



0.6/1kV-26/35kV

# XLPE INSULATED CABLE

IN ACCORDANCE WITH IEC. 60502



# Company History

- 1985 • Established.
- 1986 • First 1kV PVC Power Cable Completed.
- 1989 • First 1kV XLPE Power Cable Completed.
- 1994 • Manufacture XLPE cable up to 35kV by CCV .
- 1995 • Certified by ISO9001: 1994V.
- 1998 • Certified by ISO 10012:1994 measure system.
- 1999 • Joint-venture with BICC, then General, and Prysiman now.
- 2000 • Reform the company structure, Baosheng Science &Technology.  
Innovation Co., Ltd was founded.
- 2002 • Certified by CQC ISO 9001: 2000 new version comment.
- 2003 • LAN cable Certified by UL ISO9001:2000.
- 2004 • BST stock listed into Shanghai Stock Exchange.
- 2004 • Certified by ISO14001.
- 2005 • Manufacture 1KV EPR Cable .
- 2006 • New MV workshop belongs to BST completed XLPE cable up to 35KV.
- 2008 • Turnover of Group exceed RMB10 billion, China Top 500 Enterprise.
- 2009 • Certified by OHSAS18001, HSE Certificate.
- 2010 • Technical Reaserch Center for Cable and Wire of Jiangsu Province.
- 2011 • Issued Addtional Stock and Financing 800 Million RMB.
- 2012 • Establish Baosheng (HK) Import & Export Co., Ltd.



0.6/1kV–26/35kV

## XLPE INSULATED CABLE



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# Company qualification



China Well-known Trademark



China Famous Brand Product



Icon brand in wire & cable industry of China



ISO14001



ISO9001



Top 500 Enterprises of China







# Manufacturer Equipment





# Test Equipment





Cross-linked polyethylene(XLPE) insulated cables have been supplied by BAOSHENG SCIENCE & TECHNOLOGY INNOVATION CO., LTD. for many years and incessant effort of developments in cable design and manufacturing techniques, enables BAOSHENG to supply XLPE insulated cables for voltages up to 110KV. This catalog provides constructional and technical information on cables for the voltages  $U_0/U(U_m)$  as follows: 0.6/1KV — 1.8/3(3.6)KV — 3.6/6(7.2)KV — 6/10(12)KV — 8.7/15(17.5)KV — 12/20(24)KV — 18/30(36)KV — 21/35(42)KV — 26/35(52)KV.

The structure of XLPE insulated cables, listed in tables hereinafter, is the representative one from IEC Pub. 60502-2005(Extruded solid dielectric insulated power cables for rated voltages from 1KV up to 35KV). Other types of cables and extra high voltage cables, not listed in this catalog, can also be manufactured and offered upon request.

## Properties of Cross-Linked Polyethylene(XLPE)

XLPE, Cross-linked polyethylene, has stable intermolecular bonds between polyethylene particles created by thermochemical action, due to the presence of organic peroxide.

XLPE has the same electrical properties as the conventional polyethylene and, as a result of stable intermolecular bonds, has much better thermal and mechanical properties. This provides XLPE insulated cables to be used at maximum continuous conductor temperature of 90°C while conventional polyethylene insulated cables to be used at that of 70°C. This provides an important advantage in cable ratings and is of special significance in countries or situations where the ambient temperature is high and derating factors have to be applied.





# Product Classify

- HV Power Cable (66kV to 110kV)
- MV Power Cable (3.6kV to 35kV)
- LV Power Cable
- Control Cable
- Instrument Cable
- Branch Cable
- Special Cable
- Communication Cable
- Rubber Cable
- Mineral Insulated Cable
- Signal Cable
- Building Wire





# Cable Specification

## 1. Scope

The cables included in this catalog are manufactured and tested in accordance with IEC Pub.60502–2005. Whereas, BAOSHENG can supply XLPE insulated cables according to or customer's specification.

## 2. Construction and Material

### 1) Conductor

Cables are supplied normally with class 2 of compacted circular or circular stranded conductors in copper, or aluminium.

### 2) Conductor Screening

All cables of rated voltages above 1.8/3(3.6)KV are supplied with conductor screening which is non metallic and consists of either semi conducting tape or a layer of extruded semi conducting compound, or a combination of the two.

### 3) Insulation

Insulation is a layer of extruded cross linked polyethylene(XLPE).

### 4) Insulation Screening

For cables at rated voltages above 1.8/3(3.6)KV, insulation screening consists of a non-metallic semi-conducting part in combination with a

metallic part and for unarmored cables at rated voltage 1.8/3(3.6)KV, insulation screening consists of metallic screen.

The non-metallic part is applied directly on the in-





sulation and consists of either semi-conducting tape or a layer of extruded semi-conducting compound.

The extruded insulation screen is normally free strip-pable(easy removable) type but can be provided with bonded one upon request.

The metallic part is normally applied on the individual cores for rated voltage above 1.8/3(3.6)KV and on the core assembly for rated Voltage 1.8/3(3.6)KV and consists of plain annealed copper tape.

Instead of copper tape screen, a layer of copper wires, corrugated aluminium sheath can be provided upon request.

#### 5) Inner Covering or Separation Sheath (for armored cables)

A layer of PVC inner covering is applied under the armor, if there is no screen.

When the metallic screening and the armor are of different metals, an eXtruded separation sheath of PVC is provided in order to separate the different metals.

#### 6) Metallic Armor

The armor, if required, consists of single layer of round wires or double tapes of galvanized steel . Single core cables are normally armored with aluminium because non-magnetic armor is essential for single core cable for use on A.C circuit.



#### 7) Outer Sheath

All cables are normally provided with an extruded PVC outer sheath black colored(class ST2 ). Other materials can be available upon request polyeth-ylene high flame retardant PVC and etc

#### 8) Core IdentificatiOn

the multiple conductors are identified as follows

— for 0.6/1KV to 1.8/3(3.6)KV

single core : Black or Blue

two core : Red, Blue

three core : Red, Green, Yellow

four core : Red, Green, Yellow, Blue

Grounding core : G/Y

— for 3.6/6(7.2)KV to 26/35(52)KV

three core : Red, Green, Yellow or  
Red Yellow Blue

The above color formation will be changed by request.

#### 9)Cable Marking

The following information are indicated on the surface of the outer sheath by ink-jet or embossing;

- manufacturer's name
- number of cores, type and size
- voltage rating
- applicable standard
- year of manufacturer
- length in meter
- etc.

### 3. Tests

The finished cables meet all the appropriate test requirements specified in IEC Pub. 60502-2005.







# Test Requirement

## Test Requirements

	Items	Test Requirements													
Routine tests	1. Resistance of conductors	Reference page 69													
	2. Partial discharge test	3.6/6(7.2)KV-18/30(36)KV: Not more than 5pC at 1.73U <sub>0</sub>													
	3. Power frequency voltage test	0.6/1KV-1.8/3KV: (2.5U <sub>0</sub> +2)KV/5min. 3.6/6(7.2)KV-26/35(52)KV: (3.5U <sub>0</sub> )KV/5min.													
	4. Appearance inspection														
Sample tests	1. Conductor examination														
	2. Check of dimension														
	3. Voltage test for 4h	3.6/6(7.2)KV-26 / 35(52)KV: 4U <sub>0</sub> KV / 4h													
	4. Hot set test	<table border="1"> <thead> <tr> <th>Item</th> <th>Requirements</th> </tr> </thead> <tbody> <tr> <td>Temperature (± 3℃)</td> <td>200</td> </tr> <tr> <td>Time under load (Min.)</td> <td>15</td> </tr> <tr> <td>Stress (N / cm<sup>2</sup>)</td> <td>20</td> </tr> <tr> <td>Max. elongation under load (%)</td> <td>175</td> </tr> <tr> <td>Max. permanent elongation after cooling (%)</td> <td>15</td> </tr> </tbody> </table>		Item	Requirements	Temperature (± 3℃)	200	Time under load (Min.)	15	Stress (N / cm <sup>2</sup> )	20	Max. elongation under load (%)	175	Max. permanent elongation after cooling (%)	15
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Time under load (Min.)		15													
Stress (N / cm <sup>2</sup> )		20													
Max. elongation under load (%)	175														
Max. permanent elongation after cooling (%)	15														
5. Insulation resistance															
Type tests	1. Partial discharge test	3.6/6(7.2)KV-26/35(52)KV: Not more than 5pC at 1.73U <sub>0</sub>													
	2. Tan δ measurement	6/10(12)KV-26/35(52)KV													
		<table border="1"> <thead> <tr> <th>Voltages</th> <th>U<sub>0</sub></th> <th>0.5U<sub>0</sub>-2U<sub>0</sub></th> </tr> </thead> <tbody> <tr> <td>Max. Tan δ (%)</td> <td>0.4</td> <td>0.2</td> </tr> </tbody> </table>	Voltages	U <sub>0</sub>	0.5U <sub>0</sub> -2U <sub>0</sub>	Max. Tan δ (%)	0.4	0.2							
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	<table border="1"> <thead> <tr> <th>Temperature and voltages</th> <th>Ambient temperature, 2KV</th> <th>90℃, 2KV</th> </tr> </thead> <tbody> <tr> <td>Max. Tan δ (%)</td> <td>0.4</td> <td>0.8</td> </tr> </tbody> </table>	Temperature and voltages	Ambient temperature, 2KV	90℃, 2KV	Max. Tan δ (%)	0.4	0.8								
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	Max. Tan δ (%)	0.4	0.8												
	3. Heating cycle test	<ul style="list-style-type: none"> <li>• 3.6/6(7.2)KV-26/35(52)KV</li> <li>• Conductor temperature: 100℃</li> <li>• 20 times (On 2h+Off 3h)</li> </ul>													
4. Impulse withstand test	<table border="1"> <thead> <tr> <th>Rated voltage U<sub>0</sub>/U(KV)</th> <th>3.6/6(7.2)</th> <th>6/10(12)</th> <th>8.7/15(17.5)</th> <th>12/20(24)</th> <th>18/30(36)</th> <th>26/35(52)</th> </tr> </thead> <tbody> <tr> <th>Test voltage (KV)</th> <td>60</td> <td>75</td> <td>95</td> <td>125</td> <td>170</td> <td>200</td> </tr> </tbody> </table>	Rated voltage U <sub>0</sub> /U(KV)	3.6/6(7.2)	6/10(12)	8.7/15(17.5)	12/20(24)	18/30(36)	26/35(52)	Test voltage (KV)	60	75	95	125	170	200
	Rated voltage U <sub>0</sub> /U(KV)	3.6/6(7.2)	6/10(12)	8.7/15(17.5)	12/20(24)	18/30(36)	26/35(52)								
Test voltage (KV)	60	75	95	125	170	200									
		Each ± 10 shots at 95℃ A.C voltage test after impulse withstand test 6/10(12)KV-26/35(52)KV: (2.5U <sub>0</sub> )KV/15min.													
5. Hing-voltage test for 4h	3.6/6(7.2)KV-26/35(52)kv: 4U <sub>0</sub> KV/4h														



