 4. Insulation Screen**
semi conductive XLPE
- 5. Metallic Screen**
Copper Wire Screen (CWS) or Copper Tape (CUT)
- 6. Filler (if required)**
PP yarns or Extruded filling
- 7. Bedding/ Inner Covering**
Taped bedding/ Extruded Bedding
- 8. DRYLAM™ Sheathing Layer**
(PE-AL-PE + PE + MPA)
- 9. Armouring SWA**
Galvanized Steel Wire (SWA)
- 10. Outer Sheath PVC or LSZH**
Flame retardant and/or Hydrocarbon resistant option available upon demand

Applicable Standards

IEC 60502-2	Design Specification
IEC 60228	Conductors
IEC 60332-1	Flame Retardant
IEC 60332-3-22 - Cat. A	Flame Retardant on Bunched Cables (if required)
IEC 60754-1, 2	Low Toxicity / Halogen Free Properties (if required)
IEC 61034-1, 2	Low Smoke Emission (if required)



Flame retardant
IEC 60332-1
IEC 60332-3-22 Cat. A (if required)



-5°C, 90 °C



Lead Free



Standard Hydrocarbons
Resistance, GOOD



Excellent



LSZH/
FRLS PVC
(if required)



17 x Cable
OD (Min.)

Copper Conductor**Copper Conductor**

3 Core, Drylam armoured Cables, 3.6/6 (7.2) kV to IEC 60502-2												(Also suitable for 3.8/6.6 (7.2) kV Effectively Earthed system)	
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions													
1.0	Cable overall diameter (Approximate)	mm	41.0	43.5	47.0	50.5	54.5	58.0	61.0	65.0	70.5	78.0	85.5
2.0	Cable weight (Approximate)	kg/km	2805	3215	4065	4930	5960	6940	7940	9230	11325	14200	17280
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	500	500	500	500	500	500	500	500	500	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters													
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.928	0.669	0.494	0.343	0.248	0.197	0.160	0.129	0.099	0.081	0.065
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.114	0.109	0.104	0.096	0.092	0.089	0.087	0.084	0.082	0.081	0.079
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.935	0.678	0.505	0.356	0.265	0.216	0.182	0.154	0.129	0.115	0.102
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.619	1.174	0.875	0.617	0.459	0.374	0.315	0.267	0.223	0.199	0.177
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.29	0.33	0.37	0.42	0.48	0.53	0.57	0.62	0.68	0.69	0.73
7.0	Approximate charging current per phase at $U_0=3.6$ kV and $f = 50$ Hz	mA/m	0.33	0.37	0.42	0.48	0.54	0.60	0.64	0.70	0.77	0.78	0.83
8.0	Sustained current ratings (Laid Singly):												
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	129	154	181	220	263	298	332	374	431	482	541
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5°C m/W and Thermal resistivity of Earthenware duct = 1.2°C m/W , depth of laying = 0.8 m	A	112	134	158	194	232	264	296	335	387	435	492
8.3	Laid in air Ambient temp. 30°C	A	143	172	205	253	307	352	397	453	529	599	683
9.0	Short circuit current rating of conductor for 1 second	kA	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Copper Conductor**Copper Conductor**

3 Core, Drylam armoured Cables, 6/10 (12) kV to IEC 60502-2												(Also suitable for 6.35/11 (12) kV Effectively Earthed system)	
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions													
1.0	Cable overall diameter (Approximate)	mm	44.5	48.0	51.0	54.5	58.5	62.0	65.0	68.5	75.0	80.5	87.0
2.0	Cable weight (Approximate)	kg/km	3115	3885	4455	5315	6385	7345	8365	9705	12450	14580	17510
3.0	Standard drum length (±5% Tolerance)	m	500	500	500	500	500	500	500	500	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters													
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.928	0.669	0.494	0.343	0.247	0.197	0.160	0.129	0.099	0.080	0.065
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.122	0.116	0.111	0.102	0.098	0.094	0.092	0.089	0.086	0.083	0.081
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.936	0.679	0.506	0.358	0.266	0.218	0.185	0.157	0.131	0.115	0.104
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.621	1.176	0.876	0.620	0.461	0.378	0.320	0.272	0.227	0.199	0.180
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.23	0.25	0.28	0.32	0.36	0.40	0.43	0.47	0.53	0.58	0.65
7.0	Approximate charging current per phase at Uo=6 kV and f = 50 Hz	mA/m	0.43	0.47	0.53	0.60	0.68	0.75	0.81	0.89	1.00	1.09	1.23
8.0	Sustained current ratings (Laid Singly):												
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	129	154	181	220	263	298	332	374	431	482	541
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	112	134	158	194	232	264	296	335	387	435	492
8.3	Laid in air Ambient temp. 30°C	A	143	172	205	253	307	352	397	453	529	599	683
9.0	Short circuit current rating of conductor for 1 second	kA	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Copper Conductor**Copper Conductor****3 Core, Drylam armoured Cables, 8.7/15 (17.5) kV to IEC 60502-2**

Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions													
1.0	Cable overall diameter (Approximate)	mm	50.5	52.5	55.5	59.0	63.0	66.5	69.5	74.5	80.0	84.5	91.5
2.0	Cable weight (Approximate)	kg/km	3885	4345	4940	5800	6915	7895	8930	10975	13110	15295	18300
3.0	Standard drum length (±5% Tolerance)	m	500	500	500	500	500	500	500	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters													
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.928	0.669	0.494	0.343	0.247	0.197	0.160	0.129	0.099	0.080	0.064
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.130	0.124	0.118	0.109	0.104	0.100	0.097	0.094	0.090	0.088	0.085
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.937	0.680	0.508	0.360	0.268	0.221	0.187	0.160	0.134	0.119	0.106
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.623	1.178	0.880	0.624	0.464	0.383	0.324	0.277	0.232	0.206	0.184
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.19	0.20	0.23	0.26	0.29	0.31	0.34	0.37	0.41	0.45	0.50
7.0	Approximate charging current per phase at Uo=8.7 kV and f = 50 Hz	mA/m	0.52	0.55	0.63	0.71	0.79	0.85	0.93	1.01	1.12	1.23	1.37
8.0	Sustained current ratings (Laid Singly):												
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	129	154	181	220	263	298	332	374	431	482	541
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	112	134	158	194	232	264	296	335	387	435	492
8.3	Laid in air Ambient temp. 30°C	A	143	172	205	253	307	352	397	453	529	599	683
9.0	Short circuit current rating of conductor for 1 second	kA	3.58	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Copper Conductor**Copper Conductor**

3 Core, Drylam armoured Cables, 12/20 (24) kV to IEC 60502-2

(Also suitable for 12.7/22 (24) kV Effectively Earthed system)

