450/750 V
LSHF WIRES AND 0.6/1 KV
LSHF CABLES

مجموعة كابلات الرياض
Riyadh Cables Group

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LSHF CABLES

Fire is a complex and emotive subject, the consequences of fire can be catastrophic.

The nature of organic material used in the cable manufacture of cables and possible installation conditions in areas of the fire risk can lead to a situation where cables may contribute to the spread of fire, emission of smoke and release of combustion products injurious to equipment and human health.

In power stations, hospitals, theatres, hotels and other large public buildings, the loss of visibility caused by smoke evolved from burning cable materials can cause panic and create serious problems when evacuating personnel.
Location of the fire source and fire fighting are also greatly hampered by smoke. Additionally the presence of corrosive gases in the smoke result in damage and failure of sensitive electrical equipment and may initiate long term deterioration of structures, as well as being injurious to the health of personnel even after short exposure.

Awareness of this situation has lead to the development of new cable technologies and introduction by major cable users of cable types with low emission of smoke, corrosive and toxic fumes and reduced flame propagation properties.

In considering cable systems with improved fire performance characteristics it is useful to first consider the various aspects of the effect of fire on a cable:

- Propagation of fire along cable runs
- Evolution of smoke leading to obstruction of exits
- Evolution of acid gas leading to corrosion of equipment
- Evolution of toxic fumes leading to personal injury

LSHF cables use special formulation based on non-halogenated polymers in order to restrict the generation of smoke as much as possible. Materials are carefully selected and the compounds carefully designed in order to ensure the best performance of the external sheaths, which are directly exposed to fire.

LSHF Cables manufactured by Riyadh Cables group have been designed to offer improved performance in areas where smoke and fume emission in the event of a fire would cause particular problems. Compounds used in LSHF cables do not contain halogen hence, do not emit halogenated acids when burnt which help in minimizing the total cost of the damage caused by fire and generate little smoke when burned. Furthermore, the rate at which this low level of smoke is released, is very much slower than that of PVC or similar halogenated polymers.

LSHF Cables manufactured by Riyadh Cables have controlled limits on smoke evolution, when assessed by burning samples of cables in a 3 meter cube smoke chamber as per IEC 61034. Generally these cables combine the properties of low corrosive gas emission and low toxic gas emission as they are essentially halogen free when assessed by IEC 60754-1 and IEC 60754-2.

VERTICAL FLAME TEST FOR SINGLE CABLES (IEC 60332-1-2)

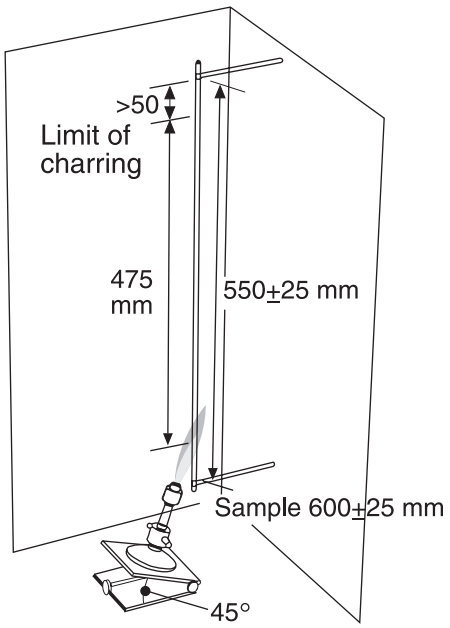
PURPOSE

The purpose of the test is to determine the resistance to flame propagation for single vertical cables.

This test is not suitable for small wires with solid conductor having a diameter less than 0.8 mm or stranded conductors less than 0.5 mm^2 because the conductor melts before the test is completed. (See IEC 60332-1-2)

EQUIPMENT

1. Enclosure
2. Burner
3. Wedge (45°)
4. A verticle adjustable jig
5. Matches
6. Ruler
7. Stop-watch



This test is to be conducted in a 3-sided enclosure (300mm wide, 450 mm deep and 1200 mm high) with open front and closed top and bottom. A 1 kW flame produced by a propane burner with adjustable air and gas flow is used.

(This design of the burner is described in IEC 60695-11-2

CALIBRATION

The burner is calibrated by adjusting the flame to about 180 mm and the inner blue cone to 55 mm. The temperature increase is measured 95 mm above the top of the burner by using a thermocouple in a copper slug. The time for the temperature from 100℃ to 700℃ should be 45 s.