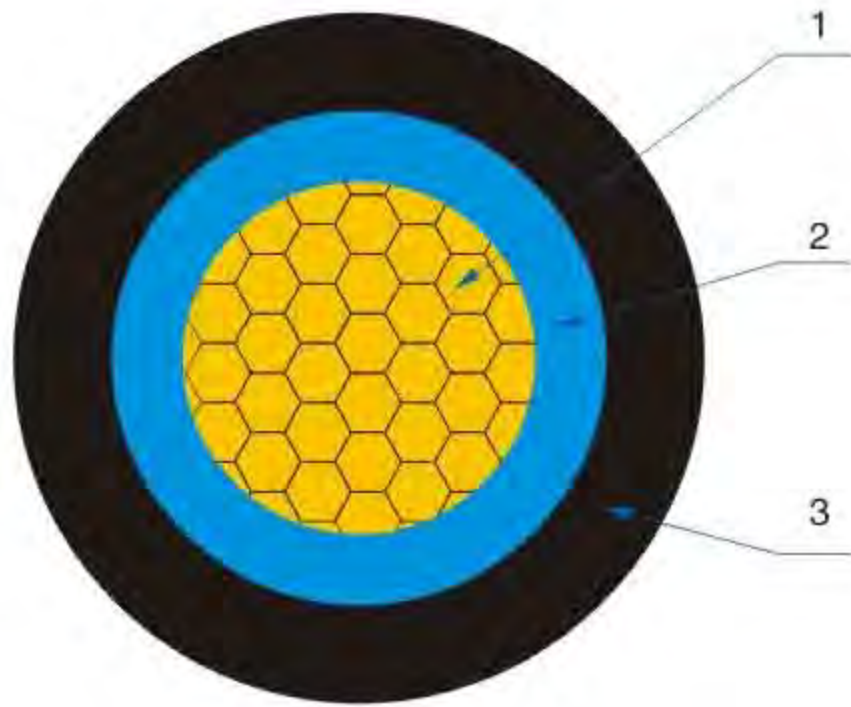
# Constructional Information of the Typical Cables



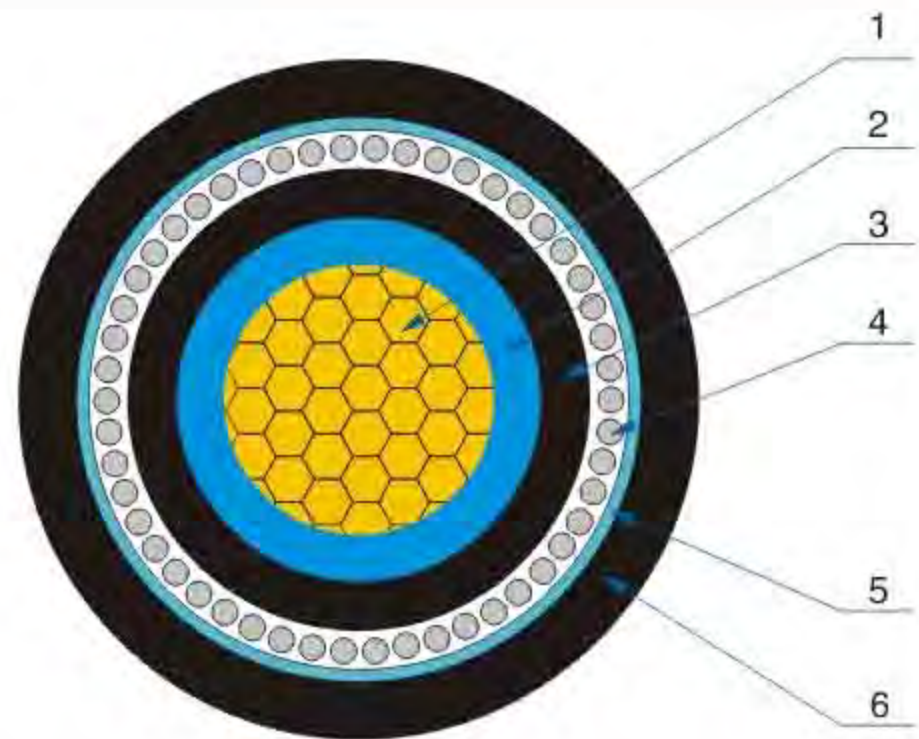


# 0.6/1kV 1 Core XLPE Cable

## Cable Sectional Drawing



1-Conductor 2-Insulation 3-Outer sheath



1-Conductor 2-Insulation 3-Inner sheath 4-AWA  
5-Binder tape 6-Outer sheath

## Construction Table(In accordance with IEC 60502-1)

Nominal Cross-section	Approx. outer diameter of conductor	Thickness of Insulation	Thickness of inner sheath	Diameter of Al wire	Thickness of PVC outer sheath		Approx. Overall Diameter		Approx. Weight of Cable				
					AWA	UnAr	UnAr	AWA	CU Conductor		AL Conductor		
			mm <sup>2</sup>	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1.5	1.6	0.7	-	-	1.4	-	5.7	-	44	-	-	-	-
2.5	2.0	0.7	-	-	1.4	-	6.2	-	57	-	-	-	-
4	2.6	0.7	-	-	1.4	-	6.7	-	74	-	-	-	-
6	3.1	0.7	-	-	1.4	-	7.3	-	96	-	-	-	-
10	3.8	0.7	1.0	0.8	1.4	1.4	7.9	12.4	134	235	74	175	
16	4.8	0.7	1.0	0.8	1.4	1.4	8.9	13.4	196	307	99	209	
25	6.0	0.9	1.0	0.8	1.4	1.4	10.6	15.1	289	417	139	267	
35	7.1	0.9	1.0	0.8	1.4	1.4	11.7	16.2	382	522	172	309	
50	8.4	1.0	1.0	1.25	1.4	1.5	13.2	18.7	503	710	220	427	
70	10.0	1.1	1.0	1.25	1.4	1.5	15.0	20.5	702	936	293	522	
95	11.7	1.1	1.0	1.25	1.5	1.5	16.8	22.4	950	1209	384	638	
120	13.3	1.2	1.0	1.6	1.5	1.6	18.6	25.1	1186	1531	469	806	
150	14.5	1.4	1.0	1.6	1.5	1.6	20.4	26.7	1458	1820	567	923	
185	16.4	1.6	1.0	1.6	1.5	1.7	22.7	29.2	1810	2219	698	1105	
240	18.7	1.7	1.0	1.6	1.6	1.8	25.4	31.9	2348	2802	889	1335	
300	20.4	1.8	1.0	1.6	1.7	1.8	27.4	33.7	2917	3393	1091	1568	
400	23.2	2.0	1.2	2.0	1.8	2.0	30.9	38.5	3713	4377	1379	2043	
500	26.4	2.2	1.2	2.0	1.9	2.1	34.7	42.3	4770	5512	1767	2510	
630	30.0	2.4	1.2	2.0	2.1	2.2	39.1	46.5	6105	6914	2248	3058	
800	34.0	2.6	1.4	2.5	2.2	2.4	43.6	52.6	7893	9008	2867	3981	
1000	41.4	2.8	1.4	2.5	2.3	2.5	51.6	60.8	10189	11524	3690	5025	

1.5mm<sup>2</sup> to 6mm<sup>2</sup> are normal round stranded conductor, 10mm<sup>2</sup> to 800mm<sup>2</sup> are compact round conductor.

1000mm<sup>2</sup> should be compact round segments conductor.

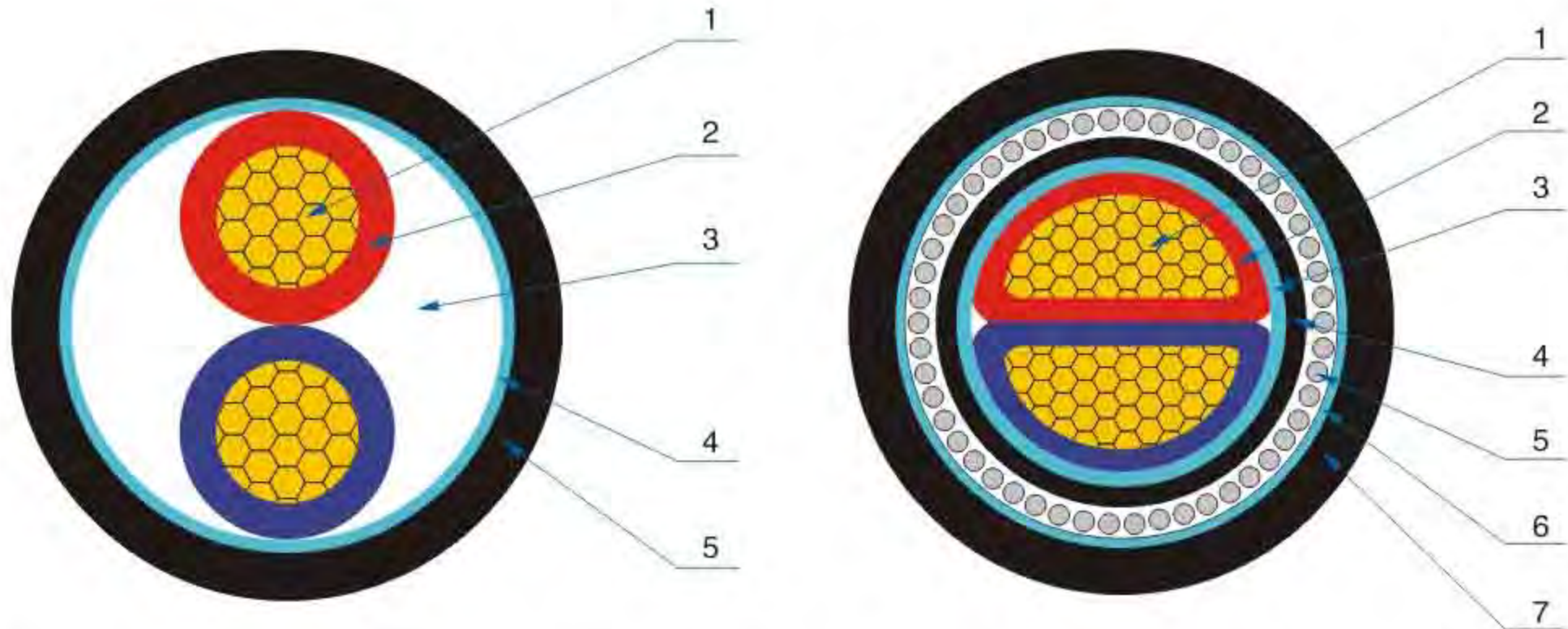
UnAr: Unarmoured / AWA: Aluminum Wire Armoured

Only the halogen free cables shall be generally complied with IEC61034 and 60754.



# 0.6/1kV 2 Core XLPE Cable

## Cable Sectional Drawing



1-Conductor 2-Insulation 3-Binder tape  
4-Filler 5-Outer sheath

1-Conductor 2-Insulation 3-Binder tape 4-Inner sheath  
5-SWA 6-Binder tape 7-Outer sheath

## Construction Table(In accordance with IEC 60502-1)

Nominal Cross-section mm <sup>2</sup>	Approx. outer diameter of conductor mm	Thickness of Insulation mm	Thickness of inner sheath		Thickness of steel tape or Diameter of steel wire		Thickness of PVC outer sheath			Approx.Overall Diameter			Approx. Weight of Cable					
			STA	SWA	STA	SWA	UnAr	STA	SWA	UnAr	STA	SWA	CU Conductor			AL Conductor		
													mm	mm	mm	mm	mm	mm
1.5	1.6	0.7	1.2	1.0	0.2	0.8	1.7	1.5	1.7	10.2	13.0	14.7	110	227	325	-	-	-
2.5	2.0	0.7	1.2	1.0	0.2	0.8	1.7	1.5	1.7	11.2	14.0	15.7	142	270	378	-	-	-
4	2.6	0.7	1.2	1.0	0.2	0.8	1.7	1.5	1.7	12.2	15.0	16.7	181	321	438	-	-	-
6	3.1	0.7	1.2	1.0	0.2	0.8	1.7	1.5	1.7	13.4	16.2	17.9	233	386	516	-	-	-
10	3.8	0.7	1.2	1.0	0.2	1.3	1.7	1.5	1.7	14.8	17.6	20.2	315	483	763	194	363	643
16	4.8	0.7	1.2	1.0	0.2	1.3	1.7	1.5	1.7	16.9	19.6	22.3	455	646	963	259	450	767
25	6.0	0.9	1.2	1.0	0.2	1.6	1.7	1.5	1.7	20.2	23.0	26.3	646	892	1413	363	591	1112
35	7.1	0.9	1.2	1.0	0.2	1.6	1.7	1.5	1.7	22.5	25.2	28.6	857	1110	1682	434	683	1242
50	8.4	1.0	1.2	1.0	0.2	1.6	1.7	1.5	1.7	25.6	28.3	31.7	1123	1411	2061	555	838	1474
70	10.0	1.1	1.2	1.0	0.2	1.6	1.7	1.6	1.9	22.7	25.6	29.1	1427	1692	2295	591	836	1382
95	11.7	1.1	1.2	1.2	0.2	2.0	1.9	1.7	2.0	25.8	28.6	33.3	1935	2222	3132	782	1050	1914
120	13.3	1.2	1.2	1.2	0.5	2.0	2.0	1.9	2.1	29.2	33.6	36.7	2431	3072	3777	971	1573	2226
150	14.5	1.4	1.3	1.2	0.5	2.0	2.1	2.0	2.2	31.9	36.5	39.3	2984	3696	4450	1171	1845	2545
185	16.4	1.6	1.3	1.4	0.5	2.5	2.2	2.1	2.4	36.5	41.2	45.4	3721	4545	5840	1461	2246	3442
240	18.7	1.7	1.4	1.4	0.5	2.5	2.4	2.2	2.5	41.3	46.0	50.3	4841	5770	7190	1924	2852	4272
300	20.4	1.8	1.5	1.5	0.5	2.5	2.5	2.4	2.6	44.7	49.6	53.8	6023	7041	8575	2363	3381	4915

1.5mm<sup>2</sup> to 6mm<sup>2</sup> are normal round stranded conductor, 10mm<sup>2</sup> to 50mm<sup>2</sup> are normal compact round conductor.