Nominal Area of Conductor		35	50	70	95	120	150	185	240	300	400
(A) Manufacturing Dimensions											
1.0	Cable overall diameter (Approximate)	mm	57.0	59.5	63.0	67.0	70.5	75.0	78.5	84.0	89.0
2.0	Cable weight (Approximate)	kg/km	4815	5420	6305	7420	8415	10170	11585	13715	15965
3.0	Standard drum length (±5% Tolerance)	m	500	500	500	500	250	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters											
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.669	0.494	0.343	0.247	0.196	0.160	0.128	0.099	0.080
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.130	0.124	0.114	0.109	0.105	0.102	0.098	0.094	0.091
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.682	0.509	0.361	0.270	0.222	0.190	0.161	0.137	0.121
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.181	0.882	0.625	0.468	0.385	0.329	0.279	0.237	0.210
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.18	0.20	0.22	0.25	0.27	0.29	0.31	0.35	0.38
7.0	Approximate charging current per phase at Uo=12 kV and f = 50 Hz	mA/m	0.68	0.75	0.83	0.94	1.02	1.09	1.17	1.32	1.43
8.0	Sustained current ratings (Laid Singly):										
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	154	181	220	263	298	332	374	431	482
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	134	158	194	232	264	296	335	387	435
8.3	Laid in air Ambient temp. 30°C	A	172	205	253	307	352	397	453	529	599
9.0	Short circuit current rating of conductor for 1 second	kA	5.01	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90
											57.20

Copper Conductor

3 Core, Drylam armoured Cables, 18/30 (36) kV to IEC 60502-2 (Also suitable for 19/33 (36) kV Effectively Earthed system)											
Nominal Area of Conductor			50	70	95	120	150	185	240	300	400
(A) Manufacturing Dimensions											
1.0	Cable overall diameter (Approximate)	mm	70.0	75.0	78.5	82.0	85.0	89.0	94.0	99.5	106.0
2.0	Cable weight (Approximate)	kg/km	6705	8320	9510	10625	11725	13220	15420	17740	20830
3.0	Standard drum length (±5% Tolerance)	m	500	250	250	250	250	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters											
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.494	0.343	0.247	0.196	0.160	0.128	0.098	0.080	0.064
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.137	0.126	0.120	0.115	0.112	0.107	0.103	0.100	0.096
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.513	0.365	0.275	0.227	0.195	0.167	0.142	0.128	0.115
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	0.889	0.632	0.476	0.393	0.338	0.289	0.246	0.222	0.199
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.15	0.17	0.19	0.20	0.22	0.23	0.26	0.28	0.31
7.0	Approximate charging current per phase at Uo=18 kV and f = 50 Hz	mA/m	0.85	0.96	1.07	1.13	1.24	1.30	1.47	1.58	1.75
8.0	Sustained current ratings (Laid Singly):										
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	181	220	263	298	332	374	431	482	541
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	158	194	232	264	296	335	387	435	492
8.3	Laid in air Ambient temp. 30°C	A	205	253	307	352	397	453	529	599	683
9.0	Short circuit current rating of conductor for 1 second	kA	7.15	10.01	13.59	17.16	21.45	26.46	34.32	42.90	57.20

Aluminium Conductor**Aluminium Conductor**

3 Core, Drylam armoured Cables, 3.6/6 (7.2) kV to IEC 60502-2												(Also suitable for 3.8/6.6 (7.2) kV Effectively Earthed system)	
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions													
1.0	Cable overall diameter (Approximate)	mm	41.0	43.5	47.0	50.5	54.5	58.0	61.0	65.0	70.5	78.0	85.5
2.0	Cable weight (Approximate)	kg/km	2350	2580	3215	3705	4235	4760	5250	5875	6885	8630	10195
3.0	Standard drum length (±5% Tolerance)	m	500	500	500	500	500	500	500	500	500	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters													
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.540	1.110	0.823	0.569	0.411	0.326	0.266	0.212	0.162	0.131	0.103
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.114	0.109	0.104	0.096	0.092	0.089	0.087	0.084	0.082	0.081	0.079
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.540	1.120	0.830	0.577	0.421	0.338	0.280	0.228	0.182	0.154	0.130
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	2.667	1.940	1.438	0.999	0.729	0.585	0.485	0.395	0.315	0.267	0.225
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.29	0.33	0.37	0.42	0.48	0.53	0.57	0.62	0.68	0.69	0.73
7.0	Approximate charging current per phase at Uo=3.6 kV and f = 50 Hz	mA/m	0.33	0.37	0.42	0.48	0.54	0.60	0.64	0.70	0.77	0.78	0.83
8.0	Sustained current ratings (Laid Singly):												
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	100	119	140	171	204	232	259	293	338	380	432
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	87	104	123	150	180	206	231	262	304	343	393
8.3	Laid in air Ambient temp. 30°C	A	111	133	159	196	238	274	309	354	415	472	545
9.0	Short circuit current rating of conductor for 1 second	kA	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

Aluminium Conductor**Aluminium Conductor**

3 Core, Drylam armoured Cables, 6/10 (12) kV to IEC 60502-2												(Also suitable for 6.35/11 (12) kV Effectively Earthed system)	
Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions													
1.0	Cable overall diameter (Approximate)	mm	44.5	48.0	51.0	54.5	58.5	62.0	65.0	68.5	75.0	80.5	87.0
2.0	Cable weight (Approximate)	kg/km	2660	3250	3605	4095	4665	5160	5675	6350	8015	9015	10425
3.0	Standard drum length (±5% Tolerance)	m	500	500	500	500	500	500	500	500	250	250	
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters													
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.540	1.110	0.823	0.569	0.411	0.326	0.266	0.212	0.162	0.131	0.103
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.122	0.116	0.111	0.102	0.098	0.094	0.092	0.089	0.086	0.083	0.081
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.540	1.120	0.830	0.578	0.423	0.339	0.281	0.230	0.183	0.155	0.131
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	2.667	1.940	1.438	1.001	0.733	0.587	0.487	0.398	0.317	0.268	0.227
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.23	0.25	0.28	0.32	0.36	0.40	0.43	0.47	0.53	0.58	0.65
7.0	Approximate charging current per phase at Uo=6 kV and f = 50 Hz	mA/m	0.43	0.47	0.53	0.60	0.68	0.75	0.81	0.89	1.00	1.09	1.23
8.0	Sustained current ratings (Laid Singly):												
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	100	119	140	171	204	232	259	293	338	380	432
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	87	104	123	150	180	206	231	262	304	343	393
8.3	Laid in air Ambient temp. 30°C	A	111	133	159	196	238	274	309	354	415	472	545
9.0	Short circuit current rating of conductor for 1 second	kA	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

Aluminium Conductor**Aluminium Conductor****3 Core, Drylam armoured Cables, 8.7/15 (17.5) kV to IEC 60502-2**

Nominal Area of Conductor		25	35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions													
1.0	Cable overall diameter (Approximate)	mm	50.5	52.5	55.5	59.0	63.0	66.5	69.5	74.5	80.0	84.5	91.5
2.0	Cable weight (Approximate)	kg/km	3430	3710	4085	4580	5190	5715	6240	7620	8670	9730	11210
3.0	Standard drum length (±5% Tolerance)	m	500	500	500	500	500	500	250	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters													
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.540	1.110	0.823	0.569	0.411	0.326	0.265	0.212	0.162	0.131	0.103
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.130	0.124	0.118	0.109	0.104	0.100	0.097	0.094	0.090	0.088	0.085
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.550	1.120	0.831	0.579	0.424	0.341	0.282	0.232	0.185	0.158	0.134
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	2.685	1.940	1.439	1.003	0.734	0.591	0.488	0.402	0.320	0.274	0.232
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.19	0.20	0.23	0.26	0.29	0.31	0.34	0.37	0.41	0.45	0.50
7.0	Approximate charging current per phase at Uo=8.7 kV and f = 50 Hz	mA/m	0.52	0.55	0.63	0.71	0.79	0.85	0.93	1.01	1.12	1.23	1.37
8.0	Sustained current ratings (Laid Singly):												
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	100	119	140	171	204	232	259	293	338	380	432
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	87	104	123	150	180	206	231	262	304	343	393
8.3	Laid in air Ambient temp. 30°C	A	111	133	159	196	238	274	309	354	415	472	545
9.0	Short circuit current rating of conductor for 1 second	kA	2.35	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

