

Certification Partners



Linking safety in construction to
successful power supply

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Prysmian
Group

Low Voltage Power Cables
XLPE, PVC, LSHF

Low Voltage Power Cable XLPE, PVC, LSHF



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ONE LEADER, TWO BRANDS.

Welcome to the Prysmian Group, the world's leading cable solutions provider.

Over 130 years of aggregated history, 22,000 people in 50 countries and almost 100 plants are the best possible platform for driving change and innovation. Operating through two of the industry's most respected global brands, Prysmian and Draka, we are ready to connect with our customers and help them respond to their present and future challenges. We enable them to bring their services to homes and businesses, cities and entire countries.

VISION

We believe in the effective, efficient and sustainable supply of Energy and Information as a primary driver in the development of communities.

MISSION

We provide our customers worldwide with superior cable solutions based on state-of-the-art technology and consistent excellence in execution, ultimately delivery sustainable growth and profit.

VALUES

Excellence.
Integrity.
Understanding.

We are powered by a clear vision and an ambitious mission. We are guided by the belief in the efficient, effective and sustainable supply of energy and information as a driver in the development of communities. We are linking the future.



If the steel foundations are the bones and spines of the building, the cables are the blood vessels that feed life to it.

It is our commitment to the owner, and social responsibility to all users that we produce world class quality cables to ensure 100% reliability and safety.

Kuala Lumpur Convention Centre



Mid Valley City



S.M.A.R.T Tunnel

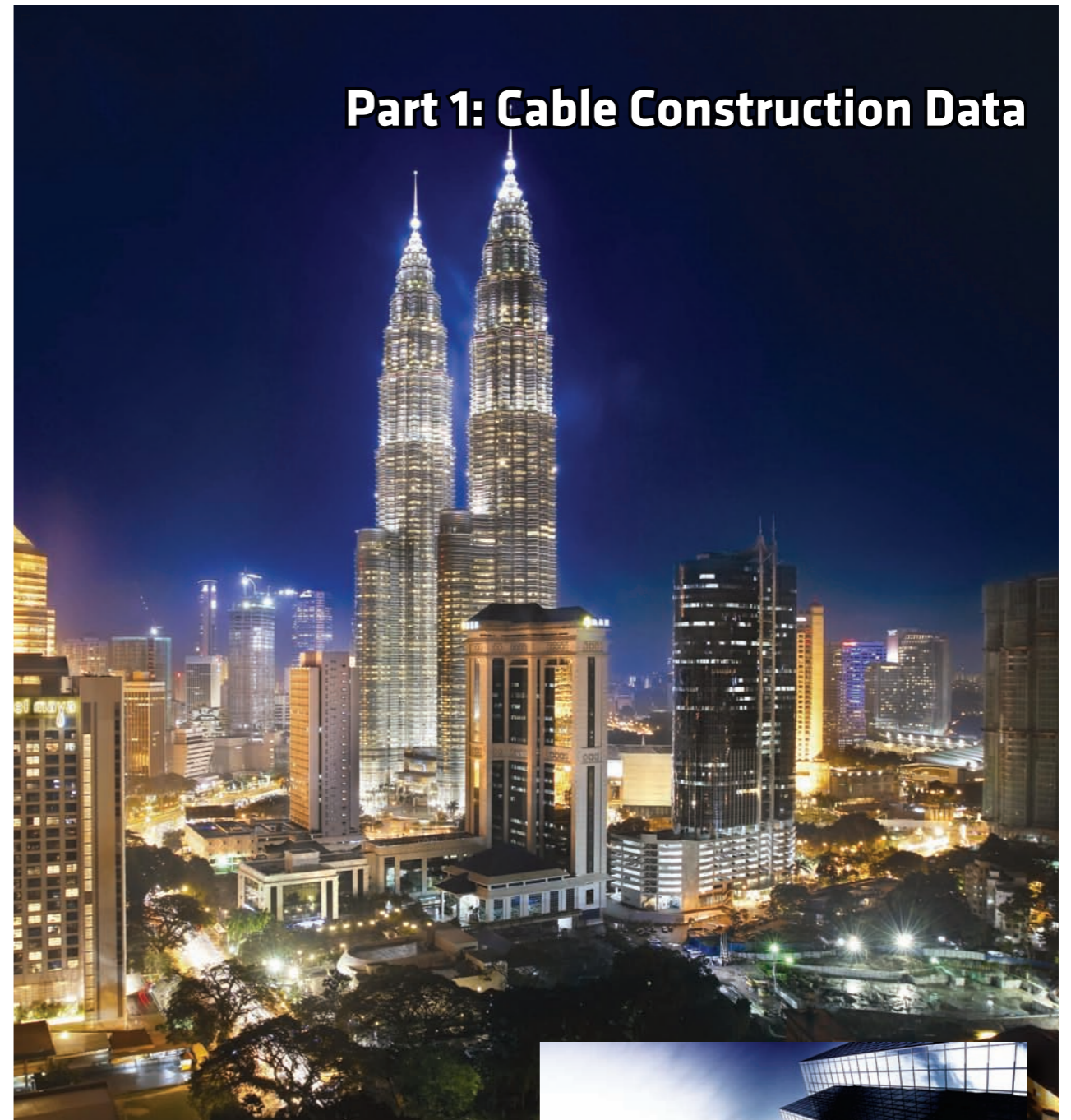


AUO Sunpower, Malaysia



Kuala Lumpur International Airport

Part 1: Cable Construction Data



Standards

In Prysmian Group, we design and manufacture cables to the following standards:-

British Standards (BS)

BS 6004	Electric cables. PVC insulated, non-armoured cables for voltages up to and including 450/750V, for electric power, lighting and internal wiring.
BS6346	Electric cables. PVC insulated, armoured cables for voltages up to 600/1000V and 1900/3300V.
BS 6360	Specification for conductors in insulated cables and cords.
BS 6500	Electric cables, Flexible cords rated up to 300/500V, for use with appliances and equipment intended for domestic, office and similar environments.
BS 6387	Specification for performance requirements for cables required to maintain circuit integrity under fire conditions.
BS 5467	Electric cables. Thermosetting insulated, armoured cables for voltages of 600/1000V and 1900/3300V.
BS 6724	Electric cables. Thermosetting insulated, armoured cables for voltages of 600/1000V and 1900/3300V, having low emission of smoke and corrosive gases when affected by fire.
BS 7671	Requirements for Electrical Installations. IEE Wiring Regulations.
BS 7211	Electric cables. Thermosetting insulated, non-armoured cables for voltages up to and including 450/750V, for electric power, lighting and internal wiring, and having low emission of smoke and corrosive gases when affected by fire.

International Electrotechnical Commission (IEC)

IEC 60227-3	Polyvinyl Chloride Insulated Cables of Rated Voltages up to and including 450/750V Part 3: Non-Sheathed Cables for Fixed Wiring.
IEC 60228	Conductors of Insulated Cables.
IEC 60331	Tests for electric cables under fire conditions - Circuit integrity - Part 11: Apparatus - Fire alone at a flame temperature of at least 750°C.
IEC 60332-1-2	Tests on electric and optical fibre cables under fire conditions - Part 1-1: Test for vertical flame propagation for a single insulated wire or cable Procedure for 1 kW pre-mixed flame.
IEC 60332-3-22	Tests on electric and optical fibre cables under fire conditions - Part 3-22: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category A.
IEC 60332-3-24	Tests on electric and optical fibre cables under fire conditions - Part 3-24: Test for vertical flame spread of vertically-mounted bunched wires or cables - Category C.
IEC 60502-1	Power cables with extruded insulation and their accessories for rated voltages from 1kV (Um = 1,2kV) up to 30kV (Um = 36kV) - Part 1: Cables for rated voltages of 1 kV (Um = 1,2kV) and 3kV (Um = 3.6kV).
IEC 60754-1	Test on gases evolved during combustion of materials from cables - Part 1: Determination of the amount of halogen acid gas.
IEC 60754-2	Test on gases evolved during combustion of electric cables - Part 2: Determination of degree of acidity of gases evolved during the combustion of material taken from electric cables by measuring pH and conductivity.
IEC 61034-2	Measurement of smoke density of cables burning under defined conditions.

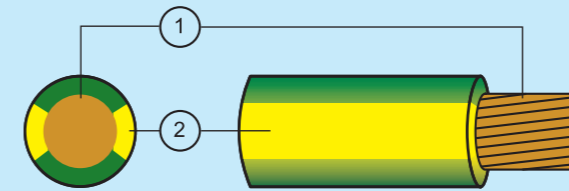
Malaysia Standards

MS 136	PVC-insulated cable (non-armoured) for electric power and lighting.
MS 274	PVC-insulated cables for electricity supply with rated voltage 0.6/1kV

Singapore Standards

SS 358-3	PVC-insulated, non-sheathed cables 450/750V.
SS 299	Specification for fire resistant cables Part 1 - Performance requirements for cables required to maintain circuit integrity under fire conditions.

Single Core CU/PVC PVC Insulated, Non-sheathed 450/750V



Component
1. Copper Conductor
2. PVC Insulation

Standards Applied

Design Guide: IEC60227-3, BS6004, SS358-3, MS136
Conductor: IEC60228, BS6360, BS EN 60228
Flame Retardancy: IEC60332-1-2, IEC60332-3-24**

Electrical Characteristics

Operating voltage, Uo/U: 450/750V
Max. operating temperature: 70°C
Final short circuit temperature: 160°C
Test voltage: 2.5kV for 15 minutes

Installation Guide

Min. bending radius (mm) : 6 x Cable Overall Diameter
Max. pulling tension (kgf) : 7 x No. of Core x Conductor Size

Construction

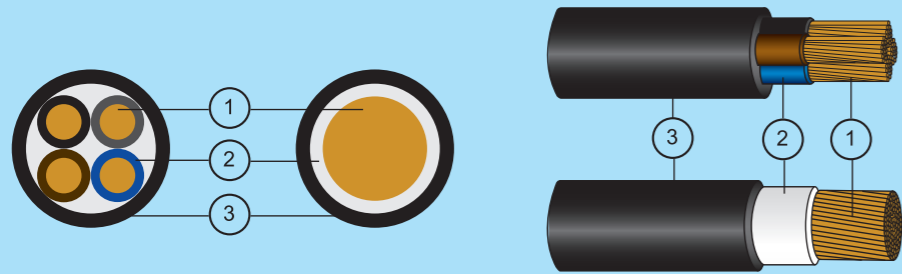
Conductor	Plain annealed copper wire
Insulation	An extruded layer of polyvinyl chloride (PVC) compound
Core Identification	Black, Red, Green/Yellow, Yellow, Blue, White, Grey, Brown or other

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	kg/km	Ω/km
	1	1.5	0.7	3.0	22	12.1
	1	2.5	0.8	3.6	33	7.41
	1	4	0.8	4.2	50	4.61
	1	6	0.8	4.7	70	3.08
	1	10	1.0	6.1	118	1.83
	1	16	1.0	7.1	178	1.15
	1	25	1.2	8.8	280	0.727
	1	35	1.2	10.1	376	0.524
	1	50	1.4	11.7	509	0.387
	1	70	1.4	13.5	717	0.268
	1	95	1.6	15.8	991	0.193
	1	120	1.6	17.4	1229	0.153
	1	150	1.8	19.4	1512	0.124
	1	185	2.0	21.6	1895	0.0991
	1	240	2.2	24.7	2471	0.0754
	1	300	2.4	27.5	3092	0.0601
	1	400	2.6	30.9	3938	0.0470
	1	500	2.8	34.4	4945	0.0366
	1	630	2.8	38.4	6303	0.0283

** Available upon request

Single Core, 2-, 3-, 4-, 5-, multicores CU/PVC/PVC PVC Insulated, PVC sheathed Cable, 0.6/1kV



- Component**
 1. Copper Conductor
 2. PVC Insulation
 3. PVC Sheath

Standards Applied

Design Guide: IEC60502-1, MS274
 Conductor: IEC60228, BS6360, BS EN 60228
 Flame Retardancy: IEC60332-1-2, IEC60332-3-24**, IEC60332-3-22**

Electrical Characteristics

Operating voltage, U₀/U: 600/1000V
 Max. operating temperature: 70°C
 Final short circuit temperature: 160°C
 Test voltage: 3.5kV for 5 minutes

Installation Guide

Min. bending radius (mm) : 8 x Cable Overall Diameter, (sector shape); 6 x cable overall diameter (circular shape)
 Max. pulling tension (kgf) : 7 x No. of Core x Conductor Size

Construction

Conductor	Plain annealed copper wire
Insulation	An extruded layer of polyvinyl chloride (PVC) compound
Core Identification	Refer to Appendix F for details except single core. Single core will come with black insulation.
Assembly***	Cores cabled together, supplied with filler* and covered with polyester (PETP) binder tape*
Outer Sheath	An extruded layer of polyvinyl chloride (PVC) compound
Outer Sheath Colour	Black except single core. Single core will come with grey outer sheath.

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	1	1.5	0.8	1.4	6.0	53	12.1
	1	2.5	0.8	1.4	6.4	66	7.41
	1	4	1.0	1.4	7.4	93	4.61
	1	6	1.0	1.4	7.9	118	3.08
	1	10	1.0	1.4	8.9	167	1.83
	1	16	1.0	1.4	9.9	234	1.15
	1	25	1.2	1.4	11.6	347	0.727
	1	35	1.2	1.4	12.9	451	0.524
	1	50	1.4	1.4	14.5	595	0.387
	1	70	1.4	1.4	16.3	815	0.268
	1	95	1.6	1.5	18.8	1113	0.193
	1	120	1.6	1.6	20.6	1372	0.153
	1	150	1.8	1.6	22.6	1670	0.124
	1	185	2.0	1.7	25.0	2082	0.0991
	1	240	2.2	1.8	28.3	2686	0.0754
	1	300	2.4	1.9	31.3	3342	0.0601
	1	400	2.6	2.0	34.9	4248	0.0470
	1	500	2.8	2.1	38.6	5307	0.0366
	1	630	2.8	2.2	42.8	6736	0.0283
	1	800	2.8	2.5	47.7	8536	0.0221
	1	1000	3.0	2.5	52.6	10649	0.0176

* Optional
 ** Available upon request
 *** Not applicable for single core

CU/PVC/PVC, PVC Insulated, PVC sheathed Cable, 0.6/1kV 2-, 3-, 4-, 5-Cores

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	2	1.5	0.8	1.8	10.4	134	12.1
	2	2.5	0.8	1.8	11.3	166	7.41
	2	4	1.0	1.8	12.4	215	4.61
	2	6	1.0	1.8	13.5	275	3.08
	2	10	1.0	1.8	16.3	380	1.83
	2	16	1.0	1.8	18.7	526	1.15
	2	25	1.2	1.8	22.2	768	0.727
	2	35	1.2	1.8	24.8	988	0.524
	2	50	1.4	1.8	28.1	1297	0.387
	2	70	1.4	1.9	32.0	1775	0.268
	2	95	1.6	2.0	37.2	2439	0.193
	2	120	1.6	2.1	40.7	2996	0.153
	2	150	1.8	2.2	44.8	3664	0.124
	2	185	2.0	2.4	49.9	4564	0.0991
	2	240	2.2	2.5	56.2	5894	0.0754
	2	300	2.4	2.7	62.4	7336	0.0601
	2	400	2.6	3.0	69.9	9293	0.0470

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	3	1.5	0.8	1.8	10.9	159	12.1
	3	2.5	0.8	1.8	11.9	202	7.41
	3	4	1.0	1.8	13.0	267	4.61
	3	6	1.0	1.8	14.3	347	3.08
	3	10	1.0	1.8	17.4	511	1.83
	3	16	1.0	1.8	19.9	724	1.15
	3	25	1.2	1.8	23.7	1086	0.727
	3	35	1.2	1.8	26.2	1396	0.524
	3	35 sh	1.2	1.8	21.9	1340	0.524
	3	50	1.4	1.8	29.8	1847	0.387
	3	50 sh	1.4	1.8	24.7	1770	0.387
	3	70	1.4	1.9	33.9	2471	0.268
	3	70 sh	1.4	1.9	27.9	2430	0.268
	3	95	1.6	2.1	39.6	3411	0.193
	3	95 sh	1.6	2.1	32.6	3278	0.193
	3	120	1.6	2.2	43.3	4336	0.153
	3	120 sh	1.6	2.2	35.4	4149	0.1530
	3	150	1.8	2.3	47.8	5310	0.124
	3	150 sh	1.8	2.3	39.2	4948	0.124
	3	185	2.0	2.5	53.2	6618	0.0991
	3	185 sh	2.0	2.5	43.7	6154	0.0991
	3	240	2.2	2.7	60.1	8584	0.0754
	3	240 sh	2.2	2.7	49.2	7905	0.0754
	3	300	2.4	2.8	66.5	10661	0.0601
	3	300 sh	2.4	2.9	53.6	9685	0.0601
	3	400	2.6	3.1	74.5	13510	0.047
	3	400 sh	2.6	3.1	66.4	12849	0.047