Above 70mm<sup>2</sup> are compacted semicircle conductor.

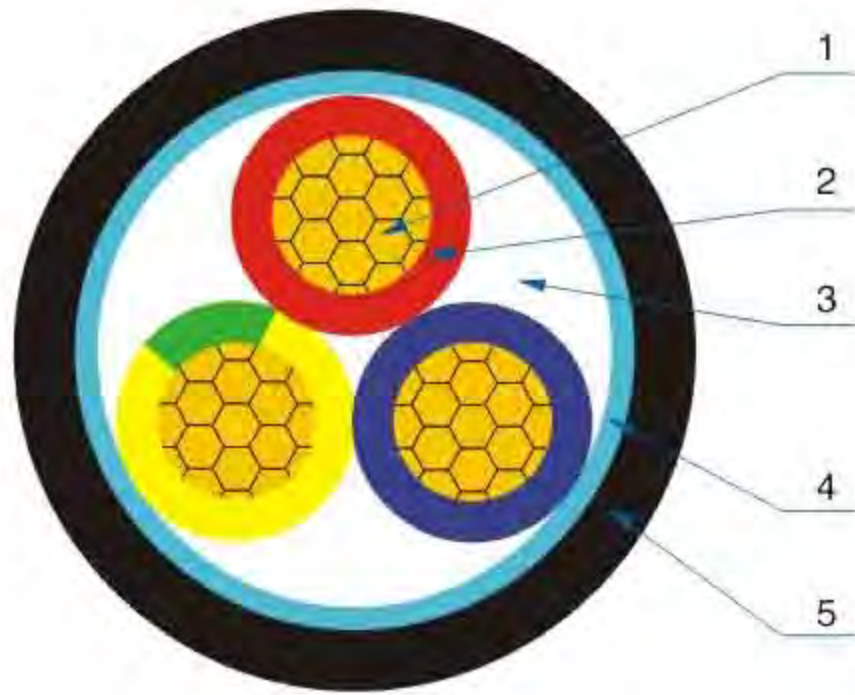
UnAr: Unarmoured / STA: Double Steel Tape Armoured / SWA: Galvanized Steel Wire Armoured

Only the halogen free cables shall be generally complied with IEC61034 and 60754.

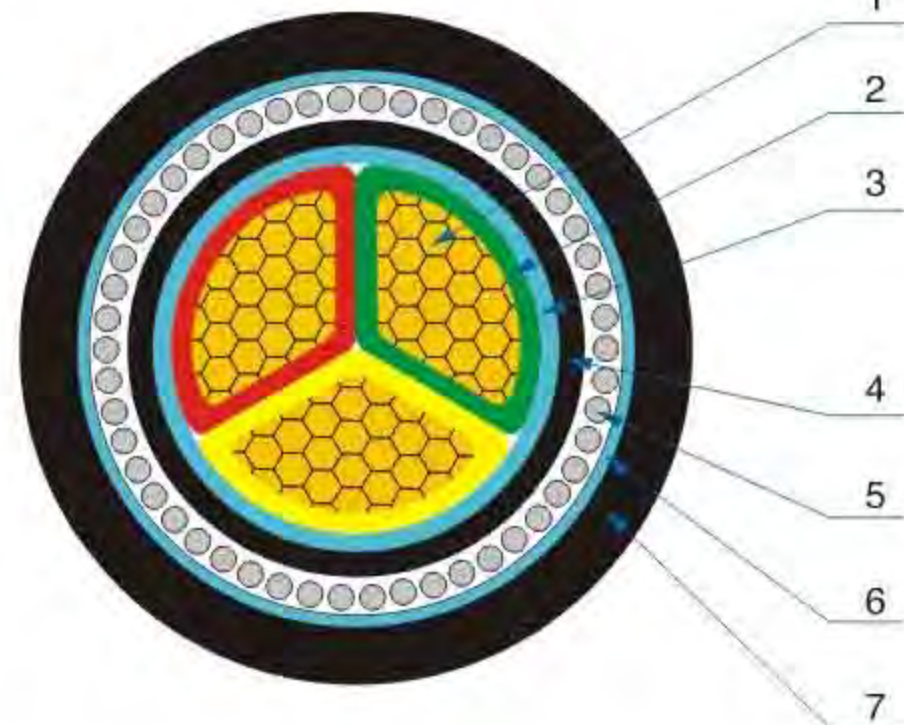


# 0.6/1kV 3 Core XLPE Cable

## Cable Sectional Drawing



1-Conductor 2-Insulation 3-Binder tape  
4-Filler 5-Outer sheath



1-Conductor 2-Insulation 3-Binder tape 4-Inner sheath  
5-SWA 6-Binder tape 7-Outer sheath

## Construction Table(In accordance with IEC 60502-1)

Nominal Cross-section mm <sup>2</sup>	Approx. outer diameter of conductor mm	Thickness of Insulation mm	Thickness of inner sheath		Thickness of steel tape or Diameter of steel wire		Thickness of PVC outer sheath			Approx. Overall Diameter			Approx. Weight of Cable					
			STA mm	SWA mm	STA mm	SWA mm	UnAr mm	STA mm	SWA mm	UnAr mm	STA mm	SWA mm	CU Conductor			AL Conductor		
													mm	mm	mm	mm	mm	mm
1.5	1.6	0.7	1.2	1.0	0.2	0.8	1.7	1.5	1.7	10.7	13.5	15.2	130	253	355	-	-	-
2.5	2.0	0.7	1.2	1.0	0.2	0.8	1.7	1.5	1.7	11.7	14.5	16.2	173	308	420	-	-	-
4	2.6	0.7	1.2	1.0	0.2	0.8	1.7	1.5	1.7	12.9	15.7	17.4	227	374	500	-	-	-
6	3.1	0.7	1.2	1.0	0.2	0.8	1.7	1.5	1.7	14.1	16.9	18.6	297	458	596	-	-	-
10	3.8	0.7	1.2	1.0	0.2	1.25	1.7	1.5	1.7	15.7	18.4	21.1	413	591	886	236	414	709
16	4.8	0.7	1.2	1.0	0.2	1.25	1.7	1.5	1.7	17.9	20.7	23.3	609	811	1142	314	517	847
25	6.0	0.9	1.2	1.0	0.2	1.6	1.7	1.5	1.7	21.5	24.3	27.6	903	1145	1691	451	694	1240
35	7.1	0.9	1.2	1.0	0.2	1.6	1.7	1.5	1.7	23.9	26.7	30.0	1187	1456	2068	550	814	1413
50	8.4	1.0	1.2	1.0	0.2	1.6	1.7	1.6	1.8	27.3	30.2	33.6	1563	1881	2571	712	1025	1701
70	10.0	1.1	1.2	1.2	0.2	2.0	1.8	1.7	1.9	26.4	29.4	33.9	2097	2403	3321	849	1133	1981
95	11.7	1.1	1.2	1.2	0.5	2.0	1.9	2.0	2.2	29.8	34.6	37.6	2834	3517	4238	1111	1751	2420
120	13.3	1.2	1.3	1.4	0.5	2.5	2.0	2.0	2.3	33.2	38.2	42.4	3560	4332	5510	1377	2105	3226
150	14.5	1.4	1.3	1.4	0.5	2.5	2.2	2.0	2.4	37.9	42.5	46.9	4406	5247	6577	1693	2492	3762
185	16.4	1.6	1.4	1.4	0.5	2.5	2.3	2.2	2.5	42.9	47.8	52.1	5491	6476	7960	2109	3050	4473
240	18.7	1.7	1.5	1.5	0.5	2.5	2.4	2.4	2.6	48.0	53.1	57.4	7144	8261	9914	2707	3779	5368
300	20.4	1.8	1.5	1.5	0.5	2.5	2.6	2.5	2.8	52.5	57.5	61.8	8903	10119	11914	3337	4508	6235

1.5mm<sup>2</sup> to 6mm<sup>2</sup> are normal round stranded conductor, 10mm<sup>2</sup> to 50mm<sup>2</sup> are normal compact round conductor.

Above 70mm<sup>2</sup> are compacted semicircle conductor.

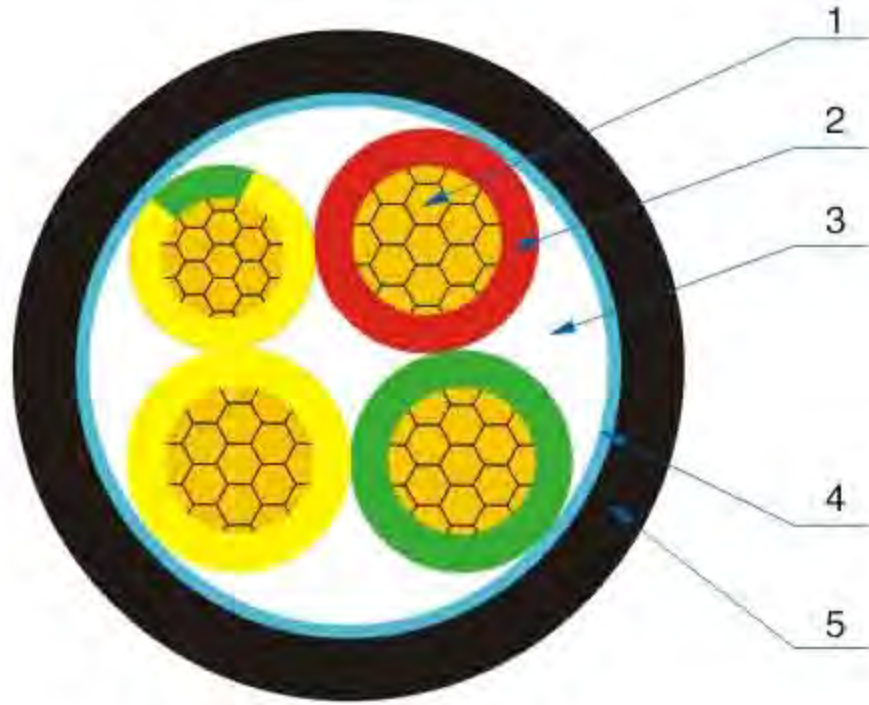
UnAr: Unarmoured / STA: Double Steel Tape Armoured / SWA: Galvanized Steel Wire Armoured

Only the halogen free cables shall be generally complied with IEC61034 and 60754.