Aluminium Conductor

3 Core, Drylam armoured Cables, 12/20 (24) kV to IEC 60502-2 (Also suitable for 12.7/22 (24) kV Effectively Earthed system)												
Nominal Area of Conductor		35	50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions												
1.0	Cable overall diameter (Approximate)	mm	57.0	59.5	63.0	67.0	70.5	75.0	78.5	84.0	89.0	95.5
2.0	Cable weight (Approximate)	kg/km	4180	4565	5080	5695	6235	7480	8230	9280	10400	11885
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	500	500	500	500	250	250	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters												
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	1.110	0.823	0.569	0.411	0.325	0.265	0.212	0.162	0.130	0.103
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.130	0.124	0.114	0.109	0.105	0.102	0.098	0.094	0.091	0.088
4.0	Impedance at 50 Hz (Approximate)	ohm/km	1.120	0.832	0.580	0.425	0.342	0.284	0.234	0.187	0.159	0.135
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.940	1.441	1.005	0.736	0.592	0.492	0.405	0.324	0.275	0.234
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.18	0.20	0.22	0.25	0.27	0.29	0.31	0.35	0.38	0.42
7.0	Approximate charging current per phase at $U_0=12$ kV and $f = 50$ Hz	mA/m	0.68	0.75	0.83	0.94	1.02	1.09	1.17	1.32	1.43	1.58
8.0	Sustained current ratings (Laid Singly):											
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	119	140	171	204	232	259	293	338	380	432
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	104	123	150	180	206	231	262	304	343	393
8.3	Laid in air Ambient temp. 30°C	A	133	159	196	238	274	309	354	415	472	545
9.0	Short circuit current rating of conductor for 1 second	kA	3.29	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

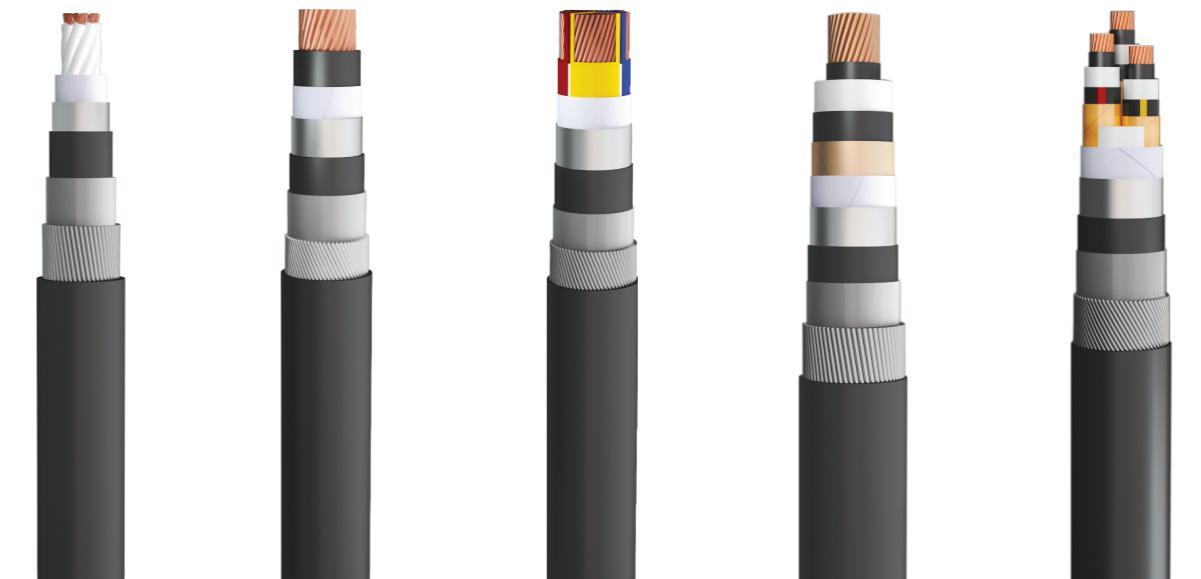
Aluminium Conductor

3 Core, Drylam armoured Cables, 18/30 (36) kV to IEC 60502-2 (Also suitable for 19/33 (36) kV Effectively Earthed system)											
Nominal Area of Conductor		50	70	95	120	150	185	240	300	400	
(A) Manufacturing Dimensions											
1.0	Cable overall diameter (Approximate)	mm	70.0	75.0	78.5	82.0	85.0	89.0	94.0	99.5	106.0
2.0	Cable weight (Approximate)	kg/km	5855	7095	7790	8440	9035	9865	10985	12170	13745
3.0	Standard drum length ($\pm 5\%$ Tolerance)	m	500	250	250	250	250	250	250	250	250
4.0	Minimum bending radius of cable (During installation)	x Cable OD	17	17	17	17	17	17	17	17	17
(B) Electrical Parameters											
1.0	DC resistance of conductor at 20°C (Max)	ohm/km	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778
2.0	AC resistance of conductor at 90°C (Approximate)	ohm/km	0.823	0.569	0.411	0.325	0.265	0.212	0.162	0.130	0.102
3.0	Reactance at 50 Hz (Approximate)	ohm/km	0.137	0.126	0.120	0.115	0.112	0.107	0.103	0.100	0.096
4.0	Impedance at 50 Hz (Approximate)	ohm/km	0.834	0.583	0.428	0.345	0.288	0.237	0.192	0.164	0.140
5.0	Voltage drop (Approximate for 3 phase system)	v/amp/km	1.445	1.010	0.741	0.598	0.499	0.410	0.333	0.284	0.242
6.0	Capacitance at 50 Hz (Approximate)	μF/km	0.15	0.17	0.19	0.20	0.22	0.23	0.26	0.28	0.31
7.0	Approximate charging current per phase at $U_0=18$ kV and $f = 50$ Hz	mA/m	0.85	0.96	1.07	1.13	1.24	1.30	1.47	1.58	1.75
8.0	Sustained current ratings (Laid Singly):										
8.1	Laid direct Ground temp. 20°C Thermal resistivity of soil 1.5°C m/W Depth of laying 0.8 m	A	140	171	204	232	259	293	338	380	432
8.2	Drawn into ducts, ground temp. = 20 °C, Thermal resistivity of soil = 1.5 °C m/W and Thermal resistivity of Earthenware duct = 1.2 °C m/W, depth of laying = 0.8 m	A	123	150	180	206	231	262	304	343	393
8.3	Laid in air Ambient temp. 30°C	A	159	196	238	274	309	354	415	472	545
9.0	Short circuit current rating of conductor for 1 second	kA	4.70	6.58	8.93	11.28	14.10	17.39	22.56	28.20	37.60

DRYLAM™ Cables

Cable Line-up

Drylam Cables



Control Cable

Low Voltage
Single Core

Low Voltage
Multi Core

Medium Voltage
Single Core

Medium Voltage
Multi Core

General Tables

3

Low Voltage Cables

Standard Conditions

Standard conditions used in this catalogue (for LV Cables), to the given Tabulated current rating are shown in the below table.