sh: sector shaped conductor

CU/PVC/PVC, PVC Insulated, PVC sheathed Cable, 0.6/1kV
2-, 3-, 4-, 5-Cores

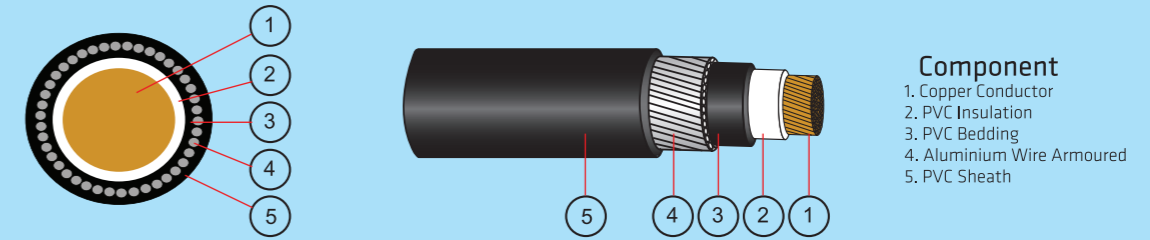
Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	4	1.5	0.8	1.8	11.8	196	12.1
	4	2.5	0.8	1.8	12.8	255	7.41
	4	4	1.0	1.8	15.1	371	4.61
	4	6	1.0	1.8	16.5	483	3.08
	4	10	1.0	1.8	19.1	667	1.83
	4	16	1.0	1.8	21.6	946	1.15
	4	25	1.2	1.8	25.8	1408	0.727
	4	35	1.2	1.8	28.8	1818	0.524
	4	35 sh	1.2	1.8	26.2	1780	0.524
	4	50	1.4	1.9	33.1	2467	0.387
	4	50 sh	1.4	1.9	29.0	2352	0.387
	4	70	1.4	2.1	37.9	3413	0.268
	4	70 sh	1.4	2.0	33.2	3251	0.268
	4	95	1.6	2.2	43.4	4599	0.193
	4	95 sh	1.6	2.2	38.6	4438	0.193
	4	120	1.6	2.3	48.0	5623	0.153
	4	120 sh	1.6	2.3	41.8	5516	0.1530
	4	150	1.8	2.5	53.1	6943	0.124
	4	150 sh	1.8	2.5	46.9	6613	0.124
	4	185	2.0	2.7	59.1	8687	0.0991
	4	185 sh	2.0	2.6	51.9	8180	0.0991
	4	240	2.2	2.9	66.8	11185	0.0754
	4	240 sh	2.2	2.9	58.8	10545	0.0754
	4	300	2.4	3.1	74.2	14008	0.0601
	4	300 sh	2.4	3.1	65.1	12954	0.0601
	4	400	2.6	3.4	83.0	17664	0.047
	4	400 sh	2.6	3.4	73.3	17018	0.047

sh: sector shaped conductor

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	5	1.5	0.8	1.8	12.7	214	12.1
	5	2.5	0.8	1.8	13.9	276	7.41
	5	4.0	1.0	1.8	16.0	402	4.61
	7	1.5	0.8	1.8	13.7	266	12.1
	7	2.5	0.8	1.8	14.9	350	7.41
	7	4.0	1.0	1.8	17.4	514	4.61
	12	1.5	0.8	1.8	17.4	420	12.1
	12	2.5	0.8	1.8	19.2	559	7.41
	12	4.0	1.0	1.8	22.7	834	4.61
	19	1.5	0.8	1.8	20.1	611	12.1
	19	2.5	0.8	1.8	22.2	826	7.41
	19	4.0	1.0	1.8	26.5	1247	4.61
	27	1.5	0.8	1.8	23.6	833	12.1
	27	2.5	0.8	1.8	26.2	1138	7.41
	27	4.0	1.0	1.9	32.0	1745	4.61
	37	1.5	0.8	1.8	26.6	1099	12.1
	37	2.5	0.8	1.8	29.5	1511	7.41
	37	4.0	1.0	2.1	36.5	2269	4.61
	48	1.5	0.8	1.8	30.6	1411	12.1
	48	2.5	0.8	1.9	34.0	1949	7.41

Single Core CU/PVC/PVC/AWA/PVC
PVC Insulated, PVC bedded, AWA armoured, PVC sheathed Cable 0.6/1kV



- Component**
1. Copper Conductor
 2. PVC Insulation
 3. PVC Bedding
 4. Aluminium Wire Armoured
 5. PVC Sheath

Standards Applied

Design Guide: BS6346, MS274
 Conductor: IEC60228, BS6360, BS EN 60228
 Flame Retardancy: IEC60332-1-2, IEC60332-3-24**, IEC60332-3-22**

Electrical Characteristics

Operating voltage, U₀/U: 600/1000V
 Max. operating temperature: 70°C
 Final short circuit temperature: 160°C
 Test voltage: 3.5kV for 5 minutes

Installation Guide

Min. bending radius (mm) : 10 x Cable Overall Diameter
 Max. pulling tension (kgf) : 7 x No. of Core x Conductor Size

Construction

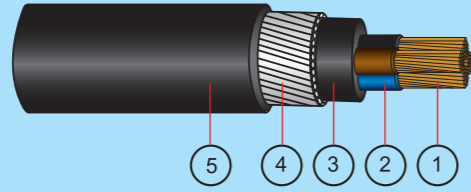
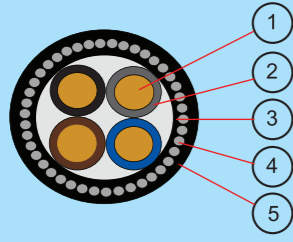
Conductor	Plain annealed copper wire
Insulation	An extruded layer of polyvinyl chloride (PVC) compound
Core Identification	Refer to Appendix F for details
Bedding	An extruded layer of polyvinyl chloride (PVC) compound
Bedding Colour	Black
Armour	A single layer of aluminium wire armoured (AWA)
Outer Sheath	An extruded layer of polyvinyl chloride (PVC) compound
Outer Sheath Colour	Black

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	1	50	1.4	13.3	1.25	1.5	19.1	804	0.387
	1	70	1.4	15.1	1.25	1.6	21.1	1056	0.268
	1	95	1.6	17.4	1.25	1.6	23.4	1378	0.193
	1	120	1.6	19.4	1.6	1.7	26.3	1738	0.153
	1	150	1.8	21.4	1.6	1.7	28.3	2071	0.124
	1	185	2.0	23.6	1.6	1.8	30.8	2522	0.0991
	1	240	2.2	26.7	1.6	1.9	34.1	3189	0.0754
	1	300	2.4	29.5	1.6	1.9	37.0	3878	0.0601
	1	400	2.6	33.3	2.0	2.1	42.0	5002	0.047
	1	500	2.8	36.8	2.0	2.1	45.5	6112	0.0366
	1	630	2.8	40.8	2.0	2.2	49.7	7610	0.0283
	1	800	2.8	45.5	2.5	2.4	55.8	9699	0.0221
	1	1000	3.0	50.4	2.5	2.5	60.9	11954	0.0176

* Optional
 ** Available upon request

2-, 3-, 4-, 5-, multicores CU/PVC/PVC/SWA/PVC PVC insulated, PVC bedded, SWA armoured, PVC sheathed Cable 0.6/1kV



Component

1. Copper Conductor
2. PVC Insulation
3. PVC Bedding
4. Galvanised Steel Wire Armoured
5. PVC Sheath

Standards Applied

Design Guide: BS6346, MS274
 Conductor: IEC60228, BS6360, BS EN 60228
 Flame Retardancy: IEC60332-1-2, IEC60332-3-24**, IEC60332-3-22**

Electrical Characteristics

Operating voltage, U₀/U: 600/1000V
 Max. operating temperature: 70°C
 Final short circuit temperature: 160°C
 Test voltage: 3.5kV for 5 minutes

Installation Guide

Min. bending radius (mm) : 10 x Cable Overall Diameter
 Max. pulling tension (kgf) : 7 x No. of Core x Conductor Size

Construction

Conductor	Plain annealed copper wire
Insulation	An extruded layer of polyvinyl chloride (PVC) compound
Core Identification	Refer to Appendix F for details
Assembly	Cores cabled together, supplied with filler* and covered with polyester (PETP) binder tape*
Bedding	An extruded layer of polyvinyl chloride (PVC) compound
Bedding Colour	Black
Armour	A single layer of galvanised steel wire armour (SWA)
Outer Sheath	An extruded layer of polyvinyl chloride (PVC) compound
Outer Sheath Colour	Black

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	2	1.5	0.6	7.3	0.9	1.4	12.2	287	12.1
	2	2.5	0.7	8.6	0.9	1.4	13.5	353	7.41
	2	4	0.8	10.1	0.9	1.4	15.0	447	4.61
	2	6	0.8	11.2	0.9	1.5	16.3	542	3.08
	2	10	1.0	14.0	1.25	1.6	20.0	783	1.83
	2	16	1.0	16.2	1.25	1.6	21.9	992	1.15
	2	25	1.2	20.1	1.6	1.7	26.7	1516	0.727
	2	35	1.2	22.7	1.6	1.8	29.5	1833	0.727
	2	50	1.4	26.0	1.6	1.9	33.0	2261	0.387
	2	70	1.4	30.0	1.6	1.9	37.0	2885	0.268
	2	95	1.6	35.1	2.0	2.1	43.3	4056	0.193
	2	120	1.6	38.4	2.0	2.2	46.8	4717	0.153
	2	150	1.8	42.3	2.0	2.3	50.9	5563	0.124
	2	185	2.0	47.4	2.5	2.4	57.2	7183	0.0991
	2	240	2.2	53.5	2.5	2.5	63.5	8829	0.0754
	2	300	2.4	59.7	2.5	2.7	70.1	10607	0.0601
	2	400	2.6	66.6	2.5	2.9	77.4	12862	0.047

* Optional
 ** Available upon request

CU/PVC/PVC/SWA/PVC, PVC insulated, PVC bedded, SWA armoured, PVC sheathed Cable 0.6/1kV 2-, 3-, 4-, 5-, multicores

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	3	1.5	0.6	7.7	0.9	1.4	12.6	315	12.1
	3	2.5	0.7	9.1	0.9	1.4	14.0	390	7.41
	3	4	0.8	10.7	0.9	1.4	15.6	499	4.61
	3	6	0.8	12.0	1.25	1.5	17.8	707	3.08
	3	10	1.0	15.1	1.25	1.6	21.2	974	1.83
	3	16	1.0	17.4	1.25	1.6	23.1	1235	1.15
	3	25	1.2	21.6	1.6	1.7	28.2	1910	0.727
	3	35	1.2	24.1	1.6	1.8	30.9	2320	0.524
	3	35 sh	1.2	19.8	1.6	1.8	27.1	2149	0.524
	3	50	1.4	27.7	1.6	1.9	34.7	2938	0.387
	3	50 sh	1.4	22.6	1.6	1.9	30.1	2710	0.387
	3	70	1.4	32.3	2.0	2.0	40.3	4123	0.268
	3	70 sh	1.4	26.3	2.0	2.0	34.8	3765	0.268
	3	95	1.6	37.3	2.0	2.1	45.5	5308	0.193
	3	95 sh	1.6	30.3	2.0	2.1	39.0	4794	0.193
	3	120	1.6	40.8	2.0	2.2	49.2	6311	0.153
	3	120 sh	1.6	32.9	2.0	2.2	41.8	5791	0.153
	3	150	1.8	45.5	2.5	2.4	55.3	8048	0.124
	3	150 sh	1.8	36.9	2.5	2.4	47.2	7206	0.124
	3	185	2.0	50.5	2.5	2.5	60.5	9622	0.0991
	3	185 sh	2.0	41.0	2.5	2.5	51.5	8636	0.0991
	3	240	2.2	57.0	2.5	2.6	67.2	11956	0.0754
	3	240 sh	2.2	46.5	2.5	2.6	57.2	10747	0.0754
	3	300	2.4	63.6	2.5	2.8	74.2	14513	0.0601
	3	300 sh	2.4	50.5	2.5	2.8	62.0	12775	0.0601
	3	400	2.6	71.0	2.5	3.0	82.0	17773	0.047
	3	400 sh	2.4	56.7	2.5	3.0	68.7	16042	0.047

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	4	1.5	0.6	7.7	0.9	1.4	12.6	315	12.1
	4	2.5	0.7	9.1	0.9	1.4	14.0	390	7.41
	4	4	0.8	10.7	0.9	1.4	15.6	499	4.61
	4	6	0.8	12.0	1.25	1.5	17.8	707	3.08
	4	10	1.0	15.1	1.25	1.6	21.2	974	1.83
	4	16	1.0	17.4	1.25	1.6	23.1	1235	1.15
	4	25	1.2	21.6	1.6	1.7	28.2	1910	0.727
	4	35	1.2	24.1	1.6	1.8	30.9	2320	0.524
	4	35 sh	1.2	19.8	1.6	1.8	27.1	2149	0.524
	4	50	1.4	27.7	1.6	1.9	34.7	2938	0.387
	4	50 sh	1.4	22.6	1.6	1.9	30.1	2710	0.387
	4	70	1.4	32.3	2.0	2.0	40.3	4123	0.268
	4	70 sh	1.4	26.3	2.0	2.0	34.8	3765	0.268
	4	95	1.6	37.3	2.0	2.1	45.5	5308	0.193
	4	95 sh	1.6	30.3	2.0	2.1	39.0	4794	0.193
	4	120	1.6	40.8	2.0	2.2	49.2	6311	0.153
	4	120 sh	1.6	32.9	2.0	2.2	41.8	5791	0.153
	4	150	1.8	45.5	2.5	2.4	55.3	8048	0.124
	4	150 sh	1.8	36.9	2.5	2.4	47.2	7206	0.124
	4	185	2.0	50.5	2.5	2.5	60.5	9622	0.0991
	4	185 sh	2.0	41.0	2.5	2.5	51.5	8636	0.0991
	4	240	2.2	57.0	2.5	2.6	67.2	11956	0.0754
	4	240 sh	2.2	46.5	2.5	2.6	57.2	10747	0.0754
	4	300	2.4	63.6	2.5	2.8	74.2	14513	0.0601
	4	300 sh	2.4	50.5	2.5	2.8	62.0	12775	0.0601
	4	400	2.6	71.0	2.5	3.0	82.0	17773	0.047
	4	400 sh	2.4	56.7	2.5	3.0	68.7	16042	0.047

sh: sector shaped conductor

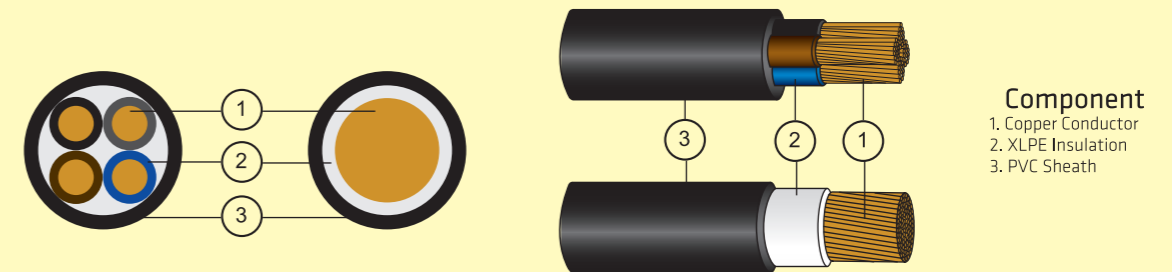
CU/PVC/PVC/SWA/PVC, PVC insulated, PVC bedded, SWA armoured, PVC sheathed Cable 0.6/1kV
2-, 3-, 4-, 5-, multicores

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	5	1.5	0.6	9.3	0.9	1.4	14.2	393	12.1
	5	2.5	0.7	11.0	0.9	1.5	16.1	512	7.41
	5	4.0	0.8	13.1	1.25	1.5	18.6	764	4.61
	7	1.5	0.6	10.2	0.9	1.4	15.0	459	12.1
	7	2.5	0.7	12.0	1.25	1.5	17.8	695	7.41
	7	4.0	0.8	14.2	1.25	1.6	19.9	910	4.61
	12	1.5	0.6	13.5	1.25	1.5	19.3	775	12.1
	12	2.5	0.7	16.1	1.25	1.6	22.2	1017	7.41
	12	4.0	0.8	19.5	1.6	1.7	26.2	1521	4.61
	19	1.5	0.6	15.8	1.25	1.6	21.8	1014	12.1
	19	2.5	0.7	19.4	1.6	1.7	26.4	1549	7.41
	19	4.0	0.8	23.0	1.6	1.8	29.8	2051	4.61
	27	1.5	0.6	19.5	1.6	1.7	26.4	1497	12.1
	27	2.5	0.7	23.3	1.6	1.8	30.5	2004	7.41
	27	4.0	0.8	28.1	2.0	2.0	36.1	2992	4.61
	37	1.5	0.6	21.9	1.6	1.8	29.0	1829	12.1
	37	2.5	0.7	26.3	1.6	1.9	33.8	2475	7.41
	37	4.0	0.8	31.7	2.0	2.1	39.9	3698	4.61
	48	1.5	0.6	25.1	1.6	1.9	32.6	2224	12.1
	48	2.5	0.7	30.6	2.0	2.0	39.2	3369	7.41

sh: sector shaped conductor

Single Core, 2-, 3-, 4-, 5-, multicores CU/XLPE/PVC
XLPE insulated, PVC sheathed Cable 0.6/1kV



Component
 1. Copper Conductor
 2. XLPE Insulation
 3. PVC Sheath

Standards Applied

Design Guide: IEC60502-1
 Conductor: IEC60228, BS6360, BS EN 60228
 Flame Retardancy: IEC60332-1-2, IEC60332-3-24**, IEC60332-3-22**

Electrical Characteristics

Operating voltage, U₀/U: 600/1000V
 Max. operating temperature: 90°C
 Final short circuit temperature: 250°C
 Test voltage: 3.5kV for 5 minutes

Installation Guide

Min. bending radius (mm) : 6 x Cable Overall Diameter (Single Core)
 Min. bending radius (mm) : 8 x Cable Overall Diameter (2-, 3-, 4-, 5-, multicores)
 Max. pulling tension (kgf) : 7 x No. of Core x Conductor Size

Construction

Conductor	Plain annealed copper wire
Insulation	An extruded layer of cross-linked polyethylene (XLPE) compound
Core Identification	Refer to Appendix F for details except single core. Single core will come with natural colour insulation.
Assembly***	Cores cabled together, supplied with filler* and covered with polyester (PETP) binder tape*
Outer Sheath	An extruded layer of polyvinyl chloride (PVC) compound
Sheath Colour	Black

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	1	1.5	0.7	1.4	5.8	47	12.1
	1	2.5	0.7	1.4	6.2	62	7.41
	1	4	0.7	1.4	6.8	77	4.61
	1	6	0.7	1.4	7.3	100	3.08
	1	10	0.7	1.4	8.5	150	1.83
	1	16	0.7	1.4	9.5	211	1.15
	1	25	0.9	1.4	11.2	314	0.727
	1	35	0.9	1.4	12.5	414	0.524
	1	50	1.0	1.4	13.7	538	0.387
	1	70	1.1	1.4	15.7	751	0.268
	1	95	1.1	1.5	18.0	1018	0.193
	1	120	1.2	1.5	19.7	1267	0.153
	1	150	1.4	1.6	21.9	1555	0.124
	1	185	1.6	1.6	24.2	1932	0.0991
	1	240	1.7	1.7	27.2	2510	0.0754
	1	300	1.8	1.8	29.9	3125	0.0601
	1	400	2.0	1.9	33.6	3985	0.047
	1	500	2.2	2.0	37.3	4978	0.0366
	1	630	2.4	2.2	42.0	6430	0.0283
	1	800	2.6	2.4	47.2	8188	0.0221
	1	1000	2.8	2.5	52.4	10256	0.0176