BUNCH BURNING TEST (IEC 60332-3 SERIES)

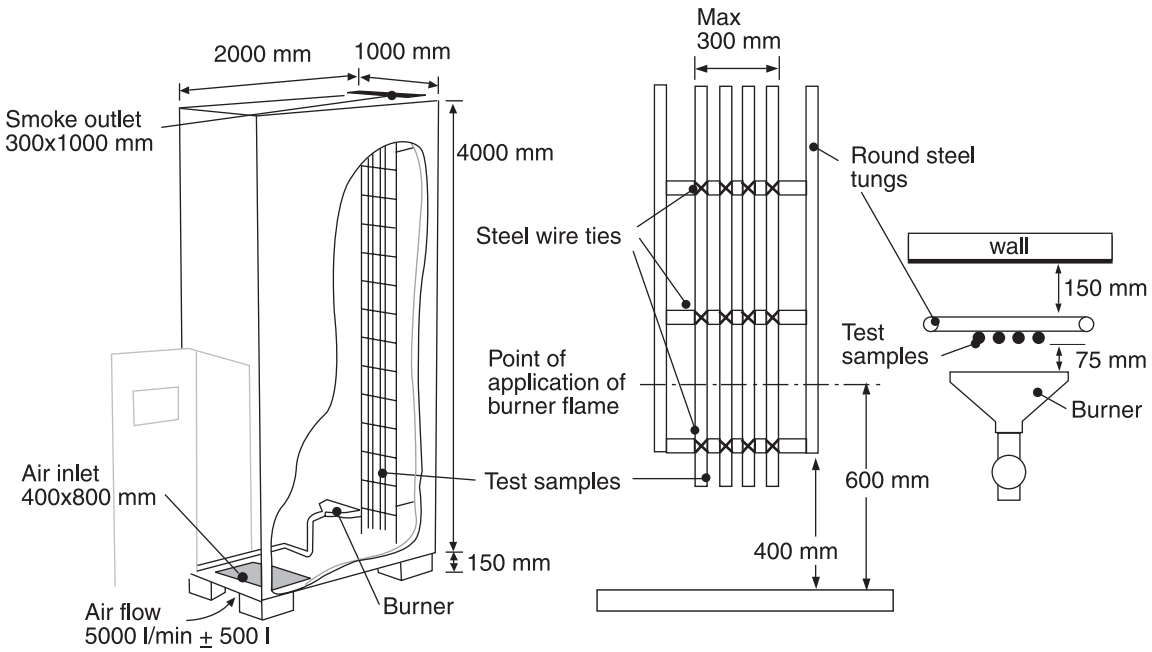
PURPOSE

This standard describes a method of type approval testing to define the ability of bunched cables to restrain flame propagation in defined conditions regardless of their application, i.e. power, telecommunications (including data transmission and optical fibre cables), etc.

Three categories (A, B and C) are defined and distinguished by test duration and the volume of non-metallic material of the sample under test. Two methods of mounting (designations F/R and F) are application to category A. Only designation F applies to categories B and C.

EQUIPMENT

1. Fire test rig
2. Ladder
3. Ignition source



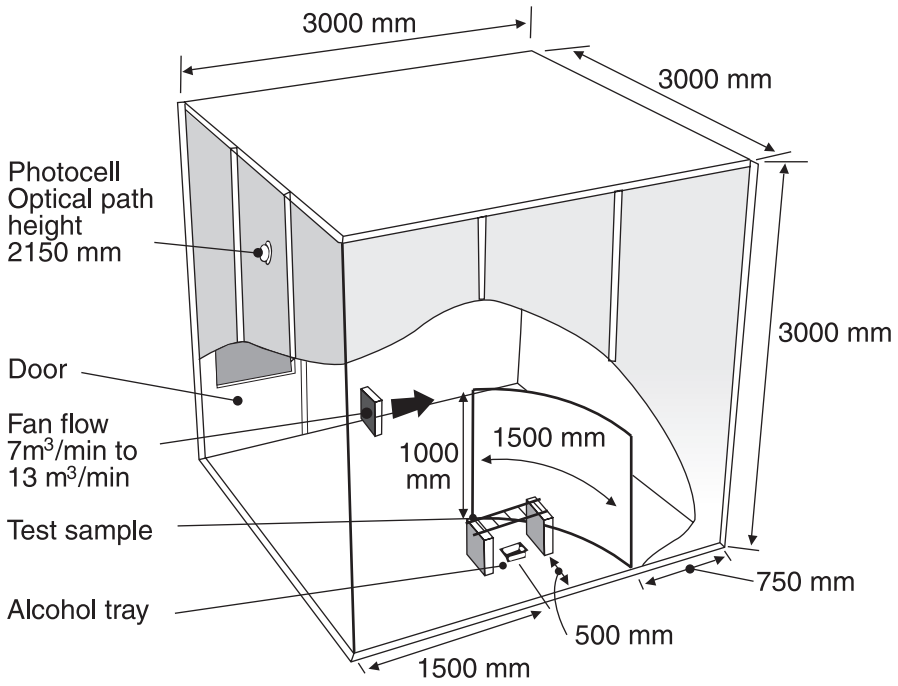
SMOKE DENSITY 3 M TEST CUBE (IEC 61034)