I	Ground Temperature	35 °C
II	Ambient Air Temperature	50 °C
III	Conductor Temperature	90 °C
IV	Thermal Resistivity of Ground	1.2 K m/W
V	Depth of Laying	0.5 m

RATING FACTORS FOR DEPTH OF LAYING FOR CABLES LAID DIRECT IN GROUND OR IN DUCTS
(FOR INSTALLATION IN GROUND & DUCT ONLY)

Depth of Laying meter	Cables Laid Direct in Ground			Cables Laid in Ducts	
	Up to 50 mm ²	70 mm ² to 300 mm ²	Above 300 mm ²	Single Core	Multicore
0.5	1.000	1.000	1.000	1.000	1.000
0.6	0.990	0.980	0.970	0.980	0.990
0.75	0.975	0.965	0.947	0.957	0.982
0.8	0.970	0.960	0.940	0.950	0.980
1.0	0.950	0.930	0.920	0.930	0.960
1.25	0.940	0.920	0.890	0.910	0.950
1.5	0.930	0.900	0.870	0.890	0.940
1.75	0.920	0.890	0.860	0.880	0.940
2.0	0.910	0.880	0.850	0.870	0.930
2.5	0.900	0.870	0.840	0.860	0.920
3 or more	0.890	0.850	0.820	0.850	0.910

Rating Factor Tables

The current rating values mentioned in the previous current rating tables are based on the standard conditions mentioned in the applicable table of LV Cables. For different ground temperature,

ambient temperature, thermal resistivity of the ground and for more than one cable in the same trench, the following factors shall be applicable.

RATING FACTORS FOR VARIATION IN AMBIENT TEMPERATURE FOR CABLES LAID IN AIR (FOR INSTALLATION IN AIR ONLY)							
Ambient Air Temperature °C		25	30	35	40	45	50
Rating Factor		1.28	1.23	1.18	1.13	1.06	1.00
55							

RATING FACTORS FOR VARIATION IN GROUND TEMPERATURE FOR CABLES LAID DIRECT IN GROUND OR IN DUCTS (FOR INSTALLATION IN GROUND & DUCT ONLY)							
Ground temperature °C		15	20	25	30	35	40
Rating Factor		1.16	1.13	1.08	1.03	1.00	0.95
45							

RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR TWO OR THREE SINGLE-CORE CABLES LAID DIRECT IN THE GROUND (FOR INSTALLATION IN GROUND ONLY)

Nominal Area of Conductor mm ²	Thermal Resistivity of Soil in K.m/W										
	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0
Up to 50	1.21	1.16	1.11	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
70	1.22	1.16	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
95	1.22	1.16	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
120	1.22	1.16	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
150	1.22	1.16	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.63	0.59
185	1.22	1.17	1.12	1.07	1.0	0.91	0.81	0.73	0.68	0.62	0.59
240	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.68	0.62	0.59
300	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.68	0.62	0.59
400	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.67	0.62	0.58
500	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.67	0.62	0.58
630	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.73	0.67	0.61	0.58
800	1.23	1.17	1.12	1.07	1.0	0.91	0.80	0.72	0.66	0.61	0.58
1000	1.24	1.18	1.12	1.07	1.0	0.91	0.80	0.72	0.66	0.61	0.58

RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR TWIN OR MULTI-CORE CABLES LAID DIRECT IN THE GROUND (FOR INSTALLATION IN GROUND ONLY)

Nominal Area of Conductor mm ²	Thermal Resistivity of Soil in K.m/W										
	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0
1.5/2.5	1.12	1.09	1.07	1.04	1.0	0.94	0.86	0.80	0.75	0.70	0.66
4	1.13	1.10	1.07	1.05	1.0	0.94	0.85	0.79	0.74	0.69	0.65
6	1.14	1.10	1.07	1.05	1.0	0.93	0.85	0.79	0.74	0.68	0.64
10	1.15	1.11	1.08	1.05	1.0	0.93	0.85	0.78	0.73	0.67	0.63
16	1.16	1.12	1.08	1.05	1.0	0.93	0.84	0.77	0.72	0.66	0.62
25	1.17	1.13	1.09	1.05	1.0	0.93	0.83	0.77	0.71	0.65	0.61
35	1.17	1.13	1.09	1.06	1.0	0.92	0.83	0.76	0.71	0.65	0.61
50	1.17	1.13	1.09	1.06	1.0	0.92	0.83	0.76	0.71	0.65	0.61
70	1.18	1.14	1.09	1.06	1.0	0.92	0.83	0.75	0.70	0.64	0.60
95	1.18	1.14	1.09	1.06	1.0	0.92	0.83	0.75	0.70	0.64	0.60
120	1.19	1.14	1.10	1.06	1.0	0.92	0.82	0.75	0.69	0.64	0.60
150	1.19	1.14	1.10	1.06	1.0	0.92	0.82	0.75	0.69	0.63	0.59
185	1.19	1.14	1.10	1.06	1.0	0.92	0.82	0.74	0.69	0.63	0.59
240	1.20	1.15	1.10	1.07	1.0	0.92	0.81	0.74	0.69	0.63	0.59
300	1.20	1.15	1.10	1.07	1.0	0.92	0.81	0.74	0.69	0.63	0.59
400	1.20	1.15	1.10	1.07	1.0	0.92	0.81	0.74	0.69	0.63	0.59

RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR TWIN OR MULTI-CORE CABLES LAID IN SINGLE WAY DUCTS (FOR INSTALLATION IN DUCT ONLY)

Nominal Area of Conductor mm ²	Thermal Resistivity of Soil in K.m/W										
	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0
1.5/2.5	1.04	1.03	1.02	1.02	1.0	0.98	0.94	0.91	0.88	0.86	0.83
4	1.04	1.04	1.03	1.02	1.0	0.97	0.94	0.90	0.87	0.85	0.82
6	1.05	1.04	1.03	1.02	1.0	0.97	0.93	0.90	0.86	0.84	0.81
10	1.05	1.04	1.03	1.02	1.0	0.97	0.93	0.89	0.86	0.83	0.80
16	1.06	1.04	1.03	1.02	1.0	0.97	0.92	0.88	0.85	0.82	0.79
25	1.06	1.05	1.03	1.02	1.0	0.96	0.92	0.88	0.84	0.82	0.78
35	1.06	1.05	1.03	1.02	1.0	0.96	0.92	0.87	0.83	0.81	0.77
50	1.07	1.05	1.03	1.02	1.0	0.96	0.91	0.87	0.83	0.80	0.77
70	1.07	1.05	1.04	1.02	1.0	0.96	0.91	0.86	0.82	0.79	0.76
95	1.07	1.06	1.04	1.02	1.0	0.96	0.91	0.86	0.82	0.78	0.75
120	1.08	1.06	1.04	1.03	1.0	0.95	0.90	0.85	0.81	0.78	0.74
150	1.09	1.06	1.04	1.03	1.0	0.95	0.90	0.85	0.80	0.77	0.73
185	1.09	1.07	1.05	1.03	1.0	0.95	0.89	0.84	0.80	0.76	0.72
240	1.09	1.07	1.05	1.03	1.0	0.95	0.89	0.84	0.79	0.76	0.72
300	1.10	1.07	1.05	1.03	1.0	0.95	0.88	0.83	0.78	0.75	0.71
400	1.10	1.07	1.05	1.03	1.0	0.95	0.88	0.83	0.78	0.75	0.71

RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR THREE SINGLE-CORE CABLES IN DUCTS (FOR INSTALLATION IN DUCT ONLY)