* Optional
 ** Available upon request
 *** Not available for single core

**CU/XLPE/PVC, XLPE insulated, PVC sheathed Cable, 0.6/1kV
2-, 3-, 4-, 5-, multicores**

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	2	1.5	0.7	1.8	9.6	117	12.1
	2	2.5	0.7	1.8	10.4	147	7.41
	2	4	0.7	1.8	11.5	193	4.61
	2	6	0.7	1.8	12.7	249	3.08
	2	10	0.7	1.8	15.2	339	1.83
	2	16	0.7	1.8	17.3	476	1.15
	2	25	0.9	1.8	20.8	697	0.727
	2	35	0.9	1.8	23.2	910	0.524
	2	50	1.0	1.8	25.8	1177	0.387
	2	70	1.1	1.8	30.1	1643	0.268
	2	95	1.1	1.9	34.1	2220	0.193
	2	120	1.2	2.0	38.2	2798	0.153
	2	150	1.4	2.2	42.4	3415	0.124
	2	185	1.6	2.3	47.2	4249	0.0991
	2	240	1.7	2.5	53.2	5530	0.0754
	2	300	1.8	2.6	58.8	6853	0.0601
	2	400	2.0	2.9	66.2	8714	0.047

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	3	1.5	0.7	1.8	10.1	138	12.1
	3	2.5	0.7	1.8	11.0	177	7.41
	3	4	0.7	1.8	12.2	238	4.61
	3	6	0.7	1.8	13.5	312	3.08
	3	10	0.7	1.8	16.2	460	1.83
	3	16	0.7	1.8	18.5	656	1.15
	3	25	0.9	1.8	22.3	976	0.727
	3	35	0.9	1.8	25.0	1286	0.524
	3	35 sh	0.9	1.8	20.2	1210	0.524
	3	50	1.0	1.8	27.8	1677	0.387
	3	50 sh	1.0	1.8	22.6	1594	0.387
	3	70	1.1	1.9	32.7	2412	0.268
	3	70 sh	1.1	1.9	26.4	2276	0.268
	3	95	1.1	2.0	37.1	3259	0.193
	3	95 sh	1.1	2.0	29.8	3000	0.193
	3	120	1.2	2.1	41.3	4077	0.153
	3	120 sh	1.2	2.1	33.0	3874	0.153
	3	150	1.4	2.3	46.0	5008	0.124
	3	150 sh	1.4	2.3	37.1	4637	0.124
	3	185	1.6	2.4	51.2	6265	0.0991
	3	185 sh	1.6	2.4	41.3	5767	0.0991
	3	240	1.7	2.6	57.8	8142	0.0754
	3	240 sh	1.7	2.6	46.4	7414	0.0754
	3	300	1.8	2.8	64.0	10119	0.0601
	3	300 sh	1.8	2.8	50.4	9091	0.0601
	3	400	2.0	3.0	71.8	12853	0.047
	3	400 sh	2.0	3.0	60.8	12097	0.047

sh: sector shaped conductor

**CU/XLPE/PVC, XLPE insulated, PVC sheathed Cable, 0.6/1kV
2-, 3-, 4-, 5-, multicores**

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	4	1.5	0.7	1.8	11.0	172	12.1
	4	2.5	0.7	1.8	12.0	223	7.41
	4	4	0.7	1.8	13.4	304	4.61
	4	6	0.7	1.8	14.8	403	3.08
	4	10	0.7	1.8	17.7	594	1.83
	4	16	0.7	1.8	20.3	856	1.15
	4	25	0.9	1.8	24.6	1278	0.727
	4	35	0.9	1.8	27.9	1690	0.524
	4	35 sh	0.9	1.8	24.3	1639	0.524
	4	50	1.0	1.9	31.2	2244	0.387
	4	50 sh	1.0	1.9	26.7	2159	0.387
	4	70	1.1	2.0	36.4	3173	0.268
	4	70 sh	1.1	2.0	31.4	3080	0.268
	4	95	1.1	2.1	41.3	4278	0.193
	4	95 sh	1.1	2.1	35.7	4056	0.193
	4	120	1.2	2.3	46.1	5471	0.153
	4	120 sh	1.2	2.3	39.7	5245	0.153
	4	150	1.4	2.4	51.1	6690	0.124
	4	150 sh	1.4	2.4	44.6	6262	0.124
	4	185	1.6	2.6	57.1	8409	0.0991
	4	185 sh	1.6	2.6	49.7	7807	0.0991
	4	240	1.7	2.8	64.4	10923	0.0754
	4	240 sh	1.7	2.8	56.0	10027	0.0754
	4	300	1.8	3.0	71.3	13567	0.0601
	4	300 sh	1.8	3.0	61.8	12326	0.0601
	4	400	2.0	3.3	80.2	17268	0.047
	4	400 sh	2.0	3.2	69.5	16291	0.047

sh: sector shaped conductor

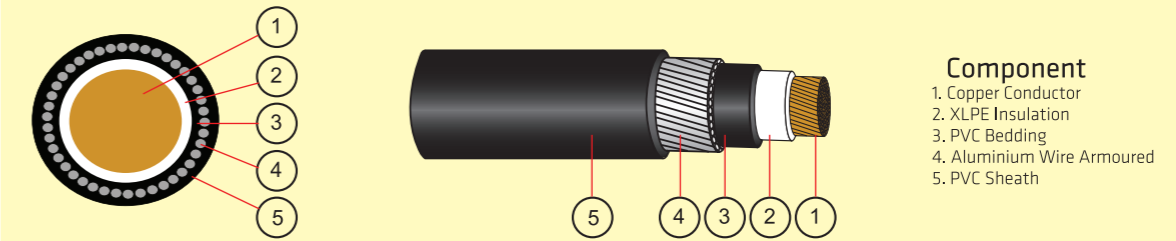
Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	5	1.5	0.7	1.8	11.9	183	12.1
	5	2.5	0.7	1.8	13.1	240	7.41
	5	4	0.7	1.8	14.6	331	4.61
	5	6	0.7	1.8	16.2	442	3.08
	5	10	0.7	1.8	18.8	707	1.83
	5	16	0.7	1.8	21.7	1028	1.15
	5	25	0.9	1.8	26.4	1549	0.727
	5	35	0.9	1.8	29.8	2038	0.524
	5	50	1.0	1.9	34.5	2774	0.387
	5	70	1.1	2.1	40.2	3891	0.268

CU/XLPE/PVC, XLPE insulated, PVC sheathed Cable, 0.6/1kV
2-, 3-, 4-, 5-, multicores

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	7	1.5	0.7	1.8	12.8	226	12.1
	7	2.5	0.7	1.8	14.6	302	7.41
	7	4.0	0.7	1.8	15.7	419	4.61
	12	1.5	0.7	1.8	16.2	351	12.1
	12	2.5	0.7	1.8	18.1	478	7.41
	12	4.0	0.7	1.8	20.3	676	4.61
	19	1.5	0.7	1.8	18.8	507	12.1
	19	2.5	0.7	1.8	20.9	704	7.41
	19	4.0	0.7	1.8	23.6	1006	4.61
	27	1.5	0.7	1.8	22.3	689	12.1
	27	2.5	0.7	1.8	24.9	965	7.41
	27	4.0	0.7	1.8	28.2	1390	4.61
	37	1.5	0.7	1.8	24.9	901	12.1
	37	2.5	0.7	1.8	27.8	1274	7.41
	37	4.0	0.7	1.9	32.0	1881	4.61
	48	1.5	0.7	1.8	28.3	1139	12.1
	48	2.5	0.7	1.9	32.1	1634	7.41

Single Core CU/XLPE/PVC/AWA/PVC
XLPE insulated, PVC bedded, AWA armoured, PVC sheathed Cable 0.6/1kV



Standards Applied

Design Guide: BS5467, IEC60502-1
 Conductor : IEC60228, BS6360, BS EN 60228
 Flame Retardancy: IEC60332-1-2, IEC60332-3-24**, IEC60332-3-22**

Electrical Characteristics

Operating voltage, U₀/U: 600/1000V
 Max. operating temperature: 90°C
 Final short circuit temperature: 250°C
 Test voltage: 3.5kV for 5 minutes

Installation Guide

Min. bending radius (mm) : 10 x Cable Overall Diameter
 Max. pulling tension (kgf) : 7 x No. of Core x Conductor Size

Construction

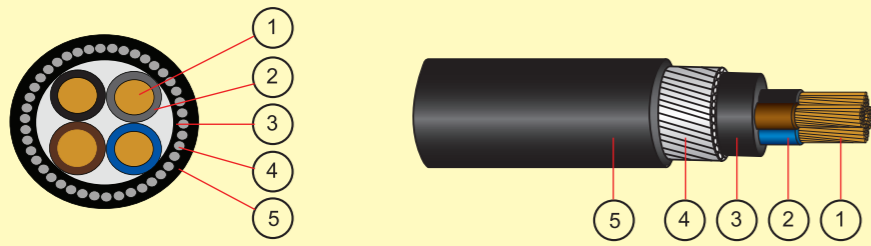
Conductor	Plain annealed copper wire
Insulation	An extruded layer of cross-linked polyethylene (XLPE) compound
Core Identification	Natural
Bedding	An extruded layer of polyvinyl chloride (PVC) compound
Bedding Colour	Black
Armour	A single layer of aluminium wire armoured (AWA)
Outer Sheath	An extruded layer of polyvinyl chloride (PVC) compound
Outer Sheath Colour	Black

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	1	50	1.0	12.9	1.25	1.8	19.0	776	0.387
	1	70	1.1	14.9	1.25	1.8	21.0	1020	0.268
	1	95	1.1	16.8	1.25	1.8	22.9	1307	0.193
	1	120	1.2	18.6	1.6	1.8	25.4	1645	0.153
	1	150	1.4	20.6	1.6	1.8	27.4	1951	0.124
	1	185	1.6	22.9	1.6	1.8	29.7	2372	0.0991
	1	240	1.7	25.7	1.6	1.9	32.7	2999	0.0754
	1	300	1.8	28.3	1.6	2.0	35.5	3661	0.0601
	1	400	2.0	32.1	2.0	2.1	40.3	4706	0.047
	1	500	2.2	35.6	2.0	2.2	44.0	5796	0.0366
	1	630	2.4	40.0	2.0	2.3	48.6	7316	0.0283
	1	800	2.6	45.1	2.5	2.5	55.1	9696	0.0221
	1	1000	2.8	50.1	2.5	2.7	60.5	11600	0.0176

* Optional
 ** Available upon request

2-, 3-, 4-, 5-, Multicores, CU/XLPE/PVC/SWA/PVC XLPE insulated, PVC bedded, SWA armoured, PVC sheathed Cable 0.6/1kV



Component

1. Copper Conductor
2. XLPE Insulation
3. PVC Bedding
4. Galvanised Steel Wire Armoured
5. PVC Sheath

Standards Applied

Design Guide: BS5467, IEC60502-1
 Conductor : IEC60228, BS6360, BS EN 60228
 Flame Retardancy: IEC60332-1-2, IEC60332-3-24**, IEC60332-3-22**

Electrical Characteristics

Operating voltage, U_o/U: 600/1000V
 Max. operating temperature: 90°C
 Final short circuit temperature: 250°C
 Test voltage: 3.5kV for 5 minutes

Installation Guide

Min. bending radius (mm) : 10 x Cable Overall Diameter
 Max. pulling tension (kgf) : 7 x No. of Core x Conductor Size

Construction

Conductor	Plain annealed copper wire
Insulation	An extruded layer of cross-linked polyethylene (XLPE) compound
Core Identification	Refer to Appendix F for details
Assembly	Cores cabled together, supplied with filler* and covered with polyester (PETP) binder tape*
Bedding	An extruded layer of polyvinyl chloride (PVC) compound
Bedding Colour	Black
Armour	A single layer of steel wire armoured (SWA)
Outer Sheath	An extruded layer of polyvinyl chloride (PVC) compound
Outer Sheath Colour	Black

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	2	1.5	0.7	8.0	0.9	1.8	13.4	332	12.1
	2	2.5	0.7	8.9	0.9	1.8	14.3	381	7.41
	2	4	0.7	10.0	0.9	1.8	15.4	447	4.61
	2	6	0.7	11.1	0.9	1.8	16.5	533	3.08
	2	10	0.7	13.6	1.25	1.8	19.7	780	1.83
	2	16	0.7	15.7	1.25	1.8	21.8	978	1.15
	2	25	0.9	19.2	1.6	1.8	26.0	1457	0.727
	2	35	0.9	21.6	1.6	1.8	28.4	1754	0.524
	2	50	1.0	24.2	1.6	1.8	31.0	2117	0.387
	2	70	1.1	28.5	1.6	2.0	35.7	2770	0.268
	2	95	1.1	32.7	2.0	2.1	40.9	3827	0.193
	2	120	1.2	36.4	2.0	2.2	44.8	4573	0.153
	2	150	1.4	40.3	2.5	2.3	48.9	5351	0.124
	2	185	1.6	45.3	2.5	2.5	55.3	7006	0.0991
	2	240	1.7	51.0	2.5	2.7	61.4	8588	0.0754
	2	300	1.8	56.8	2.5	2.8	61.4	10305	0.0601
	2	400	2.0	63.6	2.5	3.1	74.8	12569	0.047

* Optional
 ** Available upon request

CU/XLPE/PVC/SWA/PVC, XLPE insulated, PVC bedded, SWA armoured, PVC sheathed Cable, 0.6/1kV 2-, 3-, 4-, 5-, multicores

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	3	1.5	0.7	8.6	0.9	1.8	14.0	365	12.1
	3	2.5	0.7	9.5	0.9	1.8	14.9	425	7.41
	3	4	0.7	10.7	0.9	1.8	16.1	515	4.61
	3	6	0.7	12.0	0.9	1.8	17.4	616	3.08
	3	10	0.7	14.6	1.25	1.8	20.7	936	1.83
	3	16	0.7	16.9	1.25	1.8	23.0	1194	1.15
	3	25	0.9	20.7	1.6	1.8	27.5	1793	0.727
	3	35	0.9	23.4	1.6	1.8	30.2	2198	0.524
	3	35 sh	0.9	18.6	1.6	1.8	25.4	1950	0.524
	3	50	1.0	26.2	1.6	1.9	33.2	2708	0.387
	3	50 sh	1.0	20.9	1.6	1.9	27.9	2431	0.387
	3	70	1.1	31.3	2.0	2.0	39.3	3963	0.268
	3	70 sh	1.1	25.0	2.0	2.1	33.2	3518	0.268
	3	95	1.1	35.4	2.0	2.2	43.8	5019	0.193
	3	95 sh	1.1	28.2	2.0	2.2	36.6	4398	0.193
	3	120	1.2	39.5	2.0	2.3	48.1	6000	0.153
	3	120 sh	1.2	31.2	2.0	2.3	39.8	5419	0.153
	3	150	1.4	44.2	2.5	2.5	54.2	7715	0.124
	3	150 sh	1.4	35.2	2.5	2.5	45.2	6777	0.124
	3	185	1.6	49.2	2.5	2.6	59.4	9264	0.0991
	3	185 sh	1.6	39.3	2.5	2.6	49.5	8149	0.0991
	3	240	1.7	55.8	2.5	2.8	66.4	11544	0.0754
	3	240 sh	1.7	44.4	2.5	2.8	55.0	10136	0.0754
	3	300	1.8	61.6	2.5	3.0	72.6	13870	0.0601
	3	300 sh	1.8	48.0	2.5	3.0	59.0	12019	0.0601
	3	400	2.0	69.0	3.2	3.3	81.9	18039	0.047
	3	400 sh	2.0	58.0	2.5	3.3	69.6	15650	0.047

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	4	1.5	0.7	9.4	0.9	1.8	14.8	413	12.1
	4	2.5	0.7	10.4	0.9	1.8	15.8	493	7.41
	4	4	0.7	11.8	0.9	1.8	17.2	602	4.61
	4	6	0.7	13.2	1.25	1.8	19.3	842	3.08
	4	10	0.7	16.1	1.25	1.8	22.2	1108	1.83
	4	16	0.7	18.7	1.25	1.8	24.8	1453	1.15
	4	25	0.9	23.0	1.6	1.8	29.8	2179	0.727
	4	35	0.9	26.2	1.6	1.9	33.2	2722	0.524
	4	35 sh	0.9	22.7	1.6	1.9	29.7	2536	0.524
	4	50	1.0	29.3	2.0	2.0	37.3	3651	0.387
	4	50 sh	1.0	24.9	1.6	2.0	32.1	3136	0.387
	4	70	1.1	34.7	2.0	2.2	43.1	4875	0.268
	4	70 sh	1.1	29.8	2.0	2.2	38.2	4541	0.268
	4	95	1.1	39.4	2.0	2.3	48.0	6200	0.193
	4	95 sh	1.1	33.8	2.0	2.3	42.4	5729	0.193
	4	120	1.2	44.3	2.5	2.5	54.3	8179	0.153
	4	120 sh	1.2	37.8	2.5	2.5	47.8	7529	0.153
	4	150	1.4	49.1	2.5	2.6	59.3	9646	0.124
	4	150 sh	1.4	42.6	2.5	2.6	52.8	8794	0.124
	4	185	1.6	54.7	2.5	2.8	65.3	11707	0.0991
	4	185 sh	1.6	47.3	2.5	2.8	57.9	10632	0.0991
	4	240	1.7	62.0	2.5	3.0	73.0	14677	0.0754
	4	240 sh	1.7	53.6	2.5	3.0	64.6	13251	0.0754
	4	300	1.8	68.5	2.5	3.2	79.9	17676	0.0601
	4	300 sh	1.8	59.0	2.5	3.2	70.4	15896	0.0601
	4	400	2.0	77.2	3.2	3.5	90.5	22972	0.047
	4	400 sh	2.0	66.9	3.2	3.5	80.2	21387	0.047

sh: sector shaped conductor

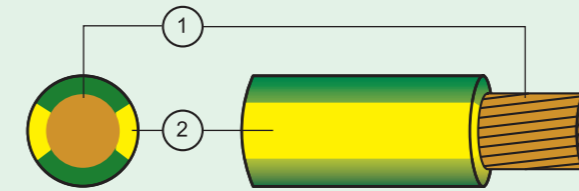
**CU/XLPE/PVC/SWA/PVC, XLPE insulated, PVC bedded, SWA armoured, PVC sheathed Cable 0.6/1kV
2-, 3-, 4-, 5-, multicores**