# 0.6/1kV 3C+E XLPE Cable

## Cable Sectional Drawing



1-Conductor 2-Insulation 3-Binder tape  
4-Filler 5-Outer sheath



1-Conductor 2-Insulation 3-Binder tape 4-Inner sheath  
5-SWA 6-Binder tape 7-Outer sheath

## Construction Table(In accordance with IEC 60502-1)

Nominal Cross-section	Approx. outer diameter of conductor	Thickness of Insulation	Earth conductor nominal Cross-section	Thickness of inner sheath		Thickness of steel tape or Diameter of steel wire		Thickness of PVC outer sheath			Approx.Overall Diameter			Approx. Weight of Cable					
				STA	SWA	STA	SWA	UnAr	STA	SWA	UnAr	STA	SWA	CU Conductor			AL Conductor		
														mm	mm	mm	mm	mm	mm
1.5	1.6	0.7	1.5	1.2	1.0	0.2	0.8	1.7	1.5	1.7	11.5	14.3	16.0	156	288	398	-	-	-
2.5	2.0	0.7	2.5	1.2	1.0	0.2	0.8	1.7	1.5	1.7	12.7	15.4	17.2	211	355	478	-	-	-
4	2.6	0.7	4	1.2	1.0	0.2	1.25	1.7	1.5	1.7	13.9	16.7	19.3	279	438	704	-	-	-
6	3.1	0.7	6	1.2	1.0	0.2	1.25	1.7	1.5	1.7	15.4	18.1	20.8	370	544	831	-	-	-
10	3.8	0.7	10	1.2	1.0	0.2	1.25	1.7	1.5	1.7	17.1	19.8	22.5	527	720	1036	286	479	795
16	4.8	0.7	16	1.2	1.0	0.2	1.6	1.7	1.5	1.7	19.5	22.3	25.6	778	999	1509	386	607	1116
25	6.0	0.9	16	1.2	1.0	0.2	1.6	1.7	1.5	1.7	22.6	25.4	28.7	1064	1318	1890	514	769	1340
35	7.1	0.9	16	1.2	1.0	0.2	1.6	1.7	1.5	1.7	24.6	27.4	30.7	1340	1617	2241	610	883	1509
50	8.4	1.0	25	1.2	1.0	0.2	1.6	1.7	1.6	1.8	28.4	31.4	34.7	1808	2139	2870	807	1134	1851
70	10.0	1.1	35	1.2	1.2	0.2	2.0	1.8	1.7	2.0	29.7	32.6	37.3	2446	2789	3831	988	1309	2280
95	11.7	1.1	50	1.2	1.2	0.5	2.0	2.0	1.9	2.1	33.7	38.1	41.1	3313	4049	4865	1307	2000	2764
120	13.3	1.2	70	1.3	1.2	0.5	2.0	2.1	2.0	2.3	36.3	40.9	43.9	4223	5033	5913	1631	2396	3223
150	14.5	1.4	70	1.3	1.4	0.5	2.5	2.2	2.1	2.4	41.3	46.0	50.2	5061	5993	7415	1940	2826	4190
185	16.4	1.6	95	1.4	1.4	0.5	2.5	2.4	2.2	2.5	46.6	51.4	55.6	6400	7446	9076	2453	3454	4983
240	18.7	1.7	120	1.5	1.5	0.5	2.5	2.5	2.4	2.7	52.4	57.3	61.8	8291	9484	11337	3137	4284	6032
300	20.4	1.8	150	1.5	1.5	0.5	2.5	2.7	2.6	2.8	58.0	63.0	67.1	10322	11659	13632	3864	5155	7058

1.5mm<sup>2</sup> to 6mm<sup>2</sup> are normal round stranded conductor, 10mm<sup>2</sup> to 50mm<sup>2</sup> are normal compact round conductor.

Above 70mm<sup>2</sup> are compacted semicircle conductor.

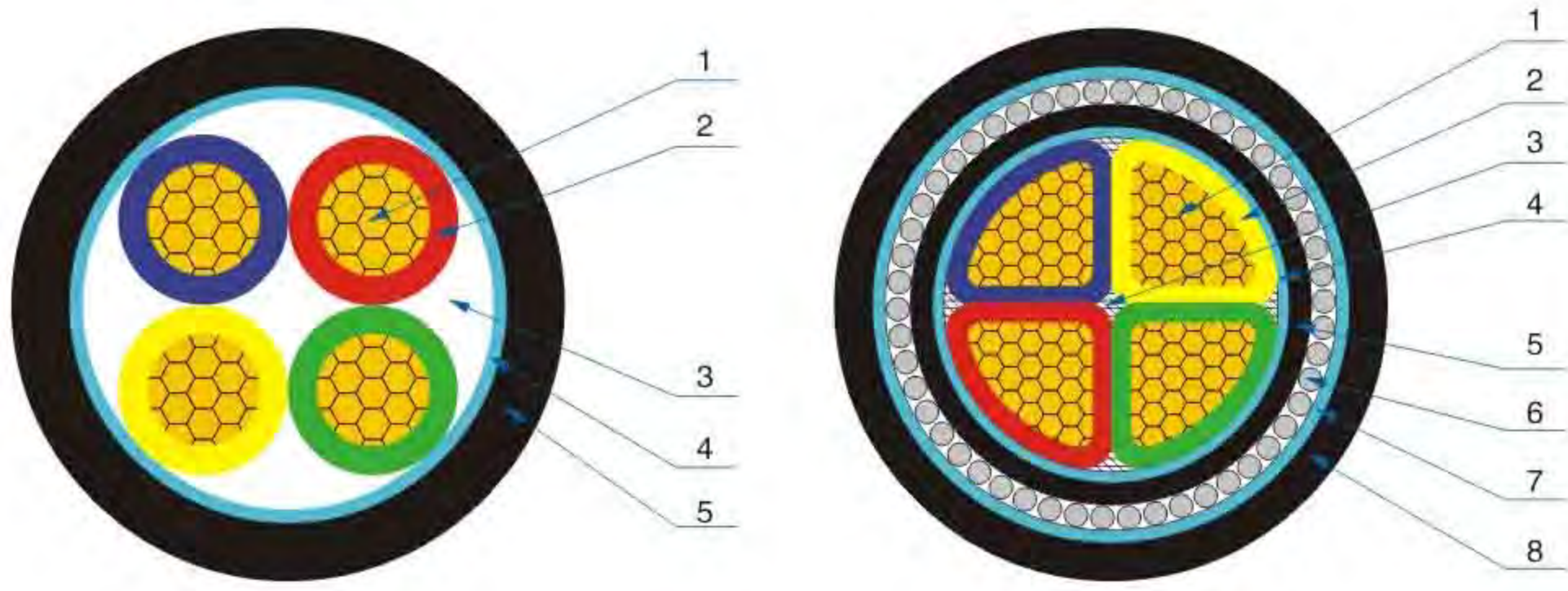
UnAr: Unarmoured / STA: Double Steel Tape Armoured / SWA: Galvanized Steel Wire Armoured

Only the halogen free cables shall be generally complied with IEC61034 and 60754.



# 0.6/1kV 4 Cores XLPE Cable

## Cable Sectional Drawing



1-Conductor 2-Insulation 3-Binder tape  
4-Filler 5-Outer sheath

1-Conductor 2-Insulation 3-Filler 4-Binder tape  
5-Inner sheath 6-SWA 7-Binder tape 8-Outer sheath

## Construction Table(In accordance with IEC 60502-1)

Nominal Cross-section	Approx. outer diameter of conductor	Thickness of Insulation	Thickness of inner sheath		Thickness of steel tape or Diameter of steel wire		Thickness of PVC outer sheath			Approx.Overall Diameter			Approx. Weight of Cable					
			STA	SWA	STA	SWA	UnAr	STA	SWA	UnAr	STA	SWA	CU Conductor			AL Conductor		
													mm	mm	mm	mm	mm	mm
1.5	1.6	0.7	1.2	1.0	0.2	0.8	1.7	1.5	1.7	11.5	14.3	16.0	156	288	398	-	-	-
2.5	2.0	0.7	1.2	1.0	0.2	0.8	1.7	1.5	1.7	12.7	15.4	17.2	211	355	478	-	-	-
4	2.6	0.7	1.2	1.0	0.2	1.25	1.7	1.5	1.7	13.9	16.7	19.3	279	438	704	-	-	-
6	3.1	0.7	1.2	1.0	0.2	1.25	1.7	1.5	1.7	15.4	18.1	20.8	370	544	831	-	-	-
10	3.8	0.7	1.2	1.0	0.2	1.25	1.7	1.5	1.7	17.1	19.8	22.5	527	720	1036	286	479	795
16	4.8	0.7	1.2	1.0	0.2	1.6	1.7	1.5	1.7	19.5	22.3	25.6	778	999	1509	386	607	1116
25	6.0	0.9	1.2	1.0	0.2	1.6	1.7	1.5	1.7	23.6	26.4	29.7	1161	1427	2025	559	825	1423
35	7.1	0.9	1.2	1.0	0.2	1.6	1.7	1.5	1.8	26.3	29.1	32.6	1533	1828	2519	690	981	1658
50	8.4	1.0	1.2	1.0	0.2	2.0	1.7	1.6	1.9	30.1	33.0	37.3	2029	2379	3410	890	1235	2243
70	10.0	1.1	1.2	1.2	0.5	2.0	1.8	1.7	2.1	30.7	35.2	38.5	2764	3443	4222	1104	1739	2467
95	11.7	1.1	1.2	1.2	0.5	2.0	1.9	2.0	2.2	35.3	40.1	43.1	3746	4551	5417	1454	2212	3026
120	13.3	1.2	1.3	1.4	0.5	2.5	2.0	2.0	2.4	38.0	43.0	47.4	4697	5578	6942	1790	2624	3890
150	14.5	1.4	1.3	1.4	0.5	2.5	2.2	2.0	2.4	43.8	48.4	52.9	5816	6785	8368	2203	3126	4609
185	16.4	1.6	1.4	1.4	0.5	2.5	2.3	2.2	2.6	48.2	53.1	57.5	7239	8342	10050	2734	3791	5395
240	18.7	1.7	1.5	1.5	0.5	2.5	2.4	2.4	2.8	53.9	59.0	63.6	9424	10676	12612	3514	4718	6545
300	20.4	1.8	1.5	1.5	0.5	2.5	2.5	2.5	3.0	61.5	66.6	71.2	11782	13205	15361	4366	5742	7824

1.5mm<sup>2</sup> to 6mm<sup>2</sup> are normal round stranded conductor, 10mm<sup>2</sup> to 50mm<sup>2</sup> are normal compact round conductor.

Above 70mm<sup>2</sup> are compacted semicircle conductor.

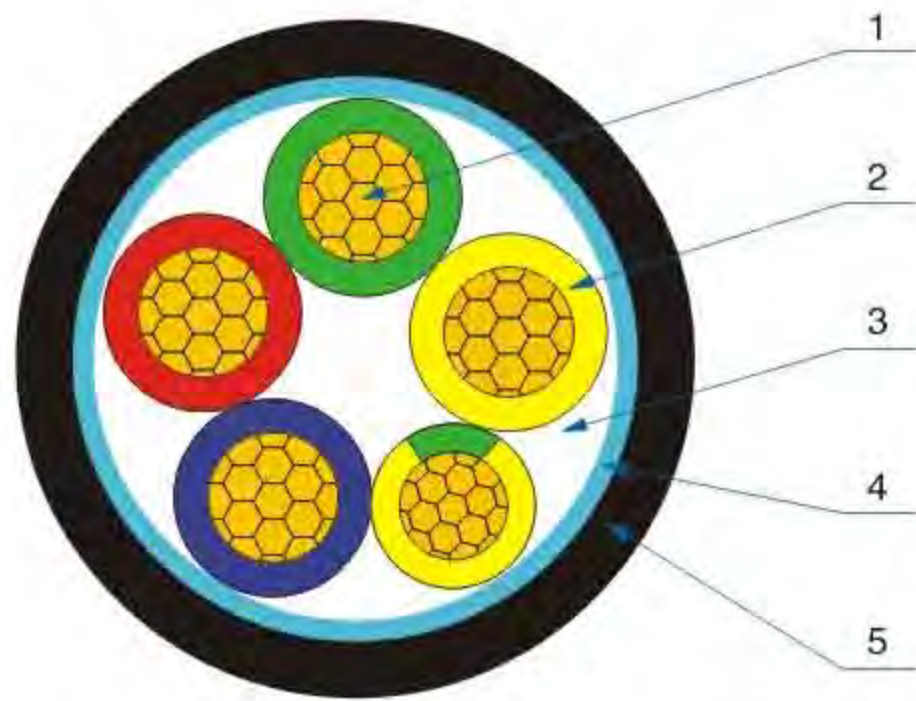
UnAr: Unarmoured / STA: Double Steel Tape Armoured / SWA: Galvanized Steel Wire Armoured

Only the halogen free cables shall be generally complied with IEC61034 and 60754.