Nominal Area of Conductor mm ²	Thermal Resistivity of Soil in K.m/W										
	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0
Up to 50	1.11	1.08	1.06	1.04	1.0	0.94	0.87	0.82	0.77	0.73	0.69
70	1.12	1.09	1.06	1.04	1.0	0.94	0.87	0.81	0.76	0.72	0.68
95	1.12	1.09	1.06	1.04	1.0	0.94	0.87	0.81	0.76	0.72	0.68
120	1.13	1.10	1.07	1.04	1.0	0.94	0.86	0.80	0.75	0.72	0.67
150	1.13	1.10	1.07	1.04	1.0	0.94	0.86	0.80	0.75	0.71	0.67
185	1.13	1.10	1.07	1.04	1.0	0.93	0.86	0.79	0.75	0.70	0.67
240	1.14	1.11	1.07	1.04	1.0	0.93	0.86	0.79	0.74	0.70	0.66
300	1.14	1.11	1.08	1.05	1.0	0.93	0.85	0.79	0.74	0.69	0.65
400	1.14	1.11	1.08	1.05	1.0	0.93	0.85	0.78	0.73	0.68	0.65
500	1.15	1.11	1.08	1.05	1.0	0.93	0.85	0.78	0.73	0.68	0.64
630	1.15	1.12	1.08	1.05	1.0	0.93	0.84	0.78	0.72	0.68	0.64
800	1.16	1.12	1.09	1.05	1.0	0.93	0.84	0.77	0.72	0.67	0.64
1000	1.16	1.13	1.09	1.05	1.0	0.92	0.84	0.77	0.71	0.67	0.63

GROUP RATING FACTORS FOR MORE THAN ONE TWIN OR MULTI-CORE ARMoured OR UNARMoured CABLES IN HORIZONTAL FORMATION LAID IN DIRECT GROUND (FOR INSTALLATION IN GROUND ONLY)

No. of cables	2	3	4	5	6	7	8	9	10	11	12
Cables laid touching	0.81	0.70	0.63	0.59	0.55	0.52	0.50	0.48	0.47	0.45	0.44
Cables laid 15 cm apart	0.87	0.78	0.74	0.70	0.68	0.66	0.64	0.63	0.62	0.61	0.60
Cables laid 30 cm apart	0.91	0.84	0.81	0.78	0.77	0.75	0.75</td				

GROUP RATING FACTORS FOR MORE THAN ONE TWIN OR MULTI-CORE ARMoured OR UNARMoured CABLES IN HORIZONTAL FORMATION LAID IN SINGLE WAY DUCTS (FOR INSTALLATION IN Duct ONLY)

No. of cables	2	3	4	5	6	7	8	9	10	11	12
Cables laid touching	0.90	0.83	0.79	0.75	0.73	0.71	0.70	0.68	0.67	0.66	0.66
Cables laid 30 cm apart	0.93	0.88	0.85	0.83	0.82	0.81	0.80	0.79	0.79	0.78	0.78
Cables laid 45 cm apart	0.95	0.91	0.89	0.88	0.87	0.86	0.85	0.85	0.85	0.84	0.84
Cables laid 60 cm apart	0.96	0.93	0.92	0.91	0.90	0.89	0.89	0.89	0.89	0.88	0.88

GROUP RATING FACTORS FOR MORE THAN ONE CIRCUITS OF 3 SINGLE CORE ARMoured OR UNARMoured CABLES IN TREFOIL TOUCHING, HORIZONTAL FORMATION LAID IN SINGLE WAY DUCTS (FOR INSTALLATION IN Duct ONLY)

No. of circuits	2	3	4	5	6	7	8	9	10	11	12
Cables laid touching	0.87	0.78	0.74	0.70	0.69	0.67	0.66	0.65	0.64	0.63	0.63
Cables laid 45 cm apart	0.91	0.84	0.81	0.79	0.78	0.76	0.76	0.75	0.75	0.74	0.74
Cables laid 45 cm apart	0.93	0.87	0.85	0.83	0.82	0.82	0.81	0.81	0.80	0.80	0.80

GROUP RATING 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 (FOR INSTALLATION IN AIR ONLY)

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	0.82	0.78	0.73	0.72
	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 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 2: 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.

GROUP RATING FACTORS FOR GROUPS OF MORE THAN ONE CIRCUIT OF SINGLE-CORE CABLES - TO BE APPLIED TO THE CURRENT - CARRYING CAPACITY FOR ONE CIRCUIT OF SINGLE - CORE CABLES IN FREE AIR (FOR INSTALLATION IN AIR ONLY)

Method of Installation	Number of trays	Number of three-phase circuits (Note 3)			Use as a multiplier to rating for
		1	2	3	
Perforated trays (Note 1)	1	1.00	0.98	0.96	Three cables in trefoil formation
	2	0.97	0.93	0.89	
	3	0.96	0.92	0.86	
Vertical perforated trays (Note 2)	1	1.00	0.91	0.89	
	2	1.00	0.90	0.86	
	3	1.00	0.99	0.95	
Ladder supports, cleats, etc. (Note 1)	1	1.00	1.00	1.00	
	2	0.97	0.95	0.93	
	3	0.96	0.94	0.90	

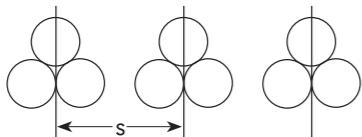
Note 1: Values are given for vertical spacings between trays of 300 mm. For closer spacing, the factors should be reduced.

Note 2: 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 3: 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.

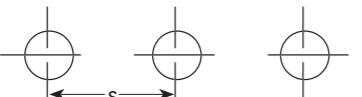
Medium Voltage Cables

GROUP RATING FACTORS FOR CIRCUITS OF THREE SINGLE CORE CABLES, IN TREFOIL LAID DIRECT IN GROUND					
Number of trefools in group	Spacing between group centres (S) mm				
	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	-	-



S = Spacing between the group's centre

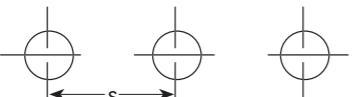
GROUP RATING FACTORS FOR CIRCUITS OF THREE CORE CABLES, LAID DIRECT IN GROUND					
Number of trefools in group	Spacing between group centres (S) mm				
	Touching	200	400	600	800
2	0.80	0.86	0.90	0.92	0.94
3	0.69	0.77	0.82	0.86	0.89
4	0.62	0.72	0.79	0.83	0.87
5	0.57	0.68	0.76	0.81	0.85
6	0.54	0.65	0.74	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	-	-



S = Spacing between the cable's centre

Nominal area of conductor mm ²	Values of soil thermal resistivity °C - m/W							
	0.7	0.8	0.9	1	1.5	2	2.5	3
25	1.30	1.25	1.20	1.16	1.00	0.89	0.81	0.75
35	1.30	1.25	1.21	1.16	1.00	0.89	0.81	0.75
50	1.32	1.26	1.21	1.16	1.00	0.89	0.81	0.74
70	1.33	1.27	1.22	1.17	1.00	0.89	0.81	0.74
95	1.34	1.28	1.22	1.18	1.00	0.89	0.80	0.74
120	1.34	1.28	1.22	1.18	1.00	0.88	0.80	0.74
150	1.35	1.28	1.23	1.18	1.00	0.88	0.80	0.74
185	1.35	1.29	1.23	1.18	1.00	0.88	0.80	0.74
240	1.36	1.29	1.23	1.18	1.00	0.88	0.80	0.74
300	1.36	1.30	1.24	1.19	1.00	0.88	0.80	0.73
400 & above	1.37	1.30	1.24	1.19	1.00	0.88	0.79	0.73