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	5	1.5	0.7	10.3	0.9	1.8	15.7	444	1.15
	5	2.5	0.7	11.4	0.9	1.8	16.8	531	0.727
	5	4	0.7	13.0	1.25	1.8	19.1	760	0.524
	5	6	0.7	14.5	1.25	1.8	20.6	918	0.387
	5	10	0.7	17.2	1.25	1.8	23.3	1256	0.268
	5	16	0.7	20.1	1.6	1.8	26.9	1809	0.193
	5	25	0.9	24.8	1.6	1.8	31.6	2508	0.153
	5	35	0.9	28.2	1.6	1.9	35.2	3130	0.124
	5	50	1.0	32.9	2.0	2.1	41.1	4391	0.0991
	5	70	1.1	38.4	2.0	2.3	47.0	5780	0.0754

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	7	1.5	0.7	11.2	0.9	1.8	16.6	510	12.1
	7	2.5	0.7	12.4	1.25	1.8	18.5	718	7.41
	7	4	0.7	14.0	1.25	1.8	20.1	875	4.61
	12	1.5	0.7	14.7	1.25	1.8	20.8	827	12.1
	12	2.5	0.7	16.5	1.25	1.8	22.6	1004	7.41
	12	4	0.7	18.6	1.6	1.8	25.4	1417	4.61
	19	1.5	0.7	17.2	1.25	1.8	23.3	1056	12.1
	19	2.5	0.7	19.4	1.6	1.8	26.2	1464	7.41
	19	4	0.7	21.9	1.6	1.8	28.7	1864	4.61
	27	1.5	0.7	20.6	1.6	1.8	27.4	1495	12.1
	27	2.5	0.7	23.3	1.6	1.8	30.1	1867	7.41
	27	4	0.7	26.5	1.6	1.9	33.5	2424	4.61
	37	1.5	0.7	23.2	1.6	1.8	30.0	1802	12.1
	37	2.5	0.7	26.2	1.6	1.9	33.2	2288	7.41
	37	4	0.7	30.3	2.0	2.1	38.5	3351	4.61
	48	1.5	0.7	26.8	1.6	1.8	33.8	2173	12.1
	48	2.5	0.7	30.7	2.0	2.1	38.9	3122	7.41

**Single Core CU/LSHF
Cross-linked polyolefin insulated, Non-sheathed Cable 450/750V**



Component
1. Copper Conductor
2. LSHF Insulation

Standards Applied

Design Guide: BS7211
Conductor: IEC60228, BS6360, BS EN 60228
Flame Retardancy: IEC60332-1-2, IEC60332-3-22
Low Smoke & Reduced Toxicity: IEC60754-1/2, IEC61034-2

Electrical Characteristics

Operating voltage, U₀/U: 450/750V
Max. operating temperature: 90°C
Final short circuit temperature: 250°C
Test voltage: 2.5kV for 15 minutes

Installation Guide

Min. bending radius (mm) : 6 x Cable Overall Diameter
Max. pulling tension (kgf) : 7 x No. of Core x Conductor Size

Construction

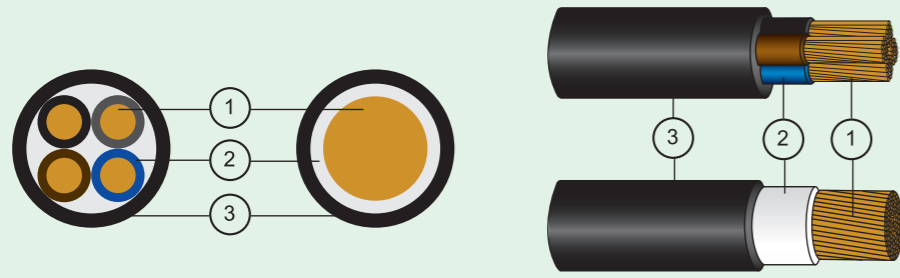
Conductor	Plain annealed copper wire
Insulation	An extruded layer of cross-linked polyolefin , E15
Core Identification	Black, Red, Green/Yellow, Yellow, Blue, White, Grey, Brown or other

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	kg/km	Ω/km
	1	1.5	0.7	3.0	22	12.1
	1	2.5	0.8	3.6	34	7.41
	1	4	0.8	4.2	51	4.61
	1	6	0.8	4.7	71	3.08
	1	10	1.0	6.1	120	1.83
	1	16	1.0	7.1	180	1.15
	1	25	1.2	8.8	283	0.727
	1	35	1.2	10.1	380	0.524
	1	50	1.4	11.7	514	0.387
	1	70	1.4	13.5	724	0.268
	1	95	1.6	15.8	1000	0.193
	1	120	1.6	17.4	1239	0.153
	1	150	1.8	19.4	1524	0.124
	1	185	2.0	21.6	1910	0.0991
	1	240	2.2	24.7	2489	0.0754
	1	300	2.4	27.5	3114	0.0601
	1	400	2.6	30.9	3965	0.0470
	1	500	2.8	34.4	4979	0.0366
	1	630	2.8	38.4	6339	0.0283

* Optional

Single Core, 2-, 3-, 4-, 5-, Multicores CU/XLPE/LSHF XLPE insulated, LSHF sheathed Cable 0.6/1kV



Component
1. Copper Conductor
2. XLPE Insulation
3. LSHF Sheath

Standards Applied

Design Guide: IEC60502-1
Conductor: IEC60228, BS6360, BS EN 60228
Flame Retardancy: IEC60332-1-2, IEC60332-3-22
Low Smoke & Reduced Toxicity: IEC60754-1/2, IEC61034-2

Electrical Characteristics

Operating voltage, U₀/U: 600/1000V
Max. operating temperature: 90°C
Final short circuit temperature: 250°C
Test voltage: 3.5kV for 5 minutes

Installation Guide

Min. bending radius (mm) : 6 x Cable Overall Diameter (Single Core)
Min. bending radius (mm) : 8 x Cable Overall Diameter (2-, 3-, 4-, 5-, multicores)
Max. pulling tension (kgf) : 7 x No. of Core x Conductor Size

Construction

Conductor	Plain annealed copper wire
Insulation	An extruded layer of cross-linked polyethylene (XLPE) compound
Core Identification	Refer to Appendix F for details except single core. Single core will come with natural colour insulation.
Assembly***	Cores cabled together, supplied with filler* and covered with polyester (PETP) binder tape*
Outer Sheath	A low smoke halogen free (LSHF) compound
Outer Sheath Colour	Black

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	1	1.5	0.7	1.4	5.8	49	12.1
	1	2.5	0.7	1.4	6.2	64	7.41
	1	4	0.7	1.4	6.8	80	4.61
	1	6	0.7	1.4	7.3	103	3.08
	1	10	0.7	1.4	8.5	153	1.83
	1	16	0.7	1.4	9.5	214	1.15
	1	25	0.9	1.4	11.2	318	0.727
	1	35	0.9	1.4	12.5	419	0.524
	1	50	1.0	1.4	13.7	543	0.387
	1	70	1.1	1.4	15.7	757	0.268
	1	95	1.1	1.5	18.0	1025	0.193
	1	120	1.2	1.5	19.7	1275	0.153
	1	150	1.4	1.6	21.9	1565	0.124
	1	185	1.6	1.6	24.2	1943	0.0991
	1	240	1.7	1.7	27.2	2524	0.0754
	1	300	1.8	1.8	29.9	3140	0.0601
	1	400	2.0	1.9	33.6	4003	0.047
	1	500	2.2	2.0	37.3	5000	0.0366
	1	630	2.4	2.2	42.0	6457	0.0283
	1	800	2.6	2.4	47.2	8222	0.0221
	1	1000	2.8	2.5	52.4	10295	0.0176

* Optional

*** Not available for single core cable

CU/XLPE/LSHF, XLPE insulated, LSHF sheathed Cable, 0.6/1kV 2-, 3-, 4-, 5-, Multicores

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	2	1.5	0.7	1.8	9.6	122	12.1
	2	2.5	0.7	1.8	10.4	152	7.41
	2	4	0.7	1.8	11.5	198	4.61
	2	6	0.7	1.8	12.7	255	3.08
	2	10	0.7	1.8	15.2	347	1.83
	2	16	0.7	1.8	17.3	484	1.15
	2	25	0.9	1.8	20.8	708	0.727
	2	35	0.9	1.8	23.2	922	0.524
	2	50	1.0	1.8	25.8	1191	0.387
	2	70	1.1	1.8	30.1	1659	0.268
	2	95	1.1	1.9	34.1	2240	0.193
	2	120	1.2	2.0	38.2	2821	0.153
	2	150	1.4	2.2	42.4	3441	0.124
	2	185	1.6	2.3	47.2	4281	0.0991
	2	240	1.7	2.5	53.2	5570	0.0754
	2	300	1.8	2.6	58.8	6899	0.0601
	2	400	2.0	2.9	66.2	8771	0.047

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	3	1.5	0.7	1.8	10.1	143	12.1
	3	2.5	0.7	1.8	11.0	183	7.41
	3	4	0.7	1.8	12.2	243	4.61
	3	6	0.7	1.8	13.5	319	3.08
	3	10	0.7	1.8	16.2	468	1.83
	3	16	0.7	1.8	18.5	666	1.15
	3	25	0.9	1.8	22.3	988	0.727
	3	35	0.9	1.8	25.0	1299	0.524
	3	35 sh	0.9	1.8	20.2	1220	0.524
	3	50	1.0	1.8	27.8	1691	0.387
	3	50 sh	1.0	1.8	22.6	1606	0.387
	3	70	1.1	1.9	32.7	2430	0.268
	3	70 sh	1.1	1.9	26.4	2290	0.268
	3	95	1.1	2.0	37.1	3281	0.193
	3	95 sh	1.1	2.0	29.8	3017	0.193
	3	120	1.2	2.1	41.3	4103	0.153
	3	120 sh	1.2	2.1	33.0	3891	0.153
	3	150	1.4	2.3	46.0	5040	0.124
	3	150 sh	1.4	2.3	37.1	4662	0.124
	3	185	1.6	2.4	51.2	6302	0.0991
	3	185 sh	1.6	2.4	41.3	5796	0.0991
	3	240	1.7	2.6	57.8	8187	0.0754
	3	240 sh	1.7	2.6	46.4	7414	0.0754

**CU/XLPE/LSHF, XLPE insulated, LSHF sheathed Cable, 0.6/1kV
2-, 3-, 4-, 5-, Multicores**

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	4	1.5	0.7	1.8	11.0	178	12.1
	4	2.5	0.7	1.8	12.0	230	7.41
	4	4	0.7	1.8	13.4	313	4.61
	4	6	0.7	1.8	14.8	412	3.08
	4	10	0.7	1.8	17.7	603	1.83
	4	16	0.7	1.8	20.3	866	1.15
	4	25	0.9	1.8	24.6	1291	0.727
	4	35	0.9	1.8	27.9	1705	0.524
	4	35 sh	0.9	1.8	24.3	1639	0.524
	4	50	1.0	1.9	31.2	2261	0.387
	4	50 sh	1.0	1.9	26.7	2159	0.387
	4	70	1.1	2.0	36.4	3195	0.268
	4	70 sh	1.1	2.0	31.4	3080	0.268
	4	95	1.1	2.1	41.3	4303	0.193
	4	95 sh	1.1	2.1	35.7	4056	0.193
	4	120	1.2	2.3	46.1	5503	0.153
	4	120 sh	1.2	2.3	39.7	5245	0.153
	4	150	1.4	2.4	51.1	6727	0.124
	4	150 sh	1.4	2.4	44.6	6262	0.124
	4	185	1.6	2.6	57.1	8454	0.0991
	4	185 sh	1.6	2.6	49.7	7807	0.0991
	4	240	1.7	2.8	64.4	10977	0.0754
	4	240 sh	1.7	2.8	56.0	10027	0.0754
	4	300	1.8	3.0	71.3	13632	0.0601
	4	300 sh	1.8	3.0	61.8	12326	0.0601
	4	400	2.0	3.3	80.2	17348	0.047
	4	400 sh	2.0	3.2	69.5	16291	0.047

sh: sector shaped conductor

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	5	1.5	0.7	1.8	11.9	189	12.1
	5	2.5	0.7	1.8	13.1	246	7.41
	5	4	0.7	1.8	14.6	338	4.61
	5	6	0.7	1.8	16.2	450	3.08
	5	10	0.7	1.8	18.8	716	1.83
	5	16	0.7	1.8	21.7	1040	1.15
	5	25	0.9	1.8	26.4	1563	0.727
	5	35	0.9	1.8	29.8	2054	0.524
	5	50	1.0	1.9	34.5	2795	0.387
	5	70	1.1	2.1	40.2	3916	0.268

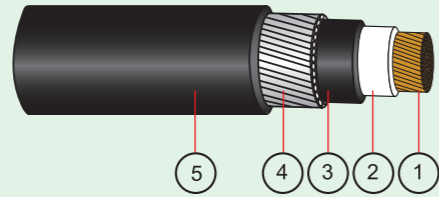
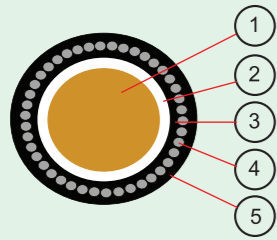
**CU/XLPE/LSHF, XLPE insulated, LSHF sheathed Cable, 0.6/1kV
2-, 3-, 4-, 5-, Multicores**

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	kg/km	Ω/km
	7	1.5	0.7	1.8	12.8	232	12.1
	7	2.5	0.7	1.8	14.6	309	7.41
	7	4.0	0.7	1.8	15.6	426	4.61
	12	1.5	0.7	1.8	16.2	359	12.1
	12	2.5	0.7	1.8	18.1	488	7.41
	12	4.0	0.7	1.8	20.2	685	4.61
	19	1.5	0.7	1.8	18.8	507	12.1
	19	2.5	0.8	1.8	22.2	715	7.41
	19	4.0	1.0	1.8	26.5	1247	4.61
	27	1.5	0.7	1.8	22.3	700	12.1
	27	2.5	0.7	1.8	18.1	978	7.41
	27	4.0	0.7	1.8	28.0	1401	4.61
	37	1.5	0.7	1.8	24.9	913	12.1
	37	2.5	0.7	1.8	27.8	1288	7.41
	37	4.0	0.7	1.9	31.8	1895	4.61
	48	1.5	0.7	1.8	28.3	1155	12.1
	48	2.5	0.7	1.9	32.1	1652	7.41

Single Core CU/XLPE/LSHF/AWA/LSHF

XLPE insulated, LSHF bedded, AWA armoured, LSHF sheathed Cable 0.6/1kV



Component

1. Copper Conductor
2. XLPE Insulation
3. LSHF Bedding
4. Aluminium Wire Armoured
5. LSHF Sheath

Standards Applied

Design Guide: BS6724, IEC60502-1
 Conductor: IEC60228, BS6360, BS EN 60228
 Flame Retardancy: IEC60332-1-2, IEC60332-3-22
 Low Smoke & Reduced Toxicity : IEC60754-1/2, IEC61034-2

Electrical Characteristics

Operating voltage, U₀/U : 600/1000V
 Max. operating temperature : 90°C
 Final short circuit temperature : 250°C
 Test voltage : 3.5kV for 5 minutes

Installation Guide

Min. bending radius (mm): 10 x Cable Overall Diameter
 Max. pulling tension (kgf): 7 x No. of Core x Conductor Size

Construction

Conductor	Plain annealed copper wire
Insulation	An extruded layer of cross-linked polyethylene (XLPE) compound
Core Identification	Natural
Bedding	An extruded layer of low smoke halogen free (LSHF) compound
Bedding Colour	Black
Armour	A single layer of aluminium wire armoured (AWA)
Outer Sheath	An extruded layer of low smoke halogen free (LSHF) compound
Outer Sheath Colour	Black

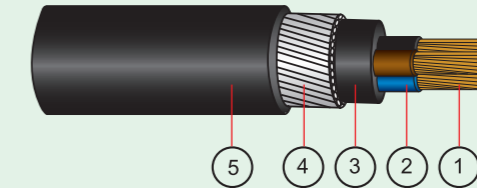
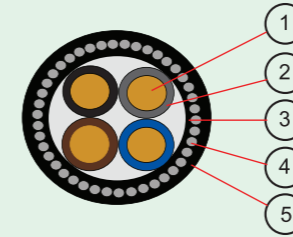
Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	1	50	1.0	12.9	1.25	1.8	19.0	745	0.387
	1	70	1.1	14.9	1.25	1.8	21.0	986	0.268
	1	95	1.1	16.8	1.25	1.8	22.9	1279	0.193
	1	120	1.2	18.6	1.6	1.8	25.4	1552	0.153
	1	150	1.4	20.6	1.6	1.8	27.4	1959	0.124
	1	185	1.6	22.9	1.6	1.8	29.7	2396	0.0991
	1	240	1.7	25.7	1.6	1.9	32.7	3010	0.0754
	1	300	1.8	28.3	1.6	2.0	35.5	3674	0.0601
	1	400	2.0	32.1	2.0	2.1	40.3	4725	0.047
	1	500	2.2	35.6	2.0	2.2	44.0	5817	0.0366
	1	630	2.4	40.0	2.0	2.3	48.6	7354	0.0283
	1	800	2.6	45.1	2.5	2.5	55.1	9432	0.0221
	1	1000	2.8	50.1	2.5	2.7	60.5	11613	0.0176