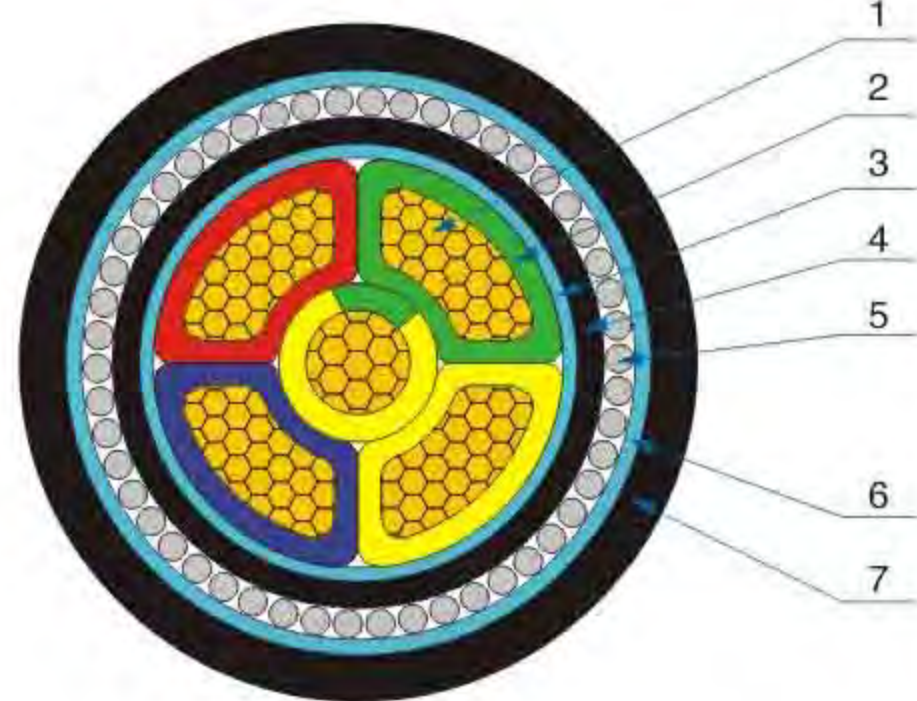


# 0.6/1kV 4C+E XLPE Cable

## Cable Sectional Drawing



1-Conductor 2-Insulation 3-Binder tape  
4-Filler 5-Outer sheath



1-Conductor 2-Insulation 3-Binder tape 4-Inner sheath  
5-SWA 6-Binder tape 7-Outer sheath

## Construction Table(In accordance with IEC 60502-1)

Nominal Cross-section	Approx. outer diameter of conductor	Thickness of Insulation	Earth conductor nominal Cross-section	Thickness of inner sheath		Thickness of steel tape or Diameter of steel wire		Thickness of PVC outer sheath			Approx.Overall Diameter			Approx. Weight of Cable					
				STA	SWA	STA	SWA	UnAr	STA	SWA	UnAr	STA	SWA	CU Conductor			AL Conductor		
														mm	mm	mm	mm	mm	mm
1.5	1.6	0.7	1.5	1.2	1.0	0.2	0.8	1.7	1.5	1.7	12.3	15.1	16.8	182	324	444	-	-	-
2.5	2.0	0.7	2.5	1.2	1.0	0.2	0.8	1.7	1.5	1.7	13.7	16.4	18.2	249	404	537	-	-	-
4	2.6	0.7	4	1.2	1.0	0.2	1.25	1.7	1.5	1.7	15.1	17.9	20.5	334	506	784	-	-	-
6	3.1	0.7	6	1.2	1.0	0.2	1.25	1.7	1.5	1.7	16.7	19.5	22.1	446	635	944	-	-	-
10	3.8	0.7	10	1.2	1.0	0.2	1.25	1.7	1.5	1.7	18.6	21.3	24.0	636	846	1192	335	545	891
16	4.8	0.7	16	1.2	1.0	0.2	1.6	1.7	1.5	1.7	21.3	24.1	27.4	953	1194	1741	463	704	1251
25	6.0	0.9	16	1.2	1.0	0.2	1.6	1.7	1.5	1.7	24.9	27.7	31.0	1337	1618	2255	621	901	1539
35	7.1	0.9	16	1.2	1.0	0.2	1.6	1.7	1.6	1.8	27.4	30.4	33.7	1709	2028	2733	753	1068	1759
50	8.4	1.0	25	1.2	1.2	0.2	2.0	1.8	1.7	2.0	31.8	34.8	39.4	2313	2681	3808	1009	1372	2476
70	10.0	1.1	35	1.2	1.2	0.5	2.0	2.0	1.9	2.1	33.2	37.6	40.7	3129	3857	4653	1340	2127	3000
95	11.7	1.1	50	1.3	1.2	0.5	2.0	2.1	2.0	2.3	37.6	42.2	45.2	4226	5064	5975	1755	2658	3616
120	13.3	1.2	70	1.4	1.4	0.5	2.5	2.3	2.1	2.4	42.3	47.0	51.1	5402	6356	7786	2244	3291	4882
150	14.5	1.4	70	1.4	1.4	0.5	2.5	2.4	2.2	2.5	45.7	50.4	54.7	6489	7515	9080	2641	3779	5532
185	16.4	1.6	95	1.5	1.5	0.5	2.5	2.5	2.4	2.7	50.6	55.5	59.9	8171	9323	11084	3329	4625	6592
240	18.7	1.7	120	1.6	1.5	0.5	2.5	2.7	2.6	2.9	57.0	62.2	66.3	10599	11940	13888	4233	5738	7873
300	20.4	1.8	150	1.7	1.5	0.5	3.15	2.9	2.8	3.1	63.3	68.9	74.0	13205	14742	17671	5200	6914	10136

1.5mm<sup>2</sup> to 6mm<sup>2</sup> are normal round stranded conductor, 10mm<sup>2</sup> to 50mm<sup>2</sup> are normal compact round conductor.

Above 70mm<sup>2</sup> are compacted semicircle conductor.

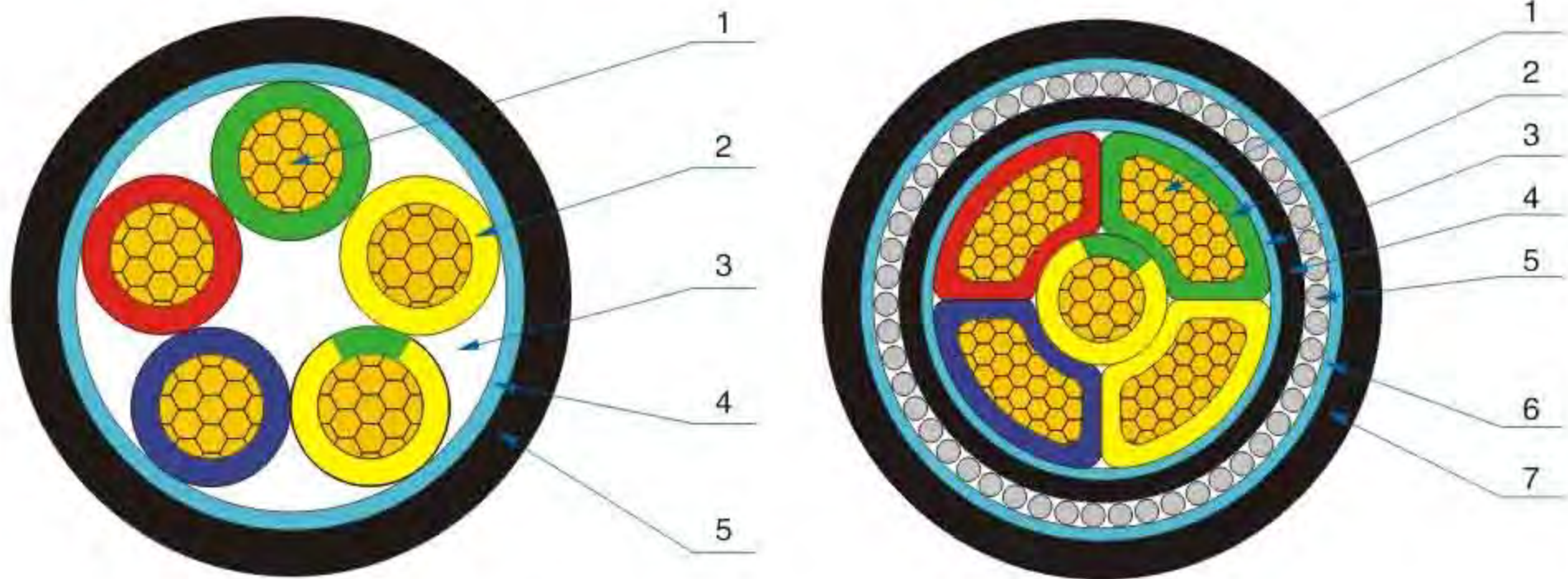
UnAr: Unarmoured / STA: Double Steel Tape Armoured / SWA: Galvanized Steel Wire Armoured

Only the halogen free cables shall be generally complied with IEC61034 and 60754.



# 0.6/1kV 5 Cores XLPE Cable

## Cable Sectional Drawing



1-Conductor 2-Insulation 3-Binder tape  
4-Filler 5-Outer sheath

1-Conductor 2-Insulation 3-Binder tape 4-Inner sheath  
5-SWA 6-Binder tape 7-Outer sheath

## Construction Table(In accordance with IEC 60502-1)

Nominal Cross-section mm <sup>2</sup>	Approx. outer diameter of conductor mm	Thickness of Insulation mm	Thickness of inner sheath		Thickness of steel tape or Diameter of steel wire		Thickness of PVC outer sheath			Approx. Overall Diameter			Approx. Weight of Cable					
			STA mm	SWA mm	STA mm	SWA mm	UnAr mm	STA mm	SWA mm	UnAr mm	STA mm	SWA mm	CU Conductor			AL Conductor		
													UnAr mm	STA mm	SWA mm	UnAr mm	STA mm	SWA mm
1.5	1.6	0.7	1.2	1.0	0.2	0.8	1.7	1.5	1.7	12.3	15.1	16.8	182	324	444	-	-	-
2.5	2.0	0.7	1.2	1.0	0.2	0.8	1.7	1.5	1.7	13.7	16.4	18.2	249	404	537	-	-	-
4	2.6	0.7	1.2	1.0	0.2	1.25	1.7	1.5	1.7	15.1	17.9	20.5	334	506	784	-	-	-
6	3.1	0.7	1.2	1.0	0.2	1.25	1.7	1.5	1.7	16.7	19.5	22.1	446	635	944	-	-	-
10	3.8	0.7	1.2	1.0	0.2	1.25	1.7	1.5	1.7	18.6	21.3	24.0	636	846	1192	335	545	891
16	4.8	0.7	1.2	1.0	0.2	1.6	1.7	1.5	1.7	21.3	24.1	27.4	953	1194	1741	463	704	1251
25	6.0	0.9	1.2	1.0	0.2	1.6	1.7	1.5	1.7	25.8	28.6	31.9	1411	1701	2366	658	949	1614
35	7.1	0.9	1.2	1.0	0.2	1.6	1.7	1.6	1.8	28.9	31.9	35.2	1889	2226	2954	832	1163	1878
50	8.4	1.0	1.2	1.2	0.2	2.0	1.9	1.8	2.0	33.4	36.4	40.9	2498	2883	4040	1110	1489	2623
70	10.0	1.1	1.2	1.2	0.5	2.0	2.0	1.9	2.2	36.6	41.1	44.3	3470	4271	5184	1471	2296	3211
95	11.7	1.1	1.3	1.4	0.5	2.5	2.2	2.0	2.3	41.3	45.9	50.1	4706	5621	7080	1940	2883	4353
120	13.3	1.2	1.4	1.4	0.5	2.5	2.3	2.2	2.4	45.9	50.8	54.9	5910	6962	8538	2426	3533	5179
150	14.5	1.4	1.5	1.4	0.5	2.5	2.4	2.3	2.6	51.5	56.4	60.5	7299	8476	10212	2948	4178	5981
185	16.4	1.6	1.5	1.5	0.5	2.5	2.6	2.5	2.8	56.5	61.6	65.9	9097	10407	12338	3685	5084	7136
240	18.7	1.7	1.6	1.5	0.5	2.5	2.8	2.7	3.0	63.8	69.2	73.2	11840	13363	15505	4704	6322	8574
300	20.4	1.8	1.7	1.7	0.5	3.15	3.0	2.9	3.2	70.7	76.3	81.7	14765	16474	19793	5783	7591	11067

1.5mm<sup>2</sup> to 6mm<sup>2</sup> are normal round stranded conductor, 10mm<sup>2</sup> to 50mm<sup>2</sup> are normal compact round conductor.