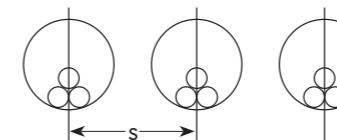
Nominal area of conductor mm ²	Values of soil thermal resistivity °C - m/W							
	0.7	0.8	0.9	1	1.5	2	2.5	3
25	1.24	1.20	1.16	1.13	1.00	0.91	0.84	0.78
35	1.25	1.21	1.17	1.13	1.00	0.91	0.83	0.78
50	1.25	1.21	1.17	1.14	1.00	0.91	0.83	0.77
70	1.26	1.21	1.18	1.14	1.00	0.90	0.83	0.77
95	1.26	1.22	1.18	1.14	1.00	0.90	0.83	0.77
120	1.26	1.22	1.18	1.14	1.00	0.90	0.83	0.77
150	1.27	1.22	1.18	1.15	1.00	0.90	0.83	0.77
185	1.27	1.23	1.18	1.15	1.00	0.90	0.83	0.77
240	1.28	1.23	1.19	1.15	1.00	0.90	0.83	0.77
300	1.28	1.23	1.19	1.15	1.00	0.90	0.82	0.77
400	1.28	1.23	1.19	1.15	1.00	0.90	0.82	0.76



S = Spacing between the cable's centre

RATING FACTOR FOR DEPTH OF LAYING FOR CABLE LAID DIRECT IN GROUND				
Depth of laying m	Single-core cables		Three-core cables	
	Nominal conductor size mm ²			
	≤185 mm ²	>185 mm ²		
0.5	1.04	1.06	1.04	
0.6	1.02	1.04	1.03	
0.8	1.00	1.00	1.00	
1.0	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	0.93	0.90	0.93	
2.5	0.91	0.88	0.91	
3.0	0.90	0.86	0.90	

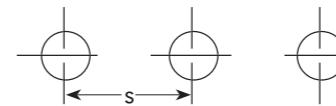
GROUP RATING FACTORS FOR CIRCUITS OF THREE SINGLE CORE CABLES, IN DUCTS IN TREFOIL					
Number of trefoils in group	Spacing between group centres (S) mm				
	Touching	200	400	600	800
2	0.78	0.85	0.89	0.91	0.93
3	0.66	0.75	0.81	0.85	0.88
4	0.59	0.70	0.77	0.82	0.86
5	0.55	0.63	0.74	0.80	0.84
6	0.51	0.64	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	-	-



S = Spacing between the Trefoil group centres in mm

RATING FACTOR FOR VARIATION IN GROUND TEMPERATURE FOR CABLE LAID DIRECT IN GROUND									
GROUND TEMPERATURE °C	10	15	20	25	30	35	40	45	50
RATING FACTOR	1.07	1.04	1.00	0.96	0.93	0.89	0.85	0.80	0.76

GROUP RATING FACTORS FOR CIRCUITS OF THREE CORE CABLES, IN DUCT IN HORIZONTAL FORMATION					
Number of trefoils in group	Spacing between group centres (S) mm				
	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	-	-



S = Spacing between the cable centres in mm

RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR THREE SINGLE CORE CABLES LAID DIRECT IN DUCT									
Nominal area of conductor	Values of soil thermal resistivity °C - m/W								
	0.7	0.8	0.9	1	1.5	2	2.5	3	
25	1.21	1.17	1.14	1.12	1.00	0.91	0.85	0.79	
35	1.21	1.18	1.15	1.12	1.00	0.91	0.84	0.79	
50	1.21	1.18	1.15	1.12	1.00	0.91	0.84	0.78	
70	1.22	1.19	1.15	1.12	1.00	0.91	0.84	0.78	
95	1.23	1.19	1.16	1.13	1.00	0.91	0.84	0.78	
120	1.23	1.20	1.16	1.13	1.00	0.91	0.84	0.78	
150	1.24	1.20	1.16	1.13	1.00	0.91	0.83	0.78	
185	1.24	1.20	1.17	1.13	1.00	0.91	0.83	0.78	
240	1.25	1.21	1.17	1.14	1.00	0.90	0.83	0.77	
300	1.25	1.21	1.17	1.14	1.00	0.90	0.83	0.77	
400 & above	1.25	1.21	1.17	1.14	1.00	0.90	0.83	0.77	

RATING FACTOR FOR DEPTH OF LAYING FOR CABLES LAID DIRECT IN DUCT											
Depth of laying m	Single-core cables									Three-core cables	
	Nominal conductor size mm²										
	≤185 mm²						>185 mm²				
0.5	1.04						1.05			1.03	
0.6	1.02						1.03			1.02	
0.8	1.00						1.00			1.00	
1.0	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	0.93						0.91			0.94	
2.5	0.91						0.89			0.93	
3.0	0.90						0.88			0.92	

RATING FACTORS FOR VARIATION IN THERMAL RESISTIVITY OF SOIL FOR THREE CORE CABLE LAID IN SINGLE WAY DUCT									
Nominal area of conductor	Values of soil thermal resistivity °C - m/W								
	0.7	0.8	0.9	1	1.5	2	2.5	3	
25	1.14	1.12	1.10	1.08	1.00	0.94	0.89	0.84	
35	1.14	1.12	1.10	1.08	1.00	0.94	0.88	0.84	
50	1.14	1.12	1.10	1.08	1.00	0.94	0.88	0.84	
70	1.15	1.13	1.11	1.09	1.00	0.94	0.88	0.83	
95	1.15	1.13	1.11	1.09	1.00	0.94	0.88	0.83	
120	1.15	1.13	1.11	1.09	1.00	0.93	0.88	0.83	
150	1.16	1.13	1.11	1.09	1.00	0.93	0.88	0.83	
185	1.16	1.14	1.11	1.09	1.00	0.93	0.87	0.83	
240	1.16	1.14	1.12	1.10	1.00	0.93	0.87	0.82	
300	1.17	1.14	1.12	1.10	1.00	0.93	0.87	0.82	
400	1.17	1.14	1.12	1.10	1.00	0.92	0.86	0.81	

RATING FACTOR FOR VARIATION IN GROUND TEMPERATURE FOR CABLE LAID DIRECT IN DUCTS									
GROUND TEMPERATURE °C	10	15	20	25	30	35	40	45	50
RATING FACTOR	1.07	1.04	1.00	0.96	0.93	0.89	0.85	0.80	0.76

RATING FACTOR FOR VARIATION IN AMBIENT AIR TEMPERATURE									
AMBIENT TEMPERATURE °C	20	25	30	35	40	45	50	55	60
RATING FACTOR	1.08	1.04	1.00	0.96	0.91	0.87	0.82	0.76	0.71

**GROUP RATING 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	0.89	0.82	0.78	0.73	0.72
	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 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 2: 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.