* Optional

2-, 3-, 4-, 5-, Multicores, CU/XLPE/LSHF/SWA/LSHF

XLPE insulated, LSHF bedded, SWA armoured, LSHF sheathed Cable 0.6/1kV



Component

1. Copper Conductor
2. XLPE Insulation
3. LSHF Bedding
4. Galvanised Steel Wire Armoured
5. LSHF Sheath

Standards Applied

Design Guide: BS6724, IEC60502-1
 Conductor: IEC60228, BS6360, BS EN 60228
 Flame Retardancy: IEC60332-1-2, IEC60332-3-22
 Low Smoke & Reduced Toxicity : IEC60754-1/2, IEC61034-2

Electrical Characteristics

Operating voltage, U₀/U: 600/1000V
 Max. operating temperature: 90°C
 Final short circuit temperature: 250°C
 Test voltage: 3.5kV for 5 minutes

Installation Guide

Min. bending radius (mm) : 10 x Cable Overall Diameter
 Max. pulling tension (kgf) : 7 x No. of Core x Conductor Size

Construction

Conductor	Plain annealed copper wire
Insulation	An extruded layer of cross-linked polyethylene (XLPE) compound
Core Identification	Refer to Appendix F for details
Assembly	Cores cabled together, supplied with filler* and covered with polyester (PETP) binder tape*
Bedding	An extruded layer of low smoke halogen free (LSHF) compound
Bedding Colour	Black
Armour	A single layer of galvanised steel wire armour (SWA)
Outer Sheath	An extruded layer of low smoke halogen free (LSHF) compound
Outer Sheath Colour	Black

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	2	1.5	0.7	8.0	0.9	1.8	13.4	292	12.1
	2	2.5	0.7	8.9	0.9	1.8	14.3	341	7.41
	2	4	0.7	10.0	0.9	1.8	15.4	410	4.61
	2	6	0.7	11.1	0.9	1.8	16.5	493	3.08
	2	10	0.7	13.6	1.25	1.8	19.7	749	1.83
	2	16	0.7	15.7	1.25	1.8	21.8	943	1.15
	2	25	0.9	19.2	1.6	1.8	26.0	1268	0.727
	2	35	0.9	21.6	1.6	1.8	28.4	1761	0.524
	2	50	1.0	24.2	1.6	1.8	31.0	2141	0.387
	2	70	1.1	28.5	1.6	2.0	35.7	2781	0.268
	2	95	1.1	32.7	2.0	2.1	40.9	3868	0.193
	2	120	1.2	36.4	2.0	2.2	44.8	4593	0.153
	2	150	1.4	40.3	2.0	2.3	48.9	5408	0.124
	2	185	1.6	45.3	2.5	2.5	55.3	7039	0.0991
	2	240	1.7	51.0	2.5	2.7	61.4	8640	0.0754
	2	300	1.8	56.8	2.5	2.8	67.4	10322	0.0601
	2	400	2.0	63.6	2.5	3.1	74.8	12599	0.047

* Optional

** Available upon request

**CU/XLPE/LSHF/SWA/LSHF, XLPE insulated, LSHF bedded, SWA armoured, LSHF sheathed
Cable, 0.6/1kV
2-, 3-, 4-, 5-, Multicores**

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	3	1.5	0.7	8.6	0.9	1.8	14.0	320	12.1
	3	2.5	0.7	9.5	0.9	1.8	14.9	383	7.41
	3	4	0.7	10.7	0.9	1.8	16.1	466	4.61
	3	6	0.7	12.0	0.9	1.8	17.4	565	3.08
	3	10	0.7	14.6	1.25	1.8	20.7	890	1.83
	3	16	0.7	16.9	1.25	1.8	23.0	1157	1.15
	3	25	0.9	20.7	1.6	1.8	27.5	1797	0.727
	3	35	0.9	23.4	1.6	1.8	30.2	2199	0.524
	3	35 sh	0.9	18.6	1.6	1.8	25.4	2020	0.524
	3	50	1.0	26.2	1.6	1.9	33.2	2695	0.387
	3	50 sh	1.0	20.9	1.6	1.9	27.9	2489	0.387
	3	70	1.1	31.3	2.0	2.0	39.3	3549	0.268
	3	70 sh	1.1	25.0	2.0	2.1	33.2	3321	0.268
	3	95	1.1	35.4	2.0	2.2	43.8	4929	0.193
	3	95 sh	1.1	28.2	2.0	2.2	36.6	4503	0.193
	3	120	1.2	39.5	2.0	2.3	48.1	5931	0.153
	3	120 sh	1.2	31.2	2.0	2.3	39.8	5512	0.153
	3	150	1.4	44.2	2.5	2.5	54.2	7618	0.124
	3	150 sh	1.4	35.2	2.5	2.5	45.2	6905	0.124
	3	185	1.6	49.2	2.5	2.6	59.4	9121	0.0991
	3	185 sh	1.6	39.3	2.5	2.6	49.5	8247	0.0991
	3	240	1.7	55.8	2.5	2.8	66.4	11347	0.0754
	3	240 sh	1.7	44.4	2.5	2.8	55.0	10201	0.0754
	3	300	1.8	61.6	2.5	3.0	72.6	13699	0.0601
	3	300 sh	1.8	48.0	2.5	3.0	59.0	12158	0.0601
	3	400	2.0	69.0	3.2	3.3	81.9	16833	0.047
	3	400 sh	2.0	58.0	2.5	3.3	69.6	15458	0.047

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	4	1.5	0.7	9.4	0.9	1.8	14.8	371	12.1
	4	2.5	0.7	10.4	0.9	1.8	15.8	450	7.41
	4	4	0.7	11.8	0.9	1.8	17.2	562	4.61
	4	6	0.7	13.2	1.25	1.8	19.3	802	3.08
	4	10	0.7	16.1	1.25	1.8	22.2	1087	1.83
	4	16	0.7	18.7	1.25	1.8	24.8	1427	1.15
	4	25	0.9	23.0	1.6	1.8	29.8	2207	0.727
	4	35	0.9	26.2	1.6	1.9	33.2	2759	0.524
	4	35 sh	0.9	22.7	1.6	1.9	29.7	2530	0.524
	4	50	1.0	29.3	2.0	2.0	37.3	3257	0.387
	4	50 sh	1.0	24.9	1.6	2.0	32.1	3127	0.387
	4	70	1.1	34.7	2.0	2.2	43.1	4943	0.268
	4	70 sh	1.1	29.8	2.0	2.2	38.2	4529	0.268
	4	95	1.1	39.4	2.0	2.3	48.0	6287	0.193
	4	95 sh	1.1	33.8	2.0	2.3	42.4	5711	0.193
	4	120	1.2	44.3	2.5	2.5	54.3	8112	0.153
	4	120 sh	1.2	37.8	2.5	2.5	47.8	7483	0.153
	4	150	1.4	49.1	2.5	2.6	59.3	9603	0.124
	4	150 sh	1.4	42.6	2.5	2.6	52.8	8741	0.124
	4	185	1.6	54.7	2.5	2.8	65.3	11620	0.0991
	4	185 sh	1.6	47.3	2.5	2.8	57.9	10568	0.0991
	4	240	1.7	62.0	2.5	3.0	73.0	14524	0.0754
	4	240 sh	1.7	53.6	2.5	3.0	64.6	13142	0.0754
	4	300	1.8	68.5	2.5	3.2	79.9	17609	0.0601
	4	300 sh	1.8	59.0	2.5	3.2	70.4	15768	0.0601
	4	400	2.0	77.2	3.2	3.5	90.5	23072	0.047
	4	400 sh	2.0	66.9	3.2	3.5	80.2	21145	0.047

sh: sector shaped conductor

**CU/XLPE/LSHF/SWA/LSHF, XLPE insulated, LSHF bedded, SWA armoured, LSHF
sheathed Cable, 0.6/1kV
2-, 3-, 4-, 5-, Multicores**

Dimension & Electrical Data

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	5	1.5	0.7	10.3	0.9	1.8	15.7	408	1.15
	5	2.5	0.7	11.4	0.9	1.8	16.8	493	0.727
	5	4	0.7	13.0	1.25	1.8	19.1	624	0.524
	5	6	0.7	14.5	1.25	1.8	20.6	879	0.387
	5	10	0.7	17.2	1.25	1.8	23.3	1225	0.268
	5	16	0.7	20.1	1.6	1.8	26.9	1840	0.193
	5	25	0.9	24.8	1.6	1.8	31.6	2546	0.153
	5	35	0.9	28.2	1.6	1.9	35.2	3177	0.124
	5	50	1.0	32.9	2.0	2.1	41.1	4430	0.0991
	5	70	1.1	38.4	2.0	2.3	47.0	5787	0.0754

Product ID	No. of Core	Conductor Size	Nom. Insulation Thickness	Nom. Dia. after Bedding	Nom. Armour Wire Size	Nom. Sheath Thickness	Nom. Overall Diameter	Approx. Cable Weight	Max. d.c. Resistance at 20°C
		mm ²	mm	mm	mm	mm	mm	kg/km	Ω/km
	7	1.5	0.7	11.2	0.9	1.8	16.6	464	12.1
	7	2.5	0.7	12.4	1.25	1.8	18.5	566	7.41
	7	4	0.7	14.0	1.25	1.8	20.1	830	4.61
	12	1.5	0.7	14.7	1.25	1.8	20.8	784	12.1
	12	2.5	0.7	16.5	1.25	1.8	22.6	970	7.41
	12	4	0.7	18.6	1.6	1.8	25.4	1408	4.61
	19	1.5	0.7	17.2	1.25	1.8	23.3	1019	12.1
	19	2.5	0.7	19.4	1.6	1.8	26.2	1470	7.41
	19	4	0.7	21.9	1.6	1.8	28.7	1866	4.61
	27	1.5	0.7	20.6	1.6	1.8	27.4	1500	12.1
	27	2.5	0.7	23.3	1.6	1.8	30.1	1889	7.41
	27	4	0.7	26.5	1.6	1.9	33.5	2481	4.61
	37	1.5	0.7	23.2	1.6	1.8	30.0	1808	12.1
	37	2.5	0.7	26.2	1.6	1.9	33.2	2298	7.41
	37	4	0.7	30.3	2.0	2.1	38.5	3381	4.61
	48	1.5	0.7	26.8	1.6	1.8	33.8	2198	12.1
	48	2.5	0.7	30.7	2.0	2.1	38.9	3179	7.41



Technical Information

- Appendix A : Materials Introduction
- Appendix B : Selection of Cross Sectional Area of Conductor
- Appendix C : Current Rating and Voltage Drop Table (Unarmoured Cable)
- Appendix D : Current Rating and Voltage Drop Table (Armoured Cable)
- Appendix E : Short Circuit Ratings
- Appendix F : Cables Drum Handling and Storage Procedure
- Appendix G : Identification of Cores in Cables

Appendix A - Materials Introduction

Insulation

In the manufacture of electric cables, the two most important factors to be considered are safety and reliability. The materials that are selected must be stable, reliable, durable, able to withstand the environment and safe to use. Materials used as insulation for the cables must meet the following;

1. Providing safe insulation of the line conductors with minimum loss in electrical energy.
2. Exhibiting good stable mechanical properties under normal conditions.
3. Possessing consistent electrical and mechanical properties over long period of use and over wide temperature ranges.
4. Exhibiting inert chemical properties which make it resistant to most chemicals.

Extruded insulations used for wire and cable can be classified into two categories, namely Thermoplastic materials and Thermoset materials.

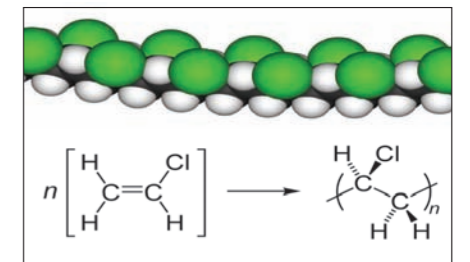
Thermoplastic materials tend to lose their form upon subsequent heating, while thermosetting materials tend to maintain their form. Generally, cables produced with thermoset materials can operate at higher temperature than cables produced with thermoplastic materials. The insulation range includes the below:-

Thermoplastic

a) Polyvinyl Chloride (PVC)

PVC has high electrical strength and good insulation resistance. It is inherently tough and resistant to flame, moisture and abrasion. Resistance to ozone, acids, alkalis, alcohols, and most solvents is also adequate. Compounding can impart resistance to oils and gasoline. Based on the specific formulation, temperature ratings range from 60°C to 105°C. PVC with 70°C temperature rating is most commonly used.

PVC materials are known to emit smoke and form hydrochloride acid (highly toxicated and corrosive chemical) when come in contact with water. Frequently in applications where smoke is a major hazard (notably in tunnels and rapid transit areas) PVC-free cable insulation such as low smoke halogen free (LSHF, XLEVA) is preferred.

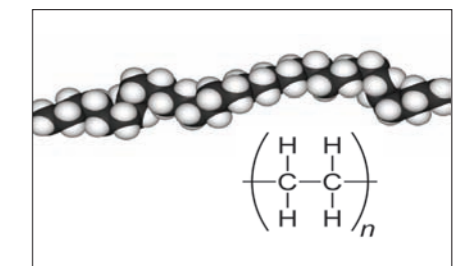


b) Polyethylene (PE)

Research has shown that PE exhibits excellent electrical insulating properties, stable mechanical characteristic and resistant to chemicals and moisture.

Polyethylene is however not suitable for use under high temperatures. This is mainly due to the molecular structure of the PE polymer which is made up of linear chains of independent PE molecules loosely held together by weak molecular bonds.

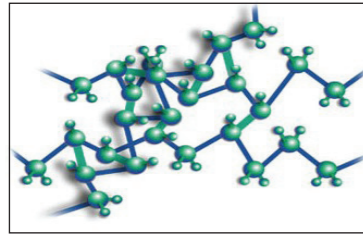
These weak molecular bonds break when subjected to temperature above 70°C, causing the individual molecules to slide over one another. The resultant PE polymer starts to change its shape and consistency and become soft plastic-like in nature. For application that required operating temperature higher than 70°C, cross-linked polyethylene (XLPE) is preferred.



Materials Introduction

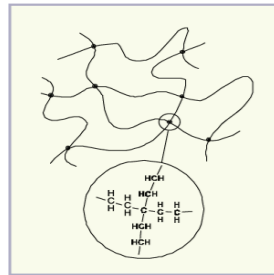
Insulation

Thermoset



c) Cross-linked Polyethylene (XLPE)

The thermoplastic nature of the PE can be converted into a thermally stable thermosetting compound by the process of cross-linking. In the process of cross-linking perpendicular chemical bonds are formed between parallel chains of the PE molecules. The parallel loose two-dimensional molecular structure is converted into a cellular three-dimensional polymeric structure.



The resultant XLPE compound exhibits a durable and excellent insulating material which exhibits the following advantages over the conventional PE material.

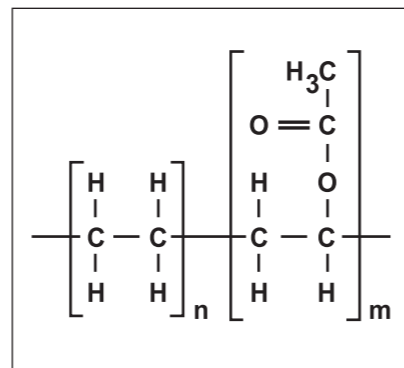
- ~ suitable for continuous operating temperature up to 90°C.
- ~ high thermal short circuit rating (250°C).
- ~ Excellent electrical properties maintained over the full temperature range.
- ~ Excellent water resistance and low permeability to water.
- ~ Excellent chemical resistance to inorganic salts, oils, alkaline, acids and organic solvents.
- ~ High durability and long operation life.
- ~ Halogen Free

All these properties have resulted in the rapid growth of preference of XLPE cables in the electrical industry.

d) Cross-linked Polyolefin (XLEVA)

EVA compound is a polymer that approaches elastomeric materials in softness and flexibility, yet can be processed like other thermoplastic. The properties is further enhanced to achieve thermal stability by the process of cross-linking to form a cellular three-dimensional polymeric structure.

The resultant XLEVA compound exhibits a more durable and excellent insulating material while maintaining its flexibility. Based on the specific formulation, XLEVA compound can withstand a temperature rating up to 110°C and display an excellent flame retardant capability. It contains no halogen and has a temperature index of more than 250°C which is currently the highest among most insulation materials.



Materials Introduction

Table A1: Table of comparison for Insulation Materials

PROPERTY	Unit	Insulation Materials				
		PVC	PE	XLPE	XLEVA ^A	
Chemical name		Polyvinyl Chloride	Polyethylene	Cross-linked Polyethylene	Cross-linked Polyolefin	
Max. Rated Temperature	Normal	°C	70	70	90	110 ^B
	Short circuit	°C	160	200	250	250
Density		1.2 - 1.4	0.92 - 0.94	0.92 - 0.95	1.5 - 1.55	
Volume resistivity	Ohm-cm	10E 15	10E 16	10E 16	10E 14	
Dielectric constant		3 - 5	2.0 - 2.3	2.3 - 2.5	4 - 6	
Tensile strength	N / mm ²	12 - 14	12 - 14	13 - 18	10 - 14	
Elongation-at-break	%	200 - 450	500 - 650	200 - 350	110 - 200	
Flame retardant property		++	+	+	+++	
Water resistance		++	+++	+++	+++	
Weather resistance		++	++	++	++	
Ozone resistance		++	++	++	++	
Solvent resistance		---	++	+	+	
Resistance to oil		++	+++	+++	++	
Resistance to heat deformation		---	+	+++	+++	

Note:

^A named as LSHF for all non-sheathed cables.

^B normal type, high temperature rating available upon request.

--- Poor

+ Fair

++ Good

+++ Excellent

Materials Introduction

Bedding and Sheathing

Jacket, also called sheaths, serve several purposes. For examples, they provide mechanical, thermal, chemical, and environmental protection to the insulated conductors they enclose. They may act as electrical insulation when used over shields or armour. They ease installation and routing concerns by enclosing multiple insulated conductors.

Commonly used jacket materials for low voltage power cables include extrusions of Polyvinyl Chloride (PVC), High Density Polyethylene (HDPE), and Low Smoke Halogen Free (LSHF) materials. These materials are applied using plastic extrusion lines that heat the compound to melting point and form it over the core. The material is then cooled in water trough and wound onto a reel.