PURPOSE

The measurement of smoke density is an important aspect in the evaluation of the burning performance of electric cables as it is related to the evacuation of persons and accessibility for fire-fighting. The standard describe measurements of smoke emission when electric cables are burned horizontally. The light transmittance for flaming and smouldering conditions can be used when comparing different cables.

EQUIPMENT

1. Cube enclosure
2. Photometric system
3. Fire source
4. Smoke mixer



ACIDITY (pH) AND CONDUCTIVITY (IEC 60754-2)

TEST ON GASES EVOLVED DURING COMBUSTION OF ELECTRIC CABLES

PURPOSE

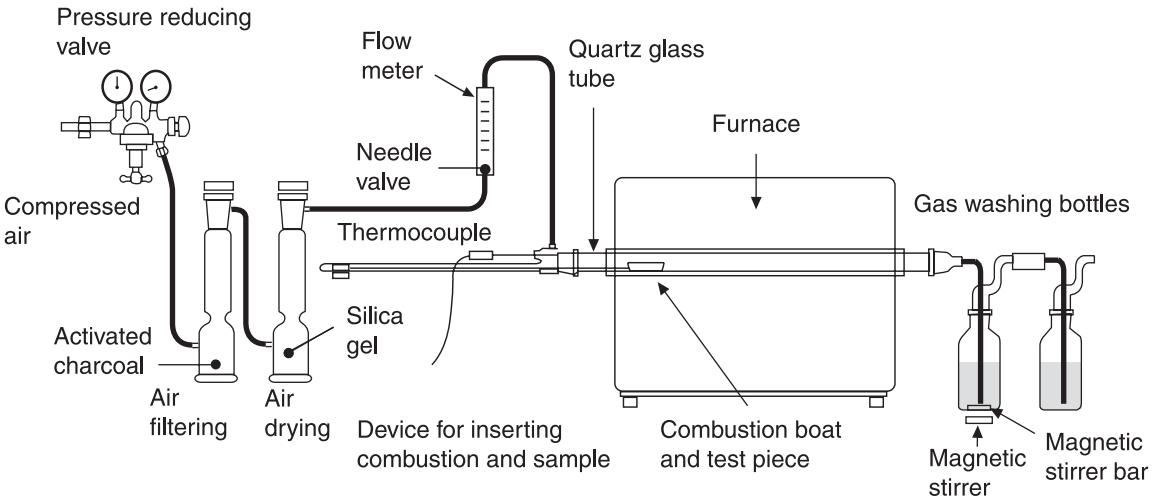
The purpose of this test is to determine the pH and conductivity of gases evolved during the combustion of materials taken from electric cables as a function of temperature.

PRINCIPLE OF OPERATION

A predetermined quantity of the test material is burned in a tube furnace. The evolved gases are trapped by bubbling through bottles filled with distilled or demineralized water. The acidity is measured by determination of pH value. The conductivity of the solution is also measured.