**GROUP RATING FACTORS FOR GROUPS OF MORE THAN ONE CIRCUIT OF
SINGLE-CORE CABLES - TO BE APPLIED TO THE CURRENT - CARRYING
CAPACITY FOR ONE CIRCUIT OF SINGLE - CORE CABLES IN FREE AIR**

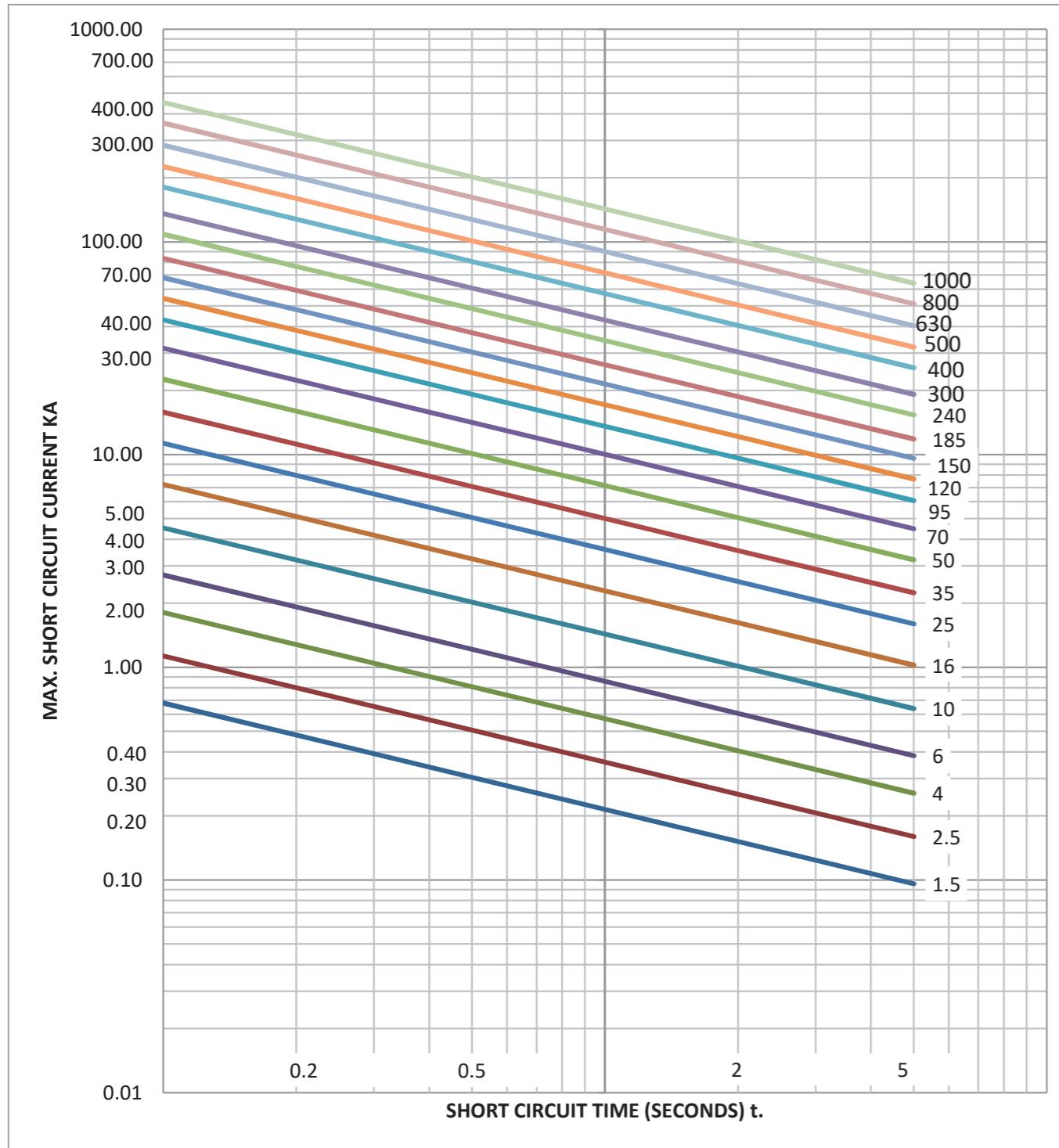
Method of Installation	Number of trays	Number of three-phase circuits (Note 3)			Use as a multiplier to rating for
		1	2	3	
Perforated trays (Note 1)	1	1.00	0.98	0.96	Three cables in trefoil formation
	2	0.97	0.93	0.89	
	3	0.96	0.92	0.86	
Vertical perforated trays (Note 2)	1	1.00	0.91	0.89	
	2	1.00	0.90	0.86	
	3	1.00	1.00	1.00	
Ladder supports, cleats, etc. (Note 1)	1	1.00	1.00	1.00	
	2	0.97	0.95	0.93	
	3	0.96	0.94	0.90	

Note 1: Values are given for vertical spacings between trays of 300 mm. For closer spacing, the factors should be reduced.

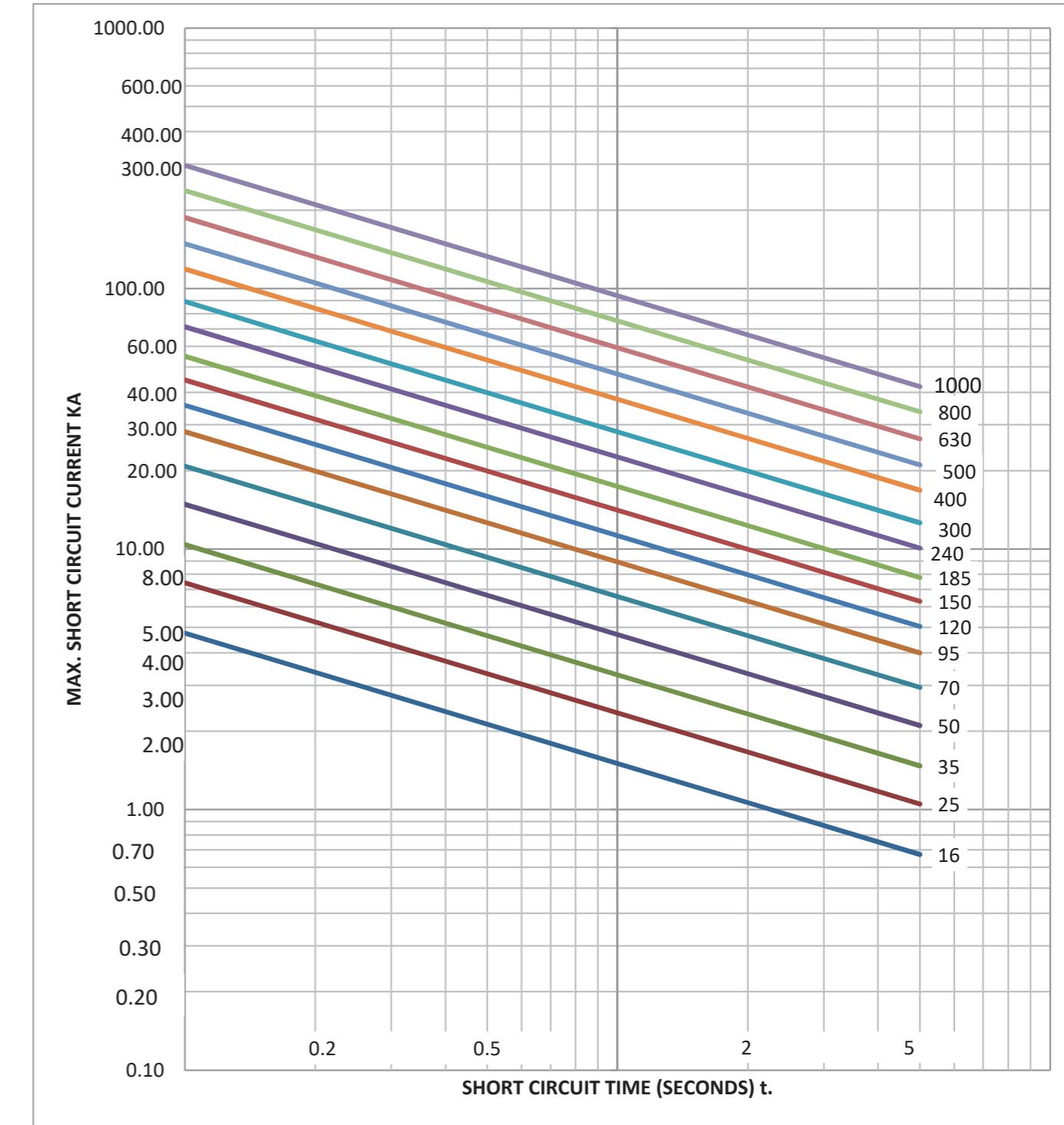
Note 2: Values are given for horizontal spacing between trays of 225 mm with trays mounted back to back. For closer spacing, the factors should be reduced.