Table A2: Table of comparison for Bedding/Sheathing Materials

PROPERTY	Bedding / Sheathing Materials		
	PVC	PE	LSHF
Chemical name	Polyvinyl Chloride	High Density Polyethylene	Low Smoke Halogen Free
Density	1.35 - 1.5	0.94 - 0.95	1.4 - 1.6
Halogen Content	>20%	<0.5%	<0.5%
Halogen Free	No	Yes	Yes
Limiting Oxygen Index (LOI)	>22	≤22	>30
Smoke Generation	Dark and dense	Less Smoke	Least Smoke
Tensile strength	N / mm ²	12 - 14	12 - 14
Elongation-at-break	%	200 - 450	500 - 650
Flame retardant property	++	---	+++
Water resistance	++	+++	+++
Weather resistance	++	++	++
Ozone resistance	++	++	++
Chemical resistance	++	+++	++
Solvent resistance	++	++	++
Resistance to crude oil	+++	++	+++
Resistance to heat deformation	---	+	+++

Note:
Refer to normal PVC that comply with IEC60332-1-2. Higher grade PVC available upon request.
Higher grade of PVC can achieve higher LOI reading.
--- Poor, + Fair, ++ Good, +++ Excellent

Appendix B - Selection Of Cross-Sectional Area Of Conductor

In order to choose the right power cable, one has to consider:

- the current
- the ambient temperature
- the voltage drop
- the frequency and harmonic current
- the short circuit rating
- maximum safe length at short circuit
- the installation methods

Current Rating

When electric current flows through the conductor of a cable, the electrical resistance of the conductor generates heat. When a temperature greater than that allowed is reached by the cable due to heat generation, a larger conductor size (with lower electrical resistance) has to be selected. Other important considerations are methods of installation of the cable and ambient temperature. Calculation which takes into account all criteria are described in IEC 60287 and are rather complex. In general, preferences is given to standard current rating tables which are issued by national standardization bureaus.

The current rating given in Table 4 to 14 are based on the following standard conditions of the installation.

1. Maximum operating temperature of conductor = 90°C
2. Ambient air temperature = 30°C
3. Ground temperature = 15°C
4. Soil thermal resistivity = 1.2°C m/w
5. Depth of laying (For cable laid direct in the ground) = 0.5m

Voltage Drop

Another important factor for the determination of the conductor size is the voltage drop. The voltage drop of the cable at a given current is caused by losses in the cable. In case of a too high voltage drop, it is necessary to choose a bigger conductor size. The voltage drop in a cable demotes the difference in voltage at the beginning and at the end of the cable. It depends on:

- the current carried
- the power factor
- the length of the cable
- the resistance of the cable
- reactance of the cable

The permissible voltage drop is usually stated as a percentage of the circuit voltage.

According to CP5:1998 regulation 525-01-01, it is stipulated that the total voltage drop for any particular cable run must be such that the voltage drop in the circuit of which the cable forms a part does not exceed 4% of the nominal voltage of the supply.

Selection of Cable based on Voltage Drop and Current using Tables

Since the actual power factor of the load is usually not known, the most practical approach to the question of the voltage drop is to assume the worst conditions, i.e. power factor equal to one and the conductor is at maximum operating temperature. The voltage drop values given in the tables are based on these assumptions.

The values of the voltage drop (Vd) are tabulated for a current of one Ampere for a 1 metre run, the value of voltage drop needs to be multiplied by the length of the run, in metre, and by the current, in Ampere that the cables are to carry.

$$V = V_d \times I \times L$$

Where V = Voltage

Vd = Approximate Voltage drop/Ampere/metre

I = Current in Ampere per phase

L = Route length in metres

Example:

Given that the supply voltage is 415V, 3 phase 50Hz and that the cable used is a 4C Cu/mica/XLPE/SWA/PVC fire resistant cable. Required cable is to be installed in ground and to carry a 250 Amp load per phase over a route length of 100m. Cable installation is to be in compliance with CP5: 1998 Regulation 522.08 regulation.

$$V = V_d \times I \times L$$

Maximum permissible voltage drop

$$V_{max} = 4\% \text{ of } 415V$$

$$V_{max} = 16.6V$$

Voltage drop/ampere/metre

$$V_d = \frac{V_{max}}{I \times L} = \frac{16.6V}{250 \times 100} = 0.66mV$$

Select from Table 10 (pg 43) such that the Vd value is equal to, or less than the calculated 0.66mV, at the same time ensuring that it will carry the current. It will be seen that this value is 0.61 giving a cable size of 70mm².

Appendix C - Current Ratings And Voltage Drop Table (Unarmoured Cable)

Cables installed in free air

Plain annealed stranded conductor, mica tape lapping, XLPE insulated, LSF cables, 600/1000V

Conditions of installation:

Ambient temperature : 30°C

Maximum Conductor temperature : 90°C

Table 1

Nominal area of conductor mm ²	INSTALLATION METHODS						
	Single Core Cable					Multicore Cable	
	2-Single Cores Touching A	2-Single Cores Touching B	3-Single Cores Trefoil C	3-Single Cores Spaced Horizontal D	3-Single Cores Spaced Vertical E	2 Loaded Conductor F	3 Loaded Conductor G
1.5	27	23	22	27	23	26	23
2.5	35	31	30	37	31	36	32
4	49	42	40	52	44	49	42
6	63	54	52	67	55	63	54
10	88	76	73	95	76	86	75
16	137	100	96	150	112	115	100
25	161	141	135	182	161	149	127
35	200	176	169	226	201	185	157
50	242	215	207	275	246	225	192
70	310	279	268	353	318	289	246
95	377	341	328	430	389	352	298
120	437	399	382	500	454	410	346
150	504	462	443	577	527	473	399
185	575	531	509	661	605	542	456
240	679	631	604	781	719	641	538
300	783	731	699	902	833	741	620
400	940	880	839	1085	1008	-	-
500	1083	1006	958	1253	1169	-	-
630	1254	1117	1077	1454	1362	-	-
800	1460	1262	1152	1696	1595	-	-
1000	1683	1432	1240	1958	1847	-	-

Group installation correction factor for methods A to E, please refer to Table 2

Group installation correction factor for methods F to G, please refer to Table 3

Correction factors for ambient air temperature other than 30°C, please refer to Table 6

d1: Clearance to wall not less than one cable diameter

d2: Minimum 0.3 times the diameter of cable

Correction factors for groups of more than one circuit of single core cables

To be used in conjunction with current ratings in Table 4 for single core cables in free air for installation methods A to G.

Table 2

Installation method (See Note 1)			Number of three-phase circuits (Note 4)			Use as a multiplier to rating for	
			Numbers of trays	1	2		3
Unperforated trays (Note 2)	H		1	0.95	0.90	0.85	Three cables in horizontal formation
			2	0.92	0.85	0.80	
			3	0.90	0.80	0.75	
Perforated trays (Note 2)	J		1	0.95	0.90	0.85	
			2	0.95	0.85	0.80	
			3	0.90	0.85	0.80	
Vertical perforated trays (Note 3)	K		1	0.95	0.85	-	Three cables in vertical formation
			2	0.90	0.85	-	
Ladder supports, cleats, etc (Note 2)	L		1	1.00	0.95	0.95	Three cables in horizontal formation
			2	0.95	0.90	0.90	
			3	0.95	0.90	0.85	
Unperforated trays (Note 2)	H		1	1.00	0.95	0.95	Three cables in trefoil formation
			2	0.95	0.90	0.85	
			3	0.95	0.90	0.85	
Perforated trays (Note 2)	J		1	1.00	1.00	0.95	
			2	0.95	0.95	0.90	
			3	0.95	0.90	0.85	
Vertical perforated trays (Note 3)	K		1	1.00	0.90	0.90	
			2	1.00	0.90	0.85	
Ladder supports, cleats, etc (Note 2)	L		1	1.00	1.00	1.00	
			2	0.95	0.95	0.95	
			3	0.95	0.95	0.90	

Notes:

- Factors are given for single layers of cables (for trefoil groups) as shown in the tables and DO NOT apply when cables are installed in more than one layer touching each other. Values for such installations may be significantly lower and must be determined by an appropriate method.
- Values are given for a vertical spacing between trays of 300mm. For closer spacing the factors should be reduced.
- Values are given for a horizontal spacing between trays of 225mm with tray mounted back to back. For closer spacing the factors should be reduced.
- For circuits having more than one cable in parallel per phase, each set of three conductors should be considered as a circuit for the purposes of this table.

Correction factors for groups of more than one multicore cable

To be used in conjunction with current ratings in Table 1 for multicore cables in free air for installation methods F to G.

Table 3

Installation method			Number of trays	Number of cables						
				1	2	3	4	6	9	
Unperforated trays (Note 2)	M		Touching	1	0.95	0.85	0.80	0.75	0.70	0.70
				2	0.95	0.85	0.75	0.75	0.70	0.65
				3	0.95	0.85	0.75	0.70	0.65	0.60
			Spaced	1	1.00	0.95	0.95	0.95	0.90	-
				2	0.95	0.95	0.90	0.90	0.85	-
				3	0.95	0.95	0.90	0.90	0.85	-
Perforated trays (Note 2)	N		Touching	1	1.00	0.90	0.80	0.80	0.75	0.75
				2	1.00	0.85	0.80	0.75	0.75	0.70
				3	1.00	0.85	0.80	0.75	0.70	0.65
			Spaced	1	1.00	1.00	1.00	0.95	0.90	-
				2	1.00	1.00	0.95	0.90	0.85	-
				3	1.00	1.00	0.95	0.90	0.85	-
Vertical perforated trays (Note 3)	O		Touching	1	1.00	0.90	0.80	0.75	0.75	0.70
				2	1.00	0.90	0.80	0.75	0.70	0.70
				3	1.00	0.90	0.80	0.75	0.70	0.70
			Spaced	1	1.00	0.90	0.90	0.90	0.85	-
				2	1.00	0.90	0.90	0.85	0.85	-
				3	1.00	0.90	0.90	0.85	0.85	-
Ladder supports, cleats, etc (Note 2)	P		Touching	1	1.00	0.85	0.80	0.80	0.80	0.80
				2	1.00	0.85	0.80	0.80	0.75	0.75
				3	1.00	0.85	0.80	0.75	0.75	0.70
			Spaced	1	1.00	1.00	1.00	1.00	1.00	-
				2	1.00	1.00	1.00	0.95	0.95	-
				3	1.00	1.00	0.95	0.95	0.95	-





Notes:

- Factors apply to single layer groups of cables as shown above and do NOT apply when cables are installed in more than one layer touching each other. Values for such installations may be significantly lower and must be determined by an appropriate method.
- Values are given for a vertical spacing between trays of 300mm. For closer vertical spacing the factors should be reduced.
- Values are given for a horizontal spacing between trays of 225mm with trays mounted back to back. For closer spacing the factors should be reduced.

Voltage drop table (Unarmoured Cables)

Voltage drop for single core cables per amp per metre

Table 7

Nominal area of conductor (mm ²)	For 		For 	For 	For 
	AC (mV)	DC (mV)	(mV)	(mV)	(mV)
1.5	30.86	30.86	26.73	26.73	26.73
2.5	18.90	18.90	16.37	16.37	16.37
4	11.76	11.76	10.19	10.19	10.19
6	7.86	7.86	6.81	6.81	6.81
10	4.67	4.66	4.04	4.04	4.05
16	2.95	2.94	2.55	2.55	2.56
25	1.87	1.85	1.62	1.62	1.63
35	1.35	1.34	1.17	1.17	1.19
50	1.01	0.99	0.87	0.88	0.90
70	0.71	0.68	0.61	0.62	0.65
95	0.52	0.49	0.45	0.45	0.50
120	0.43	0.39	0.37	0.38	0.42
150	0.36	0.32	0.32	0.33	0.37
185	0.30	0.25	0.26	0.28	0.33
240	0.25	0.19	0.22	0.24	0.29
300	0.22	0.15	0.20	0.21	0.28
400	0.20	0.12	0.17	0.20	0.26
500	0.19	0.093	0.16	0.18	0.25
630	0.18	0.072	0.15	0.17	0.25
800	0.17	0.056	0.15	0.17	0.24
1000	0.16	0.045	0.14	0.16	0.24

Voltage drop for multi-core cables per amp per metre

Table 8

Nominal area of conductor (mm ²)	For twin-core		For 3 and 4 cores (mV)
	AC (mV)	DC (mV)	
16	2.90	2.90	2.60
25	1.90	1.90	1.60
35	1.30	1.30	1.20
50	1.00	0.99	0.87
70	0.70	0.68	0.61
95	0.52	0.49	0.45
120	0.42	0.39	0.36
150	0.35	0.32	0.30
185	0.29	0.25	0.25
240	0.24	0.19	0.21
300	0.21	0.15	0.19

Appendix D - Current Ratings And Voltage Drop Table (Armoured Cable)

Cables laid direct in ground

Single Core

Plain annealed stranded copper conductor, mica tape lapping, XLPE insulated, Aluminium or copper wire armoured, LSF cables, 600/1000V

Table 9

Nominal Area of Conductor (mm ²)	Single Core (Aluminium wire armoured)					
	Two cables touching				Three cables trefoil (touching) 3-phase	
	Single-phase (ac)		dc			
	Current rating (Amp)	Approx volt drop per Amp per metre (mV)	Current rating (Amp)	Approx volt drop per Amp per metre (mV)	Current rating (Amp)	Approx volt drop per Amp per metre (mV)
50	275	0.99	275	0.99	235	0.86
70	340	0.70	340	0.68	290	0.61
95	405	0.53	410	0.49	345	0.46
120	460	0.43	470	0.39	390	0.37
150	510	0.37	530	0.32	435	0.32
185	580	0.31	600	0.25	490	0.27
240	670	0.26	690	0.19	560	0.23
300	750	0.24	790	0.15	630	0.21
400	830	0.21	910	0.12	700	0.19
500	910	0.20	1030	0.093	770	0.18
630	1000	0.19	1200	0.072	840	0.17
800	1117	0.18	1422	0.056	931	0.16
1000	1254	0.17	1683	0.045	1038	0.15

Twin and Multi Core

Plain annealed stranded copper conductor, mica tape lapping, XLPE insulated LSF bedded, Galvanised steel wire armoured, LSF sheathed cables, 600/1000V

Table 10

Nominal Area of Conductor (mm ²)	Direct in ground					
	Two-Core cable				Three or Four Core Cable	
	Single-phase (ac)		dc			
	Current rating (Amp)	Approx volt drop per Amp per metre (mV)	Current rating (Amp)	Approx volt drop per Amp per metre (mV)	Current rating (Amp)	Approx volt drop per Amp per metre (mV)
16	140	2.90	140	2.90	115	2.60
25	180	1.90	180	1.90	150	1.60
35	215	1.30	215	1.30	180	1.20
50	255	1.00	255	0.99	215	0.87
70	315	0.70	315	0.68	265	0.61
95	380	0.52	380	0.49	315	0.45
120	430	0.42	435	0.39	360	0.36
150	480	0.35	490	0.32	405	0.30
185	540	0.29	560	0.25	460	0.25
240	630	0.24	650	0.19	530	0.21
300	700	0.21	740	0.15	590	0.19

For group correction factors, please refer to Table 12. Correction factors for ground temperatures other than 15°C, refer to Table 14

Conditions of installation (for Table 9 & 10):

Ground temperature : 15°C
 Depth of laying : 0.5m
 Soil thermal resistivity : 1.2°C m/w
 Maximum conductor operating temperature at rated current : 90°C

Note:

Ratings given are for single circuits installed thermally independent of any other heat source.

Cables run in single way ducts

Plain annealed stranded copper conductor, mica tape lapping, XLPE insulated, armoured, LSF cables, 600/1000V

Table 11

Nominal area of conductor mm ²	Single Core				Two-Core		Three or Four Core	
	Two cables ducts touching		Three cables ducts touching, trefoil		Current rating Amp	Approx volt drop per Amp per metre mV	Current rating Amp	Approx volt drop per Amp per metre mV
	Current rating Amp	Approx volt drop per Amp per metre mV	Current rating Amp	Approx volt drop per Amp per metre mV				
16	-	-	-	-	115	2.90	94	2.6
25	-	-	-	-	145	1.90	125	1.6
35	-	-	-	-	175	1.30	150	1.2
50	255	1.10	235	0.93	210	1.00	175	0.87
70	310	0.80	280	0.70	260	0.70	215	0.61
95	365	0.65	330	0.56	310	0.52	260	0.45
120	410	0.55	370	0.48	355	0.42	300	0.36
150	445	0.50	405	0.43	400	0.35	335	0.30
185	485	0.45	440	0.39	455	0.29	380	0.25
240	550	0.40	500	0.35	520	0.24	440	0.21
300	610	0.37	550	0.32	590	0.21	495	0.19
400	640	0.35	580	0.30	-	-	-	-
500	690	0.33	620	0.28	-	-	-	-
630	750	0.30	670	0.26	-	-	-	-
800	828	0.28	735	0.24	-	-	-	-
1000	919	0.26	811	0.22	-	-	-	-

For group correction factors, please refer to Table 13
Correction factors for ground temperatures other than 15°C, refer to Table 14

Conditions of installation:

Ground temperature : 15°C
Depth of laying : 0.5m
Soil thermal resistivity : 1.2°C m/w
Maximum conductor operating temperature at rated current : 90°C
Ambient air temperature : 25°C

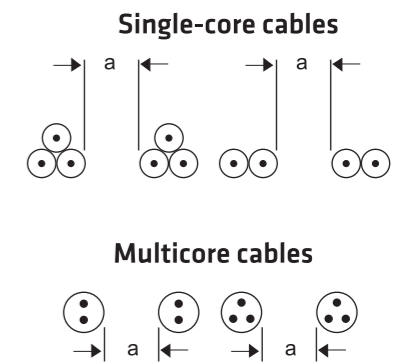
Note:

* Single core cables are aluminium wire armoured for a.c. systems.
Ratings given are for single circuits installed thermally independent of any other heat source.