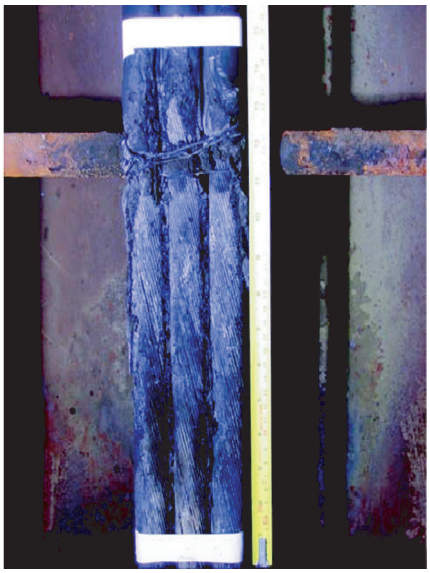
EQUIPMENT

1. Test apparatus
2. pH meter
3. Conductivity meter
4. Analytical balance
5. Computer containing a measuring program
5. Deionized water



Cable mounted for fire test

Fire test in progress



Completion of fire test (The charred portion is less than the specified requirement)

INTRODUCTION

This catalogue contains technical information on 450/750 Volts single core thermosetting insulated non-sheathed wires to BS EN 50525-3-41and 600/1000 Volt LSHF Cables of Armoured and Un-armoured type to IEC 60502-1.

CONDUCTORS

Conductors shall be of plain annealed copper for wires as per BS EN 50525-3-41 and shall be of Copper or Aluminium for 0.6/1 kV cables. Conductors shall be in accordance with IEC 60228 .

INSULATION

Insulation material shall be Type EI 5 as per BS EN 50363-5 and thickness of insulation shall be as BS EN 50525-3-41 for 450/750 V Wires.
For 0.6/1 kV Cables, insulation material and thickness shall be as per IEC 60502-1 as the case may be.

0.6/1 kV CABLES:

ASSEMBLY:

Two, three, four or five core cables shall be laid-up together with suitable non-hygroscopic fillers. Assembly shall be bedded with an extruded layer of LSHF material. In case of non-armoured cables, this layer may be omitted if the outer shape of cable of remains practically circular.

COLOUR CODE

Colour code (1) is followed by all utilities in the Middle East and colour of insulation is as mentioned below. However, cables as per colour code (2) mentioned below is also provided based on customer request.

Colour code (1)

1 Core: Red or Black
2 Core: Red, Black
3 Core: Red, Yellow, Blue
4 Core: Red, Yellow,Blue, Black
5 Core: Red, Yellow, Blue, Black, Green
Above 5 cores: Black Cores with White numerals

Colour code (2)

1 Core: Brown or Blue
2 Core: Brown, Blue
3 Core: Brown, Black, Grey
4 Core: Blue, Brown, Black, Grey
5 Core: Green/Yellow, Blue, Brown, Black, Grey
Above 5 cores: Black Cores with White numerals

ARMOUR:

Armour shall be of Galvanized steel wires applied helically over LSHF bedding in accordance with IEC 60502. Single core cables shall be Aluminium wire armoured. Also, Double steel tape armour as per IEC 60502-1 can be provided based on specific requirement.

OUTER SHEATH:

Outer sheath shall be extruded LSHF Type ST8 as per IEC 60502 . Thickness of outer sheath shall be as per IEC 60502-1 as per the requirement.

FIRE PERFORMANCE:

450/750 volt wires shall meet flame test requirements of IEC 60332-1-2
0.6/1 kV cables shall meet flame test requirements of IEC 60332-3-24 (Category C).

Particulars & Guarantees Relating to Cross-linked Insulating Compound EI 5 (BSEN 50363-5)