Above 70mm<sup>2</sup> are compacted semicircle conductor.

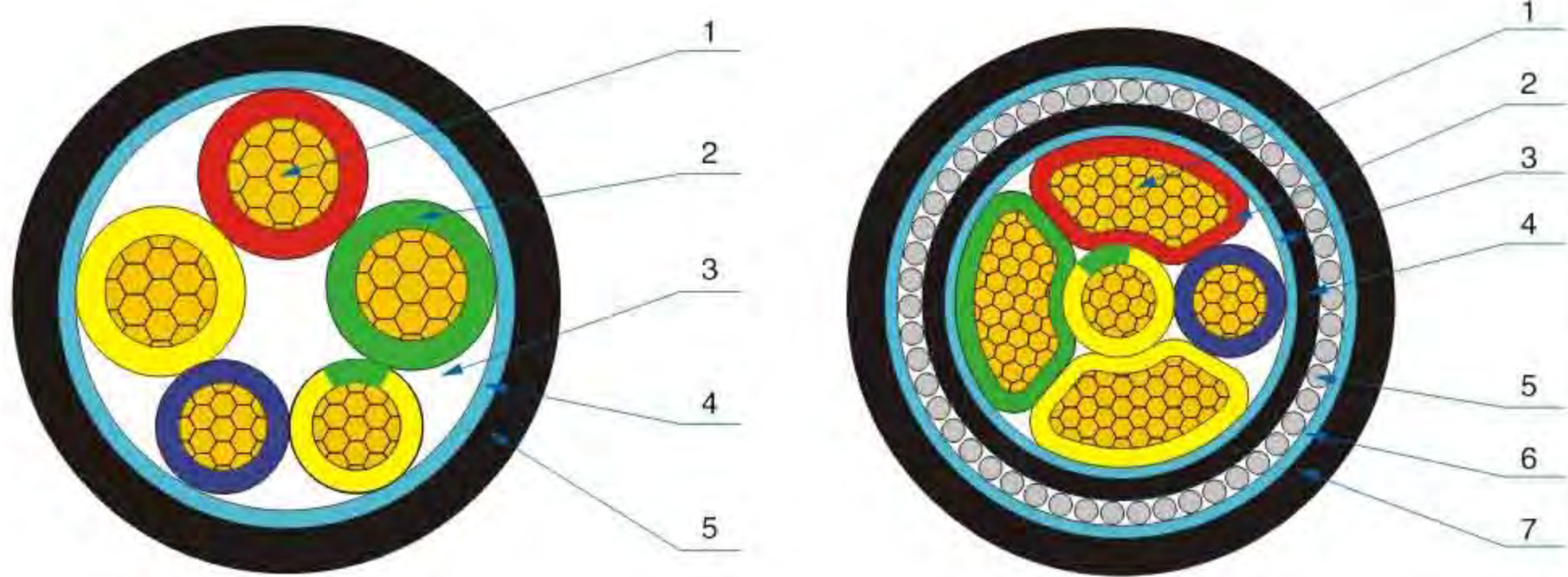
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Only the halogen free cables shall be generally complied with IEC61034 and 60754.



# 0.6/1kV 3C+2E XLPE Cable

## Cable Sectional Drawing



1-Conductor 2-Insulation 3-Binder tape  
4-Filler 5-Outer sheath

1-Conductor 2-Insulation 3-Binder tape 4-Inner sheath  
5-SWA 6-Binder tape 7-Outer sheath

## Construction Table(In accordance with IEC 60502-1)

Nominal Cross-section	Approx. outer diameter of conductor	Thickness of Insulation	Earth conductor nominal Cross-section	Thickness of inner sheath		Thickness of steel tape or Diameter of steel wire		Thickness of PVC outer sheath			Approx.Overall Diameter			Approx. Weight of Cable					
				STA	SWA	STA	SWA	UnAr	STA	SWA	UnAr	STA	SWA	CU Conductor			AL Conductor		
														mm	mm	mm	mm	mm	mm
1.5	1.6	0.7	1.5	1.2	1.0	0.2	0.8	1.7	1.5	1.7	12.3	15.1	16.8	182	324	444	-	-	-
2.5	2.0	0.7	2.5	1.2	1.0	0.2	0.8	1.7	1.5	1.7	13.7	16.4	18.2	249	404	537	-	-	-
4	2.6	0.7	4	1.2	1.0	0.2	1.25	1.7	1.5	1.7	15.1	17.9	20.5	334	506	784	-	-	-
6	3.1	0.7	6	1.2	1.0	0.2	1.25	1.7	1.5	1.7	16.7	19.5	22.1	446	635	944	-	-	-
10	3.8	0.7	10	1.2	1.0	0.2	1.25	1.7	1.5	1.7	18.6	21.3	24.0	636	846	1192	335	545	891
16	4.8	0.7	16	1.2	1.0	0.2	1.6	1.7	1.5	1.7	21.3	24.1	27.4	953	1194	1741	463	704	1251
25	6.0	0.9	16	1.2	1.0	0.2	1.6	1.7	1.5	1.7	24.0	26.8	30.1	1234	1505	2116	578	849	1460
35	7.1	0.9	16	1.2	1.0	0.2	1.6	1.7	1.5	1.7	25.9	28.7	32.0	1506	1797	2462	679	966	1617
50	8.4	1.0	25	1.2	1.0	0.2	1.6	1.8	1.7	1.9	30.4	33.3	36.6	2078	2429	3200	922	1269	2027
70	10.0	1.1	35	1.2	1.2	0.5	2.0	1.9	1.8	2.0	32.3	36.7	39.7	2817	3527	4307	1201	1950	2773
95	11.7	1.1	50	1.2	1.2	0.5	2.0	2.1	2.0	2.2	36.6	41.0	44.0	3813	4611	5487	1593	2436	3348
120	13.3	1.2	70	1.3	1.4	0.5	2.5	2.2	2.0	2.4	41.9	46.5	50.9	4967	5894	7365	2044	3027	4569
150	14.5	1.4	70	1.4	1.4	0.5	2.5	2.3	2.1	2.4	44.7	49.5	53.7	5764	6773	8305	2343	3418	5052
185	16.4	1.6	95	1.5	1.4	0.5	2.5	2.4	2.3	2.6	50.0	54.9	59.0	7353	8496	10216	2975	4199	6006
240	18.7	1.7	120	1.5	1.5	0.5	2.5	2.6	2.5	2.8	56.2	61.3	65.6	9461	10763	12700	3778	5171	7227
300	20.4	1.8	150	1.6	1.5	0.5	2.5	2.8	2.6	3.0	62.7	67.9	72.0	11766	13238	15382	4632	6193	8413

1.5mm<sup>2</sup> to 6mm<sup>2</sup> are normal round stranded conductor, 10mm<sup>2</sup> to 50mm<sup>2</sup> are normal compact round conductor.

Above 70mm<sup>2</sup> are compacted semicircle conductor.

UnAr: Unarmoured / STA: Double Steel Tape Armoured / SWA: Galvanized Steel Wire Armoured

Only the halogen free cables shall be generally complied with IEC61034 and 60754.



## Current Carrying Capacity(In accordance with IEC60287)

The current carrying capacity is calculated according to the following conditions. One multi-conductor cable or one three phase group of single core cables.

Temperature of the ground: 25°C

Temperature of the ambient air: 40°C

Laying depth: 1.4m

Thermal resistivity of the ground:1.0°C m/W

Spacing between cables laid in flat formation: twice the cable's overall diameter.

Table 1: 0.6/1kV Copper, Aluminum Conductor XLPE Insulated Cable

Conductor size	1 Core								2 Cores				3-5 Cores			
	Flat				Trefoil				With spacing				With spacing			
	Cu		Al		Cu		Al		Cu		Al		Cu		Al	
	in air	in ground	in air	in ground	in air	in ground	in air	in ground	in air	in ground	in air	in ground	in air	in ground	in air	in ground
mm <sup>2</sup>	Current Carrying Capacity(A)															
2.5	41	46	32	36	31	42	24	33	33	46	25	36	28	39	22	31
4	54	59	42	47	41	55	32	43	43	59	34	47	37	51	29	40
6	68	74	56	60	52	69	42	56	55	75	45	61	47	64	39	52
10	93	98	72	75	71	92	55	71	76	100	58	78	65	86	50	66
16	120	125	93	97	92	115	71	91	97	130	75	100	84	110	65	85
25	155	160	120	125	120	150	94	115	130	165	100	130	110	140	87	110
35	195	190	150	150	150	180	115	140	160	200	120	155	135	170	105	130
50	235	230	180	175	180	215	140	165	195	240	150	185	170	205	130	160
70	295	280	230	215	230	265	180	205	245	290	190	225	215	250	165	195
95	370	335	285	260	285	320	220	245	305	355	235	275	265	300	205	235
120	430	385	330	295	335	360	260	280	355	405	275	315	310	345	240	265
150	495	430	380	335	385	410	300	315	405	450	315	350	350	385	270	300
185	570	490	445	380	450	460	350	360	465	510	365	395	405	435	315	340
240	680	570	530	445	535	535	414	420	-	-	-	-	480	500	375	395
300	790	645	615	505	620	605	485	475	-	-	-	-	555	565	435	445
400	920	735	720	575	720	685	570	545	-	-	-	-	640	640	510	510
500	1080	840	850	665	835	775	670	620	-	-	-	-	-	-	-	-
630	1260	950	1000	760	960	865	790	705	-	-	-	-	-	-	-	-
800	1470	1080	1180	875	1110	960	920	800	-	-	-	-	-	-	-	-
1000	1630	1190	1330	970	1230	1040	1040	880	-	-	-	-	-	-	-	-