Correction factors for more than one circuit, cables laid directly in the ground

Table 12

Number of circuits	Cable to cables clearance (a)				
	Nil (cables touching)	One cable diameter	0.215m	0.25m	0.5m
2	0.75	0.80	0.85	0.90	0.90
3	0.65	0.70	0.75	0.80	0.85
4	0.60	0.60	0.70	0.75	0.80
5	0.55	0.55	0.65	0.70	0.80
6	0.50	0.55	0.60	0.70	0.80

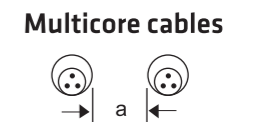


Correction factors for more than one circuit, cables laid directly in ducts in the ground

A - Multicore cables in single-way ducts

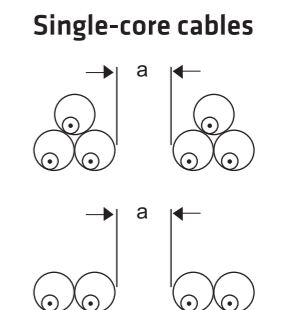
Table 13

Number of cables	Duct to duct clearance (a)			
	Nil (ducts touching)	0.25m	0.5m	1.0m
2	0.85	0.90	0.95	0.95
3	0.75	0.85	0.90	0.95
4	0.70	0.80	0.85	0.90
5	0.65	0.80	0.85	0.90
6	0.60	0.80	0.80	0.90



B - Single-core cables in single-way ducts

Number of single-core circuits of two or three cables	Duct to duct clearance (a)			
	Nil (ducts touching)	0.25m	0.5m	1.0m
2	0.80	0.90	0.90	0.95
3	0.70	0.80	0.85	0.90
4	0.65	0.75	0.80	0.90
5	0.60	0.70	0.80	0.90
6	0.60	0.70	0.80	0.90



Correction factors for ground temperatures other than 15°C

Table 14

Ground temperature °C	10	15	20	25	30	35	40	45	50
Correction factor	1.03	1.00	0.97	0.93	0.89	0.86	0.82	0.76	0.72

TECHNICAL INFORMATION

Maximum conductor resistance

Table 15

Cross Section Area (S) mm ²	Conductor for fixed wiring Class 1 (solid) Class 2 (stranded) ohm/km at 20°C
0.50	36.0
0.75	24.5
1.00	18.1
1.50	12.1
2.50	7.41
4	4.61
6	3.08
10	1.83
16	1.15
25	0.727
35	0.524
50	0.387
70	0.268
95	0.193
120	0.153
150	0.124
185	0.0991
240	0.0754
300	0.0601
400	0.0470
500	0.0366
630	0.0283
800	0.0221
1000	0.0176

Electrical Characteristics

Table 16

Conductor Resistance Temperature Correction Factors			
Temp°C	Factor	Temp°C	Factor
10	0.961	25	1.020
11	0.965	30	1.039
12	0.969	35	1.059
13	0.972	40	1.079
14	0.976	45	1.098
15	0.980	50	1.118
16	0.984	55	1.138
17	0.988	60	1.157
18	0.992	65	1.177
19	0.996	70	1.196
20	1.000	75	1.216
21	1.004	80	1.236
22	1.008	80	1.255
23	1.012	90	1.275
24	1.016		

Appendix E - Short Circuit Ratings

Another important factor for the determination of the conductor size is the maximum allowable current during a short circuit when the maximum allowable conductor temperature is higher than during normal operation.

The maximum permissible short circuit current of XLPE cables up to 1 kV with copper conductors can be calculated with following formula:

$$1k = \frac{S}{\sqrt{t}} \cdot K$$

Where 1k = Maximum permissible short circuit current in Ampere

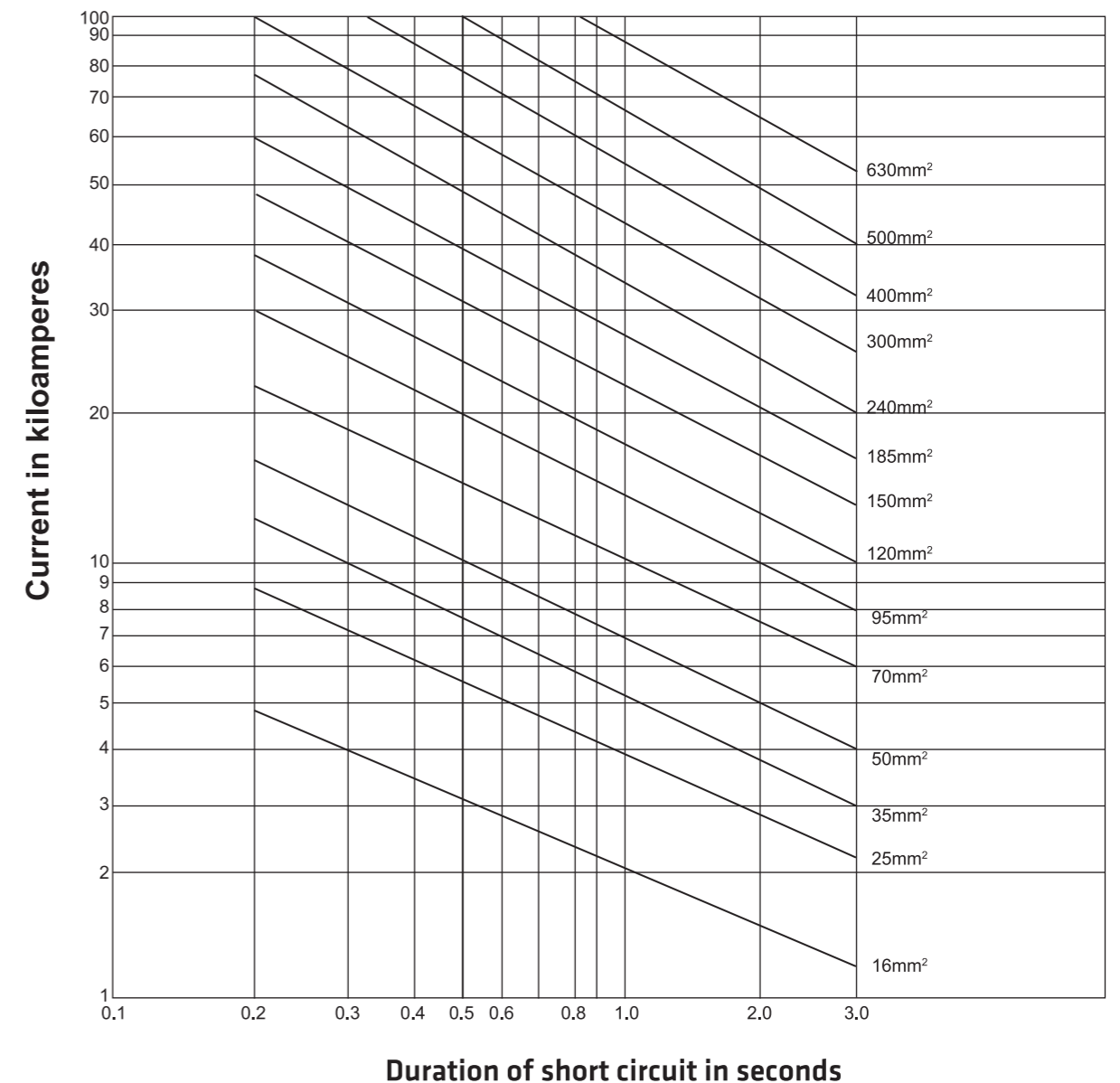
S = Conductor area in mm²

t = Duration of short circuit process in seconds. Maximum value for t = 5 seconds

K = Constant of 143 for copper conductors and temperature rising 90 degree C to 250 degree C

Copper Conductors

The values of fault current given in the graph are based on the cable being fully loaded at the start of the short circuit (conductor temperature 90°C) and a final conductor temperature of 250°C, and it should be ensured that the accessories associated with the cable are also capable of operation at these values of fault current.



Appendix F - Cables Drum Handling and Storage Procedure

Minimum bending radius

Type of cable	Unarmoured		Armoured
	Single core	Multicore	
Number of cores	8D	6D	10D
300/500V and 600/1000V cable			

where D: diameter of cable

Side wall pressure to cable

Permissible maximum side wall pressure to the cable at bending point during installation is 500kgf/m.

$$\text{Side wall pressure to cable} = \frac{\text{Pulling tension (kgf)}}{\text{Bending radius (m)}}$$

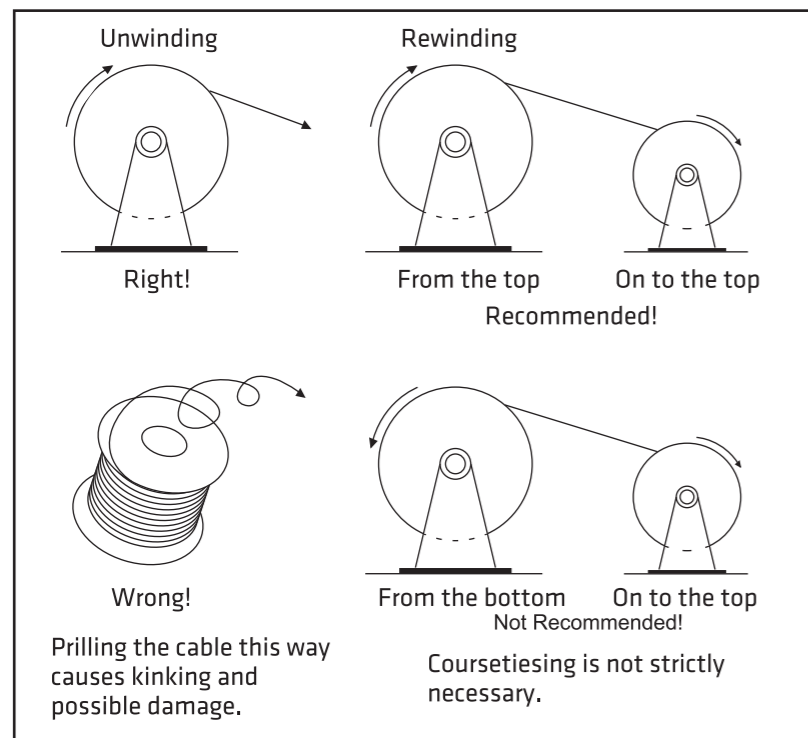
$$= \frac{T}{R}$$

Permissible maximum pulling tension (T)

Conductor	(Tension kgf)
Copper	7 x (No. of cores) x (cross-sectional area of conductor)

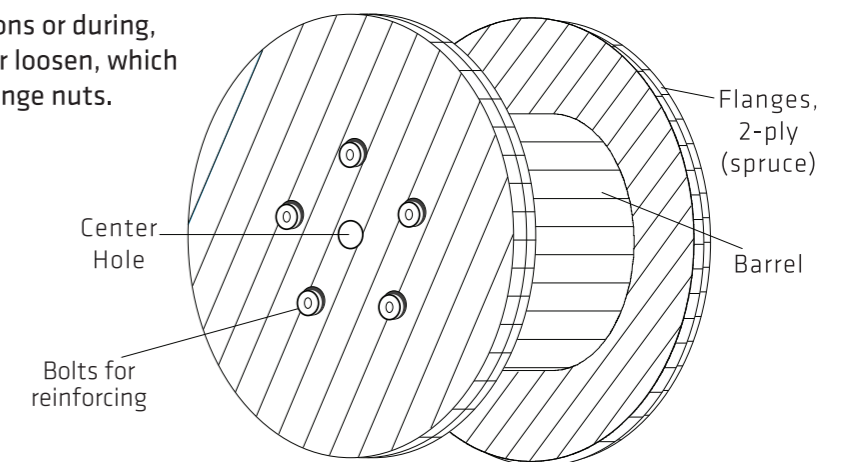
Drum handling

Handle the drums with care! It is always recommended and a must with heavy drums - to lift drums with a fork-lift truck or a crane when removing them from the vehicle. Always take care to lower the drums into an upright position on their flanges.



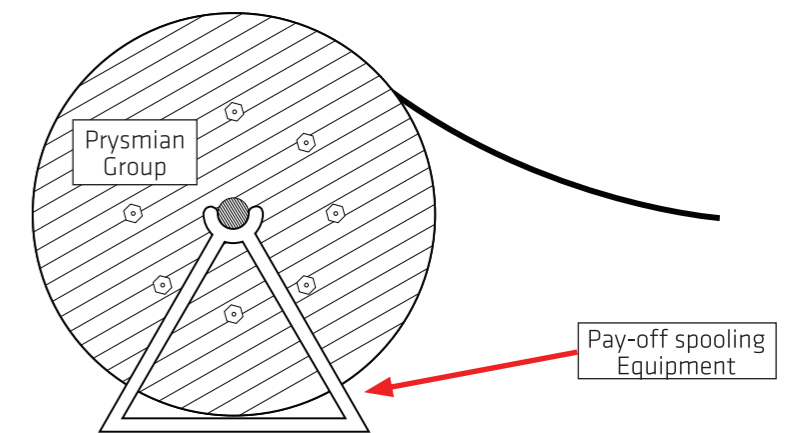
Tightening

Due to changing of weather conditions or during, woodendrums may slightly shrink or loosen, which necessitates retightening on the flange nuts.



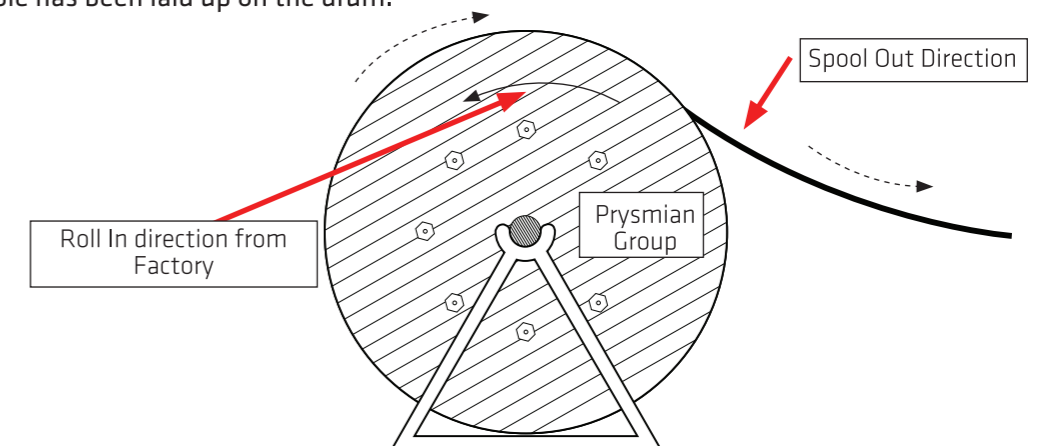
Proper Spooling Equipment

Although generally tough, cables can be damaged by impact, pinching or abrasion. Pay-off spooling shall be an easy operation. Through faulty handling cables may slide or "crawl". This can result in pinching or locking and cause damage.



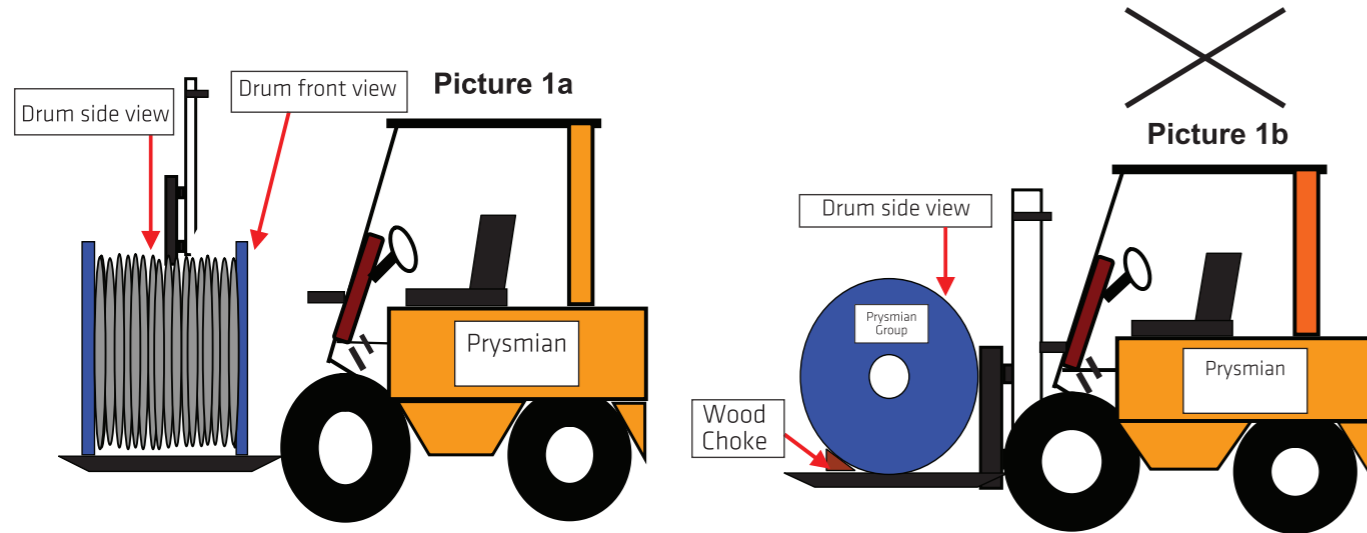
Direction of spooling

The cable must be drawn off the drum AGAINST the direction the cable has been laid up on the drum.