SL. NO.	DESCRIPTION	UNIT	GUARANTEED PARTICULARS
1	**Tensile Strength and Elongation at break :**		
	Minimum Tensile Strength	N/mm^2	10
	Minimum Elongation at break	%	125
2	Properties after ageing for specified period at specified temperature followed by tensile strength and elongation at break test		
	Number of days ageing		7
	Ageing temperature	°C	135 ± 2
	Tensile Strength after ageing :		
	Minimum value	N/mm^2	-
	Maximum variation	%	30
	Elongation at break after ageing :		
	Minimum value	%	-
	Minimum variation from unaged value	%	30
3	**Low temperature bend test:**		
	Temperature at which specimen shall not crack	°C	-15 ± 2
4	**Low temperature elongation test:**		
	Test temperature	°C	-15 ± 2
	Minimum Elongation	%	30
5	**Low temperature impact test:**		
	Temperature at which specimen shall not crack	°C	- 5
6	**Ozone resistance test**		
	Temperature at which specimen shall not crack	°C	25 ± 2
	Duration	hours	24
	Ozone Concentration	ppm	250 to 300
6a	**Alternate Ozone resistance test (Low Concentration)**		
	Temperature at which specimen shall not crack	°C	40 ± 2
	Duration	hours	72
	Ozone Concentration	ppm	2 ± 0.5
7	**Hot Set Test**		
	Test temperature	°C	200 ± 3
	Time under Load	minutes	15
	Mechanical Stress	N/mm^2	0.2
	Maximum elongation under Load	%	100
	Maximum permanent elongation after cooling	%	25
8	**Pressure test at high temperature :**		
	Force exerted by the blade with a k value of 1.0	BSEN 60811-508	
	Duration of heating under load		
	Test temperature	°C	100 ± 2
	Maximum indentation	%	50
9	**Acidic (corrosive) gases evolved :**		
	Level of HCL	%	< 0.5
	pH (minimum)	BSEN 50267	4.3
	Conductivity (maximum) (µS/mm)	BSEN 50267	10

XLPE INSULATION

STANDARD : IEC 60502-1

PARTICULARS & GUARANTEES RELATING TO XLPE INSULATION

SL. NO.	DESCRIPTION	UNIT	GUARANTEED PARTICULARS
1	**Tensile Strength and Elongation at break :** Min. tensile strength Min. elongation at break	 N/mm^2 %	 12.5 200
2	Accelerated ageing for specified period at specified temperature followed by tensile strength and elongation at break No. of days ageing Ageing temperature Max. variation of tensile strength from unaged specimen Max. variation of elongation from unaged specimen	 Days °C % %	 7 135 ± 3 ± 25 ± 25
3	**Hot Set Test :** ***Treatment*** - Temperature - Time under load - Mechanical stress Max. elongation under load Max permanent elongation after cooling	 °C Minutes N/cm^2 % %	 200 ± 3 15 20 175 15
4	**Water Absorption :** ***Treatment :*** - Temperature - Duration Max. variation of mass	 °C Days mg/cm^2	 85 ± 2 14 1.0
5	**Maximum permissible shrinkage :** ***Treatment :*** - Temperature - Duration Maximum permissible shrinkage	 °C Hours %	 130 ± 3 1 4
6	Insulation Resistance constant (Ki) at maximum rated temperature (90°C)	M.Ohm.Km	3.67
7	Volume Resistivity at maximum rated temperature (90°C)	Ohm.cm	10^{12}
8	**Acidic emission and corrosive gases evolved** Level of HCl Fluorine Content pH Minimum Conductivity	 % % µ S/mm	 < 0.5 < 0.1 4.3 10

PARTICULARS & GUARANTEES RELATING TO LSHF OUTER SHEATH TYPE ST8 (IEC 60502-1)

SL. NO.	DESCRIPTION	UNIT	GUARANTEED
1	**Tensile Strength and Elongation at break :** Minimum Tensile strength Minimum Elongation at break	 N/mm^2 %	 9 125
2	Properties after ageing for specified period at specified temperature followed by tensile strength and elongation at break test Number of days ageing Ageing temperature **Tensile Strength after ageing :** Minimum value Maximum variation **Elongation at break after ageing :** Minimum Value Maximum variation from unaged value	 °C N/mm^2 % % %	 7 100 ± 2 9 40 100 40
3	**Low temperature bend test :** Temperature at which specimen shall not crack	°C	-15 ± 2
4	**Low temperature elongation test :** Test temperature Minimum Elongation	°C %	-15 ± 2 20
5	**Low temperature impact test :** Temperature at which specimen shall not crack	°C	-15 ± 2
6	**Pressure test at high temperature :** Test temperature Maximum indentation	°C %	80 ± 2 50
7	**Water Absorption** Ageing: Number of hours Ageing temperature Maximum increase in Mass	 °C mg/cm^2	 24 70 ± 2 10
8	**Acidic emission and corrosive gases evolved** Level of HCl Fluorine Content pH Minimum Conductivity	 % % µ S/mm	 < 0.5 < 0.1 4.3 10

450 - 750 VOLTS Copper Conductor LSHF insulated Wires to BS EN 50525-3-41

HO7Z-U with Solid Conductor

For internal wiring of equipment rated voltage up to 1000 V AC and up to 750 V DC to earth.