## 3.6/6kV Single Core XLPE Insulated Unarmoured Power Cable

**CU/XLPE/CTS/PVC**

Rated voltage	3.6/6kV													
Conductor –Nominal cross-section	mm <sup>2</sup>	25	35	50	70	95	120	150	185	240	300	400	500	630
– Nominal diameter	mm	6.0	6.9	8.2	9.7	11.3	12.8	14.2	15.9	18.3	20.4	23.2	26.4	30.1
Insulation –Nominal thickness	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.8	3.0	3.2	3.2
– Nominal diameter	mm	12.4	13.3	14.6	16.1	17.7	19.2	20.6	22.3	24.9	27.4	30.6	34.6	38.3
Copper tape screen –Nominal cross-section	mm <sup>2</sup>	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
Outer sheath – Nominal thickness	mm	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.9	2.0	2.1	2.2	2.3
Approx. outer diameter	mm	17.6	18.5	20.0	21.5	23.3	24.8	26.4	28.1	30.9	33.6	37.0	41.1	45.0
Approx. Weight	kg/m	0.49	0.60	0.74	0.96	1.23	1.48	1.77	2.13	2.71	3.32	4.16	5.27	6.62

### Mechanic & electric performance

Allowable max. pulling	kN	1.8	2.5	3.5	4.9	6.7	8.4	10.5	13	16.8	21	28	35	44.1
Min. bending radius –In installation	mm	351	369	399	429	465	495	527	561	617	671	739	822	900
– After installation	mm	263	277	299	322	349	371	395	421	463	503	554	617	675
Max. conductor resistance –20°C DC resistance	Ω/km	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283
–90°C AC resistance	Ω/km	0.9270	0.6680	0.4936	0.3420	0.2464	0.1955	0.1587	0.1271	0.0976	0.0778	0.0615	0.0487	0.0387
Positive/negative inductance – Trefoil	μH/m	0.4182	0.3977	0.3763	0.3546	0.3387	0.3261	0.3161	0.3048	0.2949	0.2902	0.2844	0.2778	0.2698
– Flat	μH/m	0.6020	0.5815	0.5572	0.5386	0.5260	0.5102	0.5025	0.4917	0.4817	0.4774	0.4676	0.4641	0.4567
Zero inductance at 50Hz & 20°C	μH/m	0.2239	0.2067	0.1891	0.1716	0.1505	0.1489	0.1409	0.1322	0.1253	0.1208	0.1166	0.1118	0.1054
Positive/negative impedance – Trefoil	μΩ/m	131.39	124.9	118.2	111.4	106.4	102.5	99.3	95.8	92.7	91.2	89.4	87.3	84.8
– Flat	μΩ/m	189.11	182.7	175.1	169.2	165.3	160.3	157.9	154.5	151.3	150.0	148.1	145.8	143.5
Zero impedance at 50Hz & 20°C	μΩ/m	70.34	64.93	59.40	53.91	47.28	46.79	44.25	41.54	39.37	37.94	36.63	35.12	33.10
Capacitance	pF/m	275	304	343	392	439	480	521	570	637	626	656	690	778
Charging current(50Hz)	A/km	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8	0.9	0.9	1	1.0

### Short circuit current

Conductor(1s)	kA	3.53	4.87	6.55	9.42	13.04	16.41	20.2	25.24	33.11	41.48	52.95	67.92	87.76
Metallic screen(1s)	kA													
Final short circuit temperature	°C	250	250	250	250	250	250	250	250	250	250	250	250	250

### Continuous loading current

1) Direct buried – Trefoil	A	143	171	202	248	296	337	378	427	494	556	631	714	801
– Flat	A	151	181	214	262	314	357	400	453	529	595	680	777	883
2) In air – Trefoil	A	136	165	200	250	305	353	403	463	550	632	735	853	980
– Flat	A	169	205	248	311	379	438	500	575	683	786	916	1068	1242
Max. working temperature of conductor	°C	90	90	90	90	90	90	90	90	90	90	90	90	90

Remarks:

Offering nominal cross-section of conductor when purchasing

Laying conditions:

Depth of laying: 700mm

Thermal ratio of soil: 1.2°C m/W

Single circuit phase spacing : – Flat is 2D , D: Overall diameter

Air temperature: 40°C

– Trifolts touched with others

Soil temperature: 25°C



## 3.6/6kV Single Core XLPE Insulated Unarmoured Power Cable

AL/XLPE/CTS/PVC

Rated voltage	3.6/6kV													
Conductor –Nominal cross-section	mm <sup>2</sup>	25	35	50	70	95	120	150	185	240	300	400	500	630
– Nominal diameter	mm	6.0	6.9	8.2	9.7	11.3	12.8	14.2	15.9	18.3	20.4	23.2	26.4	30.1
Insulation –Nominal thickness	mm	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.8	3.0	3.2	3.2
– Nominal diameter	mm	12.4	13.3	14.6	16.1	17.7	19.2	20.6	22.3	24.9	27.4	30.6	34.6	38.3
Copper tape screen –Nominal cross-section	mm <sup>2</sup>	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
Outer sheath – Nominal thickness	mm	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.9	2.0	2.1	2.2	2.3
Approx. outer diameter	mm	17.6	18.5	20.0	21.5	23.3	24.8	26.4	28.1	30.9	33.6	37.0	41.1	45.0
Approx. Weight	kg/m	0.34	0.39	0.46	0.55	0.66	0.77	0.87	1.01	1.23	1.48	1.81	2.24	2.73
Mechanic & electric performance														
Allowable max.pulling	kN	1	1.4	2	2.8	3.8	4.8	6	7.4	9.6	12	16	20	25.2
Min.bending radius –In installation	mm	351	369	399	429	465	495	527	561	617	671	739	822	900
– After installation	mm	263	277	299	322	349	371	395	421	463	503	554	617	675
Max. conductor resistance –20°C DC resistance	Ω/km	1.2000	0.8680	0.6410	0.4430	0.3200	0.2530	0.2060	0.1640	0.1250	0.1000	0.0778	0.0605	0.0469
–90°C AC resistance	Ω/km	1.5300	1.1130	0.8219	0.5681	0.4100	0.3250	0.2644	0.2110	0.1610	0.1290	0.1010	0.0788	0.0618
Positive/negative inductance – Trefoil	μH/m	0.4182	0.3977	0.3763	0.3546	0.3387	0.3261	0.3161	0.3048	0.2949	0.2902	0.2844	0.2778	0.2698
– Flat	μH/m	0.6020	0.5815	0.5572	0.5386	0.5260	0.5102	0.5025	0.4917	0.4817	0.4774	0.4676	0.4641	0.4567
Zero inductance at 50Hz &20°C	μH/m	0.2239	0.2067	0.1891	0.1716	0.1505	0.1489	0.1409	0.1322	0.1253	0.1208	0.1166	0.1118	0.1054
Positive/negative impedance – Trefoil	μΩ/m	131.39	124.9	118.2	111.4	106.4	102.5	99.3	95.8	92.7	91.2	89.4	87.3	84.8
– Flat	μΩ/m	189.11	182.7	175.1	169.2	165.3	160.3	157.9	154.5	151.3	150.0	148.1	145.8	143.5
Zero impedance at 50Hz &20°C	μΩ/m	70.34	64.93	59.40	53.91	47.28	46.79	44.25	41.54	39.37	37.94	36.63	35.12	33.10
Capacitance	pF/m	275	304	343	392	439	480	521	570	637	626	656	690	778
Charging current(50Hz)	A/km	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8	0.9	0.9	1	1.0
Short circuit current														
Conductor(1s)	kA	2.36	3.23	4.34	6.24	8.6	10.84	13.28	16.64	21.78	27.17	34.85	44.74	57.64
Metallic screen(1s)	kA													
Final short circuit temperature	°C	250	250	250	250	250	250	250	250	250	250	250	250	250
Continuous loading current														
1)Direct buried – Trefoil	A	111	132	157	192	230	262	293	332	385	435	498	570	648
– Flat	A	118	140	166	203	243	277	310	352	411	463	533	612	701
2)In air – Trefoil	A	105	128	154	194	237	274	312	361	429	494	580	681	793
– Flat	A	131	159	192	241	294	340	388	447	531	611	717	842	986
Max. working temperature of conductor	°C	90	90	90	90	90	90	90	90	90	90	90	90	90

Remarks:

Offering nominal cross-section of conductor when purchasing

Laying conditions:

Depth of laying:700mm

Thermal ratio of soil: 1.2°C m/W

Single circuit phase spacing : – Flat is 2D , D: Overall diameter

Air temperature:40°C

– Trifolils touched with others

Soil temperature:25°C



## 6/6(10)kV Single Core XLPE Insulated Unarmoured Power Cable

CU/XLPE/CTS/PVC

Rated voltage		6/6(10)kV													
Conductor –Nominal cross-section	mm <sup>2</sup>	25	35	50	70	95	120	150	185	240	300	400	500	630	
– Nominal diameter	mm	6.0	6.9	8.2	9.7	11.3	12.8	14.2	15.9	18.3	20.4	23.2	26.4	30.1	
Insulation –Nominal thickness	mm	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	
– Nominal diameter	mm	14.2	15.1	16.4	17.9	19.5	21	22.4	24.1	26.5	28.6	31.4	35.0	38.7	
Copper tape screen –Nominal cross-section	mm <sup>2</sup>	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	
Outer sheath – Nominal thickness	mm	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.9	2.0	2.0	2.2	2.2	2.4	
Approx. outer diameter	mm	19.4	20.5	21.8	23.5	25.1	26.8	28.2	30.1	32.7	34.8	38.0	41.5	45.6	
Approx. Weight	kg/m	0.55	0.66	0.80	1.03	1.30	1.56	1.85	2.22	2.80	3.39	4.22	5.29	6.67	
Mechanic & electric performance															
Allowable max.pulling	kN	1.8	2.5	3.5	4.9	6.7	8.4	10.5	13	16.8	21	28	35	44.1	
Min.bending radius –In installation	mm	387	409	435	469	501	535	563	601	653	695	759	830	912	
– After installation	mm	290	307	326	352	376	401	422	451	490	521	569	623	684	
Max. conductor resistance –20°C DC resistance	Ω/km	0.7270	0.5240	0.3870	0.2680	0.1930	0.1530	0.1240	0.0991	0.0754	0.0601	0.0470	0.0366	0.0283	
–90°C AC resistance	Ω/km	0.9270	0.6680	0.4936	0.3420	0.2464	0.1955	0.1587	0.1271	0.0976	0.0778	0.0615	0.0487	0.0387	
Positive/negative inductance – Trefoil	μH/m	0.4331	0.4118	0.3914	0.3686	0.3533	0.3426	0.3322	0.3185	0.3075	0.2978	0.2908	0.2826	0.2741	
– Flat	μH/m	0.6230	0.5917	0.5808	0.5560	0.5342	0.5282	0.5170	0.5020	0.4911	0.4832	0.4757	0.4713	0.4567	
Zero inductance at 50Hz &20°C	μH/m	0.2486	0.2298	0.2213	0.1920	0.1768	0.1673	0.1567	0.1468	0.1371	0.1289	0.1216	0.1140	0.1074	
Positive/negative impedance – Trefoil	μΩ/m	136.07	129.4	123.0	115.8	111.0	107.6	104.4	100.1	96.6	93.6	91.4	88.8	86.1	
– Flat	μΩ/m	195.73	185.9	182.5	174.7	167.8	165.9	162.4	157.7	154.3	151.8	149.5	148.1	143.5	
Zero impedance at 50Hz &20°C	μΩ/m	78.09	72.18	69.45	60.32	55.54	52.57	49.22	46.12	43.09	40.51	39.19	35.82	33.74	
Capacitance	pF/m	216	237	265	302	336	366	396	432	481	524	584	660	734	
Charging current(50Hz)	A/km	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.2	1.4	
Short circuit current															
Conductor(1s)	kA	3.53	4.9	6.55	9.42	13.04	16.41	20.2	25.24	33.11	37.71	52.95	67.92	87.76	
Metallic screen(1s)	kA	0.93	0.99	1.06	1.16	1.25	1.33	1.41	1.51	1.64	1.73	1.93	2.13	2.34	
Final short circuit temperature	°C	250	250	250	250	250	250	250	250	250	250	250	250	250	
Continuous loading current															
1)Direct buried – Trefoil	A	143	171	202	248	296	337	377	427	494	556	631	714	801	
– Flat	A	152	181	214	262	314	357	400	454	526	595	680	776	883	
2)In air – Trefoil	A	138	168	202	253	309	357	406	467	553	634	737	853	980	
– Flat	A	170	206	249	312	380	439	500	574	682	783	914	1066	1238	
Max. working temperature of conductor	°C	90	90	90	90	90	90	90	90	90	90	90	90	90	