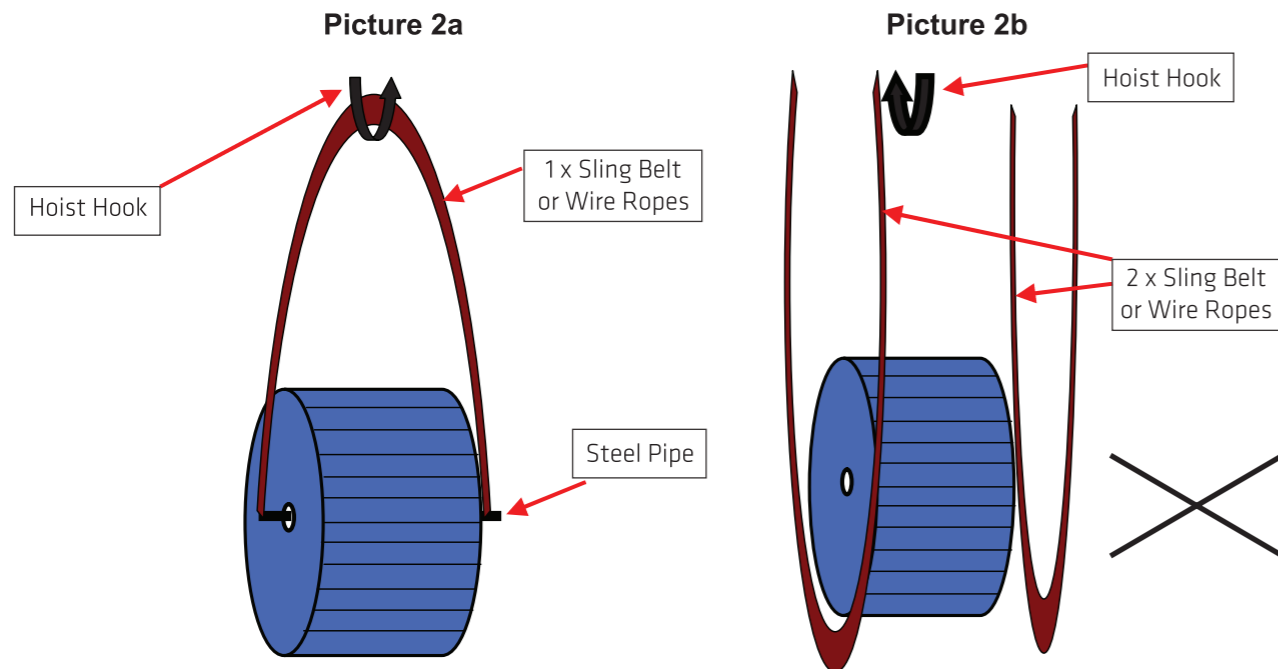


Handling

- When using Forklift Truck to handle the cable drums, it must be fork in the direction of the drum front view or across the both flanges. (see picture 1a)
- Improper handling of cables drum by forking from drum side view will cause serious damage to the cables. (see picture 1b)



- Using Hoist to lift the cables drums, the correct method require a metal rode to go through the center hole and a certified sling belt or wire rope. (see picture 2a)
- Improper Hoisting, using two or single sling belt or wire rope over the wood battens will cause damage to woodbattens resulted damaging the cables.(see picture 2b)

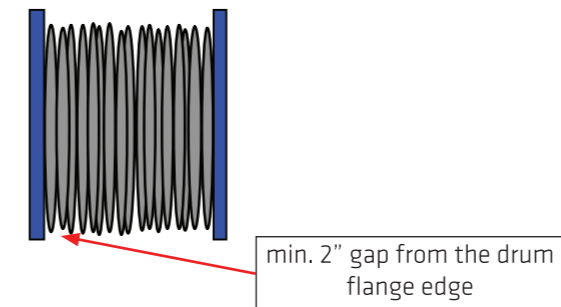


Storage

- Cables coiled in the drum must have at least min. 2" gap away from the edge of the flange.
- Black PVC sheet to be used for wrapping over the cables before storage in the open.
- Cables drums must be stored in an upright position (see Picture 3a)

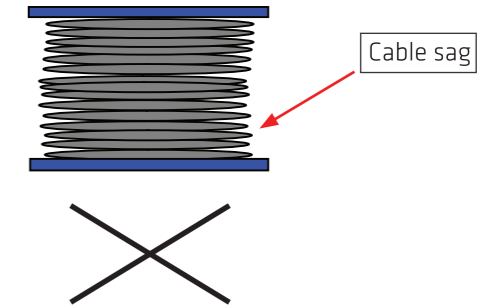
Picture 3a

This picture show the Cables Drum in up right postion is the correct method of storing

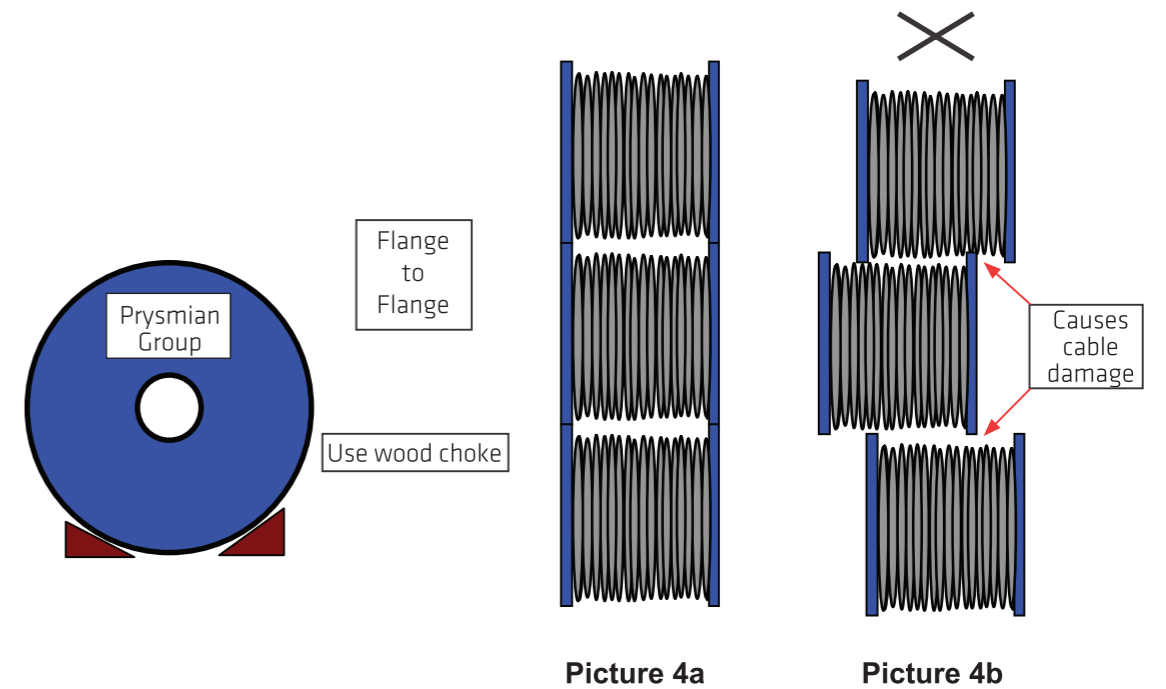


Picture 3b

This picture show the Cables Drum in lay postion is incorrect method of storing



- Wood choke should be placed under the flanges to prevent accidental rolling. (see picture 2)
- Cables drums must be stored flanges against flange. (see picture 3a)
- If improper storage, cables will be damage if flange hit against. (see Picture 3b)

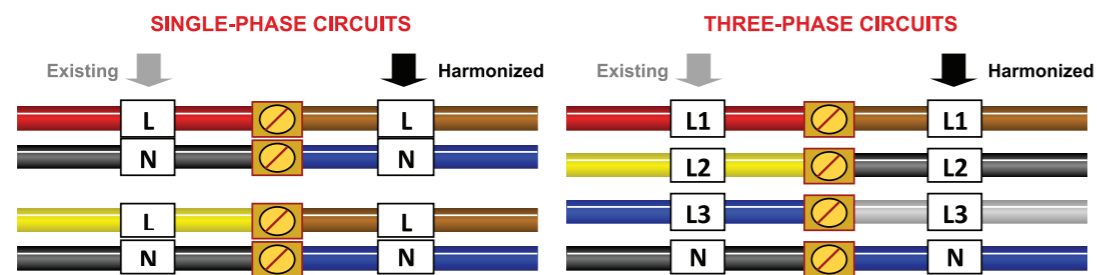


A Glimpse of Our Project Reference ASEAN

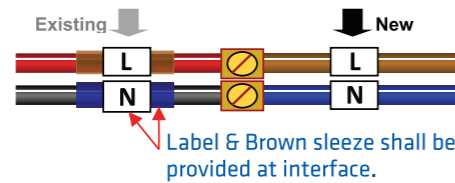
Appendix G - Identification of Cores in Cables

In March 2004, the Amendment No.2: AMD 14905 to BS7671: 2001 (IEE Wiring Regulations Sixteenth Edition) has been harmonized with the CENELEC Standard HD 384.5.514: Identification including 514.3: Identification of conductor and with CENELEC Harmonization Document HD 308 S2: 2001 Identification of cores in cables and flexible cords.

The change in cable core colours is a major development that will affect the way wiring cable colours are distinguished and installed. Currently, for three phase fixed electrical installations, the wiring cable colours for “line” connections are red, yellow and blue respectively. The new three phase harmonized cable core colours will be brown, black and grey, following that of the new BS 7671: 2008 Requirements for electrical installations, IEE Wiring Regulations, 17th edition. A number of countries in the European Union as well as Hong Kong and Singapore are implementing these harmonized cable core colours.



For any new electrical installation that involved extension from existing wiring system, BS7671 has been modified to align with these cable core colours where suitable marking/ labelling method eg. colour tapes, sleeves, discs, or by alphanumeric (letters and/or numbers) is allowed. See below figure:-



Cable cores colour code

Function	Alpha-numeric	Existing Core Colour	New Harmonized Core Colour
Protective conductor		Green/ Yellow	Green/ Yellow
Functional earthing conductor		Cream	Cream
AC Power Circuit			
- Phase	L	Red	Brown
- Neutral	N	Black	Blue
Three Phase Circuit			
- Phase 1	L1	Red	Brown
- Phase 2	L2	Yellow	Black
- Phase 3	L3	Blue	Grey
- Neutral	N	Black	Blue
DC Two-Wire Unearthed Circuit			
- Positive	L+	Red	Brown
- Negative	L-	Black	Grey
DC Two-Wire Earthed Circuit			
- Positive (of negative earth)	L+	Red	Brown
- Negative (of negative earth)	M	Black	Blue
- Positive (of positive earth)	M	Black	Blue
- Negative (of positive earth)	L-	Blue	Grey
DC Three-Wire Circuit			
- Positive	L+	Red	Brown
- Mid-wire (may be earthed)	M	Black	Blue
- Negative	L-	Blue	Grey

Australia

Cross City Tunnel
Eastern Distribution Tunnel
Lane Cove Tunnel
M5 Motorway
Parramatta Rails
Proggo Road Busway

Brunei

7000 Units Housing Development
Balai Bomba At Perumahan Kg Bt Beruang, Tutong
Balai Bomba Dan Perumahan Kampong Mentiri
BLNG / Refinery CCTV
BLNG Cooling Tower
BLNG Power Plant
Brunei Methanol Plant
BSP CER (Containerised Equipment Room)
BSP DATA Centre
BSP Magpie Platform
BSP Mampak Platform
BSP Seria North Flank
BSP Supplies
BSP Tank Major Repair
Centre Point Hotel upgrading
DES Supplies
DES Supply
Empire Hotel upgrading
Kg Kilanas Mosque
Kiulap Mall
Light Industry Shop at Kg Katimahar, Sengkurong
Magistrate Court
Maraburong Prison
Naval Base
New Building For Brunei Muara District
Radio TV Brunei
RTB (Radio TV Brunei)
SCOT Rejuvenisation
Shell Brunei Refinery
Tutong Street Lighting
Various Schools

Hong Kong

Caribbean Coast
Disneyland
Elements Shopping Center
Enterprise Square Five Mega Box Mall
Four Seasons Hotel
Grand Promenade
Harbor Front Horizon
Hong Kong International Airport
Hong Kong Science Park
Hong Kong-Shenzhen Western Corridor Bridge
ICAC Headquarter
Kowloon, Tsingyi, Iai King, Olympic, Tsuen Wan West MRT Station
Movie City
One Beacon Hill
Pok Oi Hosiptal
Taiwan, Kam Sheung, Fotan MRT stations

Indonesia

Australia Embassy
British Embassy
Ciputra World
DATA Centre at Surabaya
Kemang Village Apt
Kuningan City
Life Style Kuta Bali
LOTTE Mart Bintaro
Mall Summarecon
Mayapada Hospital
SILOAM Hospital
ST Moritz
TANG City Mall
TEMPO Scan
TRANS Studio Bandung

Macau

Macao Sands Casino
Macau Airport Extension
Ponte 16 Casino
Venetian Expo, Theater & Arena
Venetian Parcel 1 Casino

Malaysia

ALAM DAMAI
BANK NEGARA
Bank Negara Malaysia, Cyberjaya
BASF Gebeng, Petronas

CAPITAL SQUARE KL
Customs Kelantan
CX5
CYBERJAYA PRIMA 9 & 10
CYCAL PROPERTIES
Good Wood Hotel, JB
GOOGLE DATA CENTER
HONG LEONG DATA CENTER
Jaya Jusco, Bukit Indah, JB
JB PROJECT

KINRARA MAS PUCHONG
KLIA 2 - MOV COMMUNICATION
KLIA SPUR LINE
Kuantan & Segamat Compressor
Expansion Project
LHDNM - CYBERJAYA
Light Rail Transit Station
LOT C, KLCC
LYNAS
MCOT Petronas
Megasteel
MELODY HOME PROJECT
MEMC
Midvalley Megamall
MLNG - Fire & Gas System, Metering Station 1
MyDin Hypermarket
PACIFIC FOOD
PAHLAWAN
PAJAM, SOLAR FARM
PEMBINAAN PEJABAT TANAH & GALIAN
PAHANG
Petronas Refinery Melaka
Petronas Twin Towers
RAUB AUSTRALIAN GOLD MINE PROJECT
S-COGENERATION Project
SGL CARBON BANTING
Shell offshore Platform B11, F6, F26
SMART Tunnel Project
SPMY - HK SL SUNPOWER
SUBANG AVENUE
SUNPOWER PROJECT SITE (SPMY-HK 8L)
Tawakai Hospital
Teluk Salut, Ranhill Power
Tenaga National Berhad SCADA System
TNB
TNB SCADA System
UOA Holding Berhad - 2 Block Condominium at Bangsar South
UTUSAN MALAYSIA
Wisma Lee Rubber
WISMA PERSEKUTUAN AT MITC MELAKA
WTP

Singapore

A'Posh Bizhub
Alstom Metropolis C830
Anchor Handling Tug/Supply AHTS - Ice Class
Breadtalk Building
CAAS Terminal 3 CCTV
Changi Airport T3
Changi International Airport
Changi PMS Electrical Works
Changi Prison CCTV
Changi Water Reclamation Plant
Circle Line Stage 3 - Mechanical
Circle Line Stage 3,4,5 - Electrical
Common Service Tunnel - Marina
Credit Suisse Datacenter
Deutsche Bank @ Mapletree Business City
Downtown line signal package, C955, C956, C960, C961
Downtown Line stage 1 (M&E)
Downtown Line stage 2 (M&E)
Exxon Mobile Singapore Parallel Train, Jurong Island
ExxonMobile Singapore Parallel Train 2, Jurong Island
Formula One Grand Prix - Pitstop
Formulae One Night Race
Garden by the Bay
HDB Commercial, Industrial & Residential Buildings
Ion Orchard
Islamic Hub
Kallang Paya Lebar Expressway
LTA Circle Line C830, C414
LTA KPE Expressway C415
Management Development Institute of Singapore (MDIS)
Marina Coastal Expressway C461
Marina Coastal Expressway C466
Marina Sands Integrated Resort
MSD Pharmaceutical Facility
North South Line Extension (Electrical), C1565

North South Line Extension (Mechanical), C1563
Orchard Gateway
Orchard Turn Shopping Center
OTS10 (Oil Tanking) Project
Oxley Bizhub 1 & 2
Presidential ISTANA CCTV
PSA Corporation Harbor projects
Regal Theatre
Renewable Energy Consortium
Savvis Datacenter
Schering Plough Expansion
SG2 Equinox Datacenter
SGH Heart Center
SGH Pathology Center
Shell Bukom C2 Jetty
Shell Houdini, Bukom Refinery
Shell MEG Air Liquide Project
Singapore Sports Hub
St James Power Station
The Baywater Condo
The Pier@ Robertson Quay
The Pinnacle Collection, Sentosa Cove
The SAIL Condo
Tuas Incineration Plant
Tuas undersea Tunnel
UE Bizhub East @ Changi Business Park
Vopak Horizon Project PII & PIII
Yen San Building, Orchard
Yong Loo Lin School of Medicine
Zion Bishan Bible - Presbyterian Church

Thailand

Airport Rail Link
Ban Rachaprasong Rachadomri
Bangchat Combine Heat & Power Plant
Bangkok Bank Building
Bangkok Metropolitan Administration
Bangkok Transit Systems (BTS)
Bangsui Waterteatment
Baromchonanree Tunnel Road
BNC
Chulalongkorn University
Expressway Thailand Authority
Glow Power 115 MW CFB#3
Honda New Factory - 3
Jasmine Telecom
KLT - 8
Love Beach Hotel
LP Hospitality
Mahidol University (Dentistry Department)
Maneeya
Mass Rapid Transit System (MTRA -Blue Line)
MEA 230 KV Transmission Tunnel
MEA 230kV Underground Transmission Line Between Bangkok and Chidlom
MEA PM2-0030-WBA Modification Of 69 Kv Circuit
Breaker 9 Substations,
Novotel Airport Hotel
Pre Clinic Siriraj Hospital
Prin Narathiwat, Prin Ratchaprarob
PTT ESP & GSP#6 Plant
PTT Phenol Plant
Puric Latic Acid Refinery Plant
Ramkamkhang University
Ricoh (RMT) New Factory
Samart Ministry of Defense Southern Provinces CCTV
SCB Data Center
Siam Cement Group Chemicals _ THPP#3
Suvanabhumi International Airport (SBIA)
Thammasat University Rangsit
Thappline - Ethanol & Gasohol
The Room Radchada
Triple T Broadband Project
True Multimedia
United International Highway

Vietnam

Ca Mau Pipeline
Can Tho Airport
Dung Quat Oil Refinery
Fidco Building, HCMC
Gemadep Tower
Hanoi Museum
Hyatt Hotel
IndoChina Plaza Hanoi
Park Hyatt HCM
RMIT University HCM
Saigon Pearl Condominium
Thi Vi LPG Storage Tanks Development
Vietcombank Tower HCM