Note 3: 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.

**SHORT CIRCUIT CURRENT CURVES FOR
COPPER CONDUCTOR XLPE INSULATED CABLES**



**SHORT CIRCUIT CURRENT CURVES FOR
ALUMINIUM CONDUCTOR XLPE INSULATED CABLES**



Short Circuit Current Rating

It is very important to note that the conductor size necessary for an installation is decided by its ability to carry short circuit current rather than the sustained current. For that, below you can find the permissible short circuit current of XLPE insulated power cables:

$$ISC = KS / SQ. Root (t)$$

ISC = Short Circuit Current (KA)

S = Nominal Area of Conductor

t = ShortCircuit Time (Second)

K = 0.143 for CU and 0.094 for AL

Conductor operating temp 90°C

Conductor short circuit temp 250°C

Pulling Forces

Pulling Socks

One of the limitations that we should consider when installing a cable is not to exceed the maximum pulling force of the cable. The specific type of cable construction imposes this limitation. When a cable pulling sock is placed on a wire armoured cable; the maximum force that can be tolerated to overall cable diameter is given by the following equation:

$$T = K \cdot D^2$$

Where:

T = Maximum pulling load (kgf)

D = Overall diameter of cable (mm)

K = 9

Pulling Eyes

If the cable is to be laid by means of a pulling eye arrangement, many advantages can be achieved including the following:

1. Larger pulling force can be applied on a cable which is useful for long runs or where there are lots of bends on the route.
2. Unarmoured cables and steel armoured cables can be pulled without being damaged. As a guideline the following maximum pulling tensions are recommended:

$$T = K \cdot A \text{ (Newton)}$$

Where:

T = Maximum pulling load

K = 50N/mm² for copper conductors

30N/mm² for Aluminium conductors

A = Total cross-sectional area of all conductors (mm²)

The above figures are based on the ultimate tensile strength of the materials with a safety factor of 2.5. An absolute maximum load of 19.6 KN should be used, as such a load would indicate an obstruction somewhere along the route. By using a 2T (19.6 KN) winch would ensure this value is not exceeded.

When pulling a cable using a cable with pulling eyes, it is important to seal the end of the cable to prevent moisture entering the cable, and to clamp all conductor wires so that all are equally loaded.

The Use of Winches

When a power winch is used to pull cables, it is necessary to pay more attention to the maximum permissible pulling load applied. For that, it is recommended to use a pulling eye and the maximum pulling load can be calculated with the above equation.

When using a winch, additional precautions should be followed:

- A shear pin calibrated to maximum permissible tensile force could be used
- Always use roller guides and/or skid-plates, especially where there are a lot of bends along the route
- The tensile force can be monitored by means of a tensometer

The Use of Rollers and Skid Plates

It is very important to choose the right accessories when cable pulling is applied to maintain the smoothness of the outer sheath of the cable and reduce damage that can occur during the pulling process. It has been proven that the optimum accessory for cable pulling at bends is the horizontal rollers combined with skid plates.



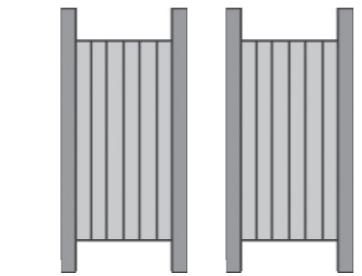
Storage

Cables should be stored with special care to prevent immediate as well as mid-term failures. The below recommendations are for both indoor and outdoor storage applications. Additional measures need to be considered for outdoor drum storage considering the surrounding environmental conditions and in accordance with cable specifications; LSZH, PVC or PE as applicable.

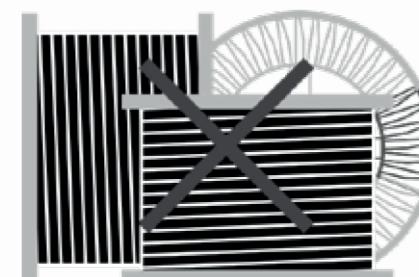
- Cables must be stored in proper packed condition, in the shade. Direct exposure to sun must be avoided.
- Drums should be stacked flange-to-flange and preferably not on top of each other.
- Drums should be stacked so that they are easily accessible.



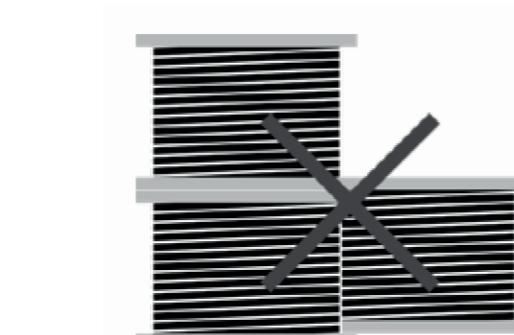
Recommended



Recommended



Not Recommended



Not Recommended

Drum Handling Instructions

Recommended



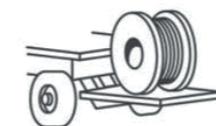
Lift drums correctly onto/from trucks while loading and unloading. Cradle both fringes between forks.



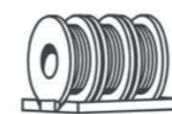
Lifting drums through both flanges using crane



Roll in the direction shown by the arrow



Lower reels from truck using hydraulic gate, hoist or fork lift. Lower carefully.



Always load with flanges on edge and check and block securely



Secure drums adequately before transportation

Not Recommended



Do not lift by top flange, Cable or reel



The reel flanges and mashes the cable



Upended heavy reels will often arrive damaged. Refuse or receive subject to inspection for hidden damage



Never allow forks to touch cable surface or reel wrap



Never drop reels



Do not lay drums flat on their sides, use proper wedges to prevent drums rolling

Warning: Failure to store or install in a proper manner, no in-line with the above may void factory warranty.

List of Certificates

System Certifications

- ISO 9001 - Quality Management System



- ISO 14001 - Environmental Management System



- ISO 45001 - Occupational Health and Safety



Notes

Product Certifications for Drylam Cables

Product Certificate Reference - IMQ - CN19-0044952-01

- CN19-0044952-02

- CN19-0044952-03

Scope of testing certified - IEC 60502-1

- IEC 60502-2

- EN 60811 Series

- IEC 60332-1-2

- IEC 60332-3-22

- ASTM D 2863

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