**Remarks:**

Offering nominal cross-section of conductor when purchasing

Laying conditions: Depth of laying:700mm

Thermal ratio of soil: 1.2°C m/W Single circuit phase spacing ; – Flat is 2D , D: Overall diameter

Air temperature:40°C – Trifolts touched with others

Soil temperature:25°C



# LSHF FIRE RESISTANT CABLE

LOW SMOKE HALOGEN FREE (LSHF) FIRE RESISTANT CABLES

VOLTAGE RATING(U<sub>0</sub>/U) : 300/500V, 450/750V or 600/1000V

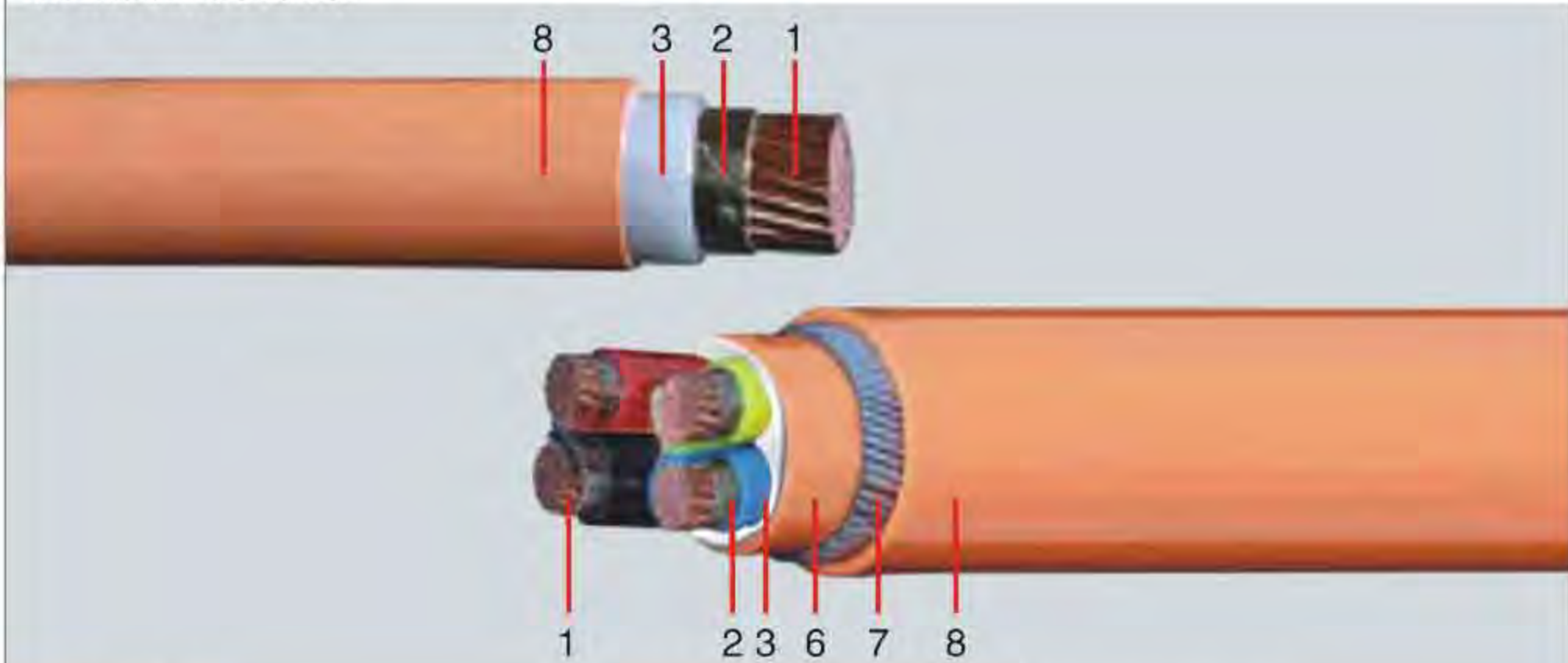
STANDARDS COMPLIED:

MAIN CABLE SPECIFICATION	FIRE TESTS	FLAME RETARDANT TEST	TEST ON ACID GAS EVOLVED	SMOKE DENSITY TEST
BS 6724 BS 7211 BS 7629 BS 7846 IEC 60502-1	BS 6387 CAT CWZ IEC 60331	BS EN 50265 BS EN 50266 IEC 60332-1 IEC 60332-3	BS EN 50267 IEC 60754	BS EN 50268 IEC 61034

COLOUR OF IDENTIFICATION:

INSULATION:	1C: NATRUAL.(ORANGE FOR NON-SHEATHED) 2C: (RED & BLACK)or (BROWN & BLUE) 3C: (RED,YELLOW,BLUE) or (BROWN, BLACK, GREY) 3C: (RED,YELLOW,BLUE,BLACK) or (BROWN, BLACK, GREY, BLUE)
OVER SHEATH:	ORANGE

CONSTRUCTION:



- |                                   |  |
|-----------------------------------|--|
| 1. Conductors                     | : Plain annealed stranded copper conductor.          |
| 2. Fire barrier                   | : Mica tape.   |
| 3. Insulation                     | : Cross-linked PE or LSHF compound.                  |
| 4. Filler (where applicable)      | : LSHF or Polypropylene yarn.                        |
| 5. Binder Tape (where applicable) | : Polyester (mylar) tape / non woven polyester tape. |
| 6. Bedding (for armoured cable)   | : LSHF compound, type LTS 1.                         |
| 7. Armouring (for armoured cable) | : Aluminium wires or Galvanized steel wires.         |
| 8. Oversheath                     | : LSHF compound, type LTS 1 or LTS 4.                |



## LSHF FIRE RESISTANT CABLE

### BS 6387 : FIRE, FIRE WITH WATER AND MECHANICAL TESTS

The following tests are used to determine the capability of maintaining circuit integrity under fire conditions, fire with water spray and fire with mechanical shock. Depending on the level achieved by the cable, a corresponding letter is assigned according to denote the category the cable passed:

RESISTANCE TO FIRE	Symbol
650°C for 3 hours	A
750°C for 3 hours	B
950°C for 3 hours	C
950°C for 20 minutes	S



RESISTANCE TO FIRE WITH WATER SPRAY	Symbol
650°C for 15 minutes then 650°C with water spray for 15 minutes	W



RESISTANCE TO FIRE WITH MECHANICAL SHOCK	Symbol
650°C for 15 minutes with every 30 sec. Mechanical shock	X
750°C for 15 minutes with every 30 sec. Mechanical shock	Y
950°C for 15 minutes with every 30 sec. Mechanical shock	Z





## LSHF FIRE RESISTANT CABLE

### IEC 60331: FIRE TEST

A cable sample of 1200mm in length is placed over a gas burner and connected to an electrical supply at its rated voltage. Fire is applied for a period of 3 hours. The temperature on the cable is between 750°C & 800°C. After 3 hours, the fire and the power is switched off, 12 hours later, the cable sample is re-energised and must maintain its circuit integrity.



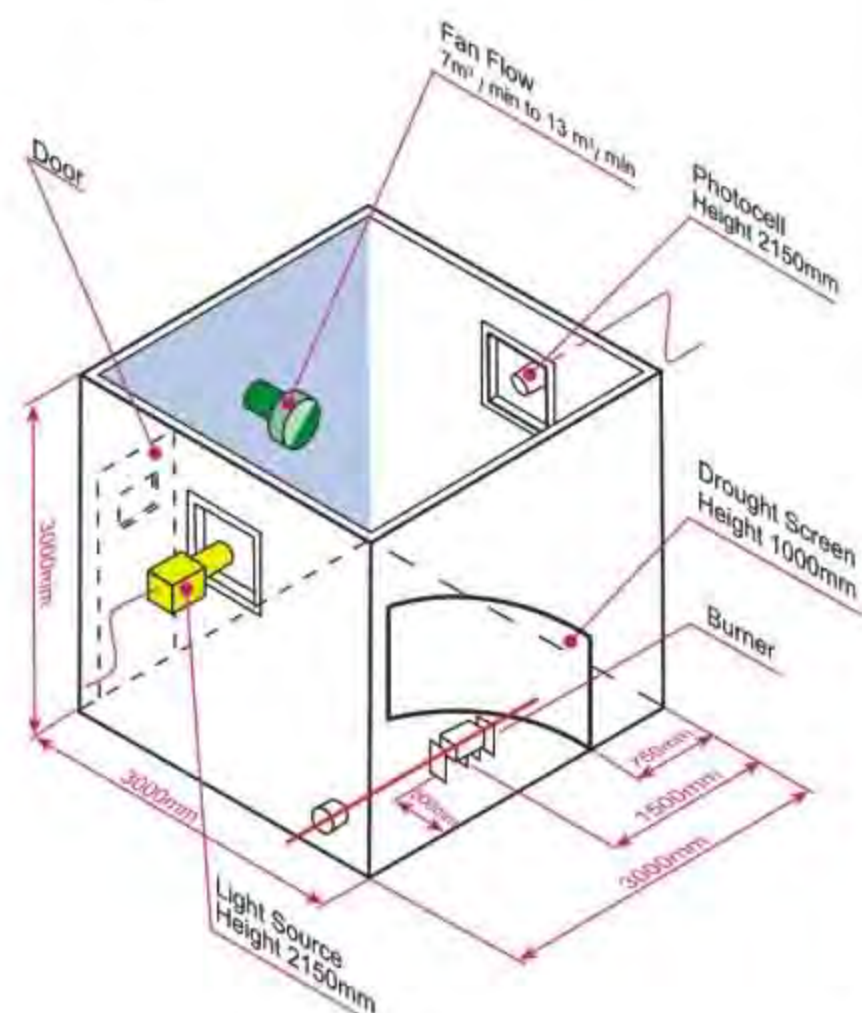
### IEC 61034: SMOKE DENSITY TEST

The "3 metre cube test" measures the generation of smoke from electric cables during fire. A light beam emitted from a window is projected across the enclosure to a photocell connected to a recorder at the opposite window. The recorder is adjusted to register from 0% for complete obscuration to 100% luminous transmission. A 1 metre cable sample is placed in the centre of the enclosure and then subjected to fire. The minimum light transmission is recorded.

### IEC 60754: ACID GAS EMISSION TEST

This test specifies a method for the determination of the degree of acidity of gases evolved during combustion of cables by measuring pH and conductivity.

The performance requirements of this standard state the weighted pH value should not be less than 4.3 when related to 1 litre of water and the weighted value of conductivity should not exceed 10uS/mm.





## LSHF FIRE RESISTANT CABLE

### IEC 60332 PART 1:FLAME PROPAGATION TEST (SINGLE)

This test defines the ability of single vertical insulated wire or cable to restrict flame propagation when affected by fire. After all burning has ceased, the surface of the sample shall be wiped clean and the charred or affected portion shall not have reached within 50mm of the lower edge of the top clamp.



### IEC 60332 PART3:FLAME PROPAGATION TEST (BUNCHED)

This test defines the ability of bunched cables to restrict flame propagation when laid in trunking, cable trays or conduit. The test comprises of 3 categories each determined by the amount of combustible material in a 1 metre sample, as shown in the table below:

CATEGORY	A	B	C
No of litres of combustible material in a 1 metre sample	7	3.5	1.5
Exposure to fire in minutes	40	40	20

The cable samples are placed vertically next to one another on a vertical ladder tray where they are exposed to fire from a ribbon gas burner for the pre-arranged times.

After burning, the samples are wiped clean to examine for char ( the crumbling) of the cable surface. The charring should not have reached a height exceeding 2.5 metres above the bottom edge of the burner.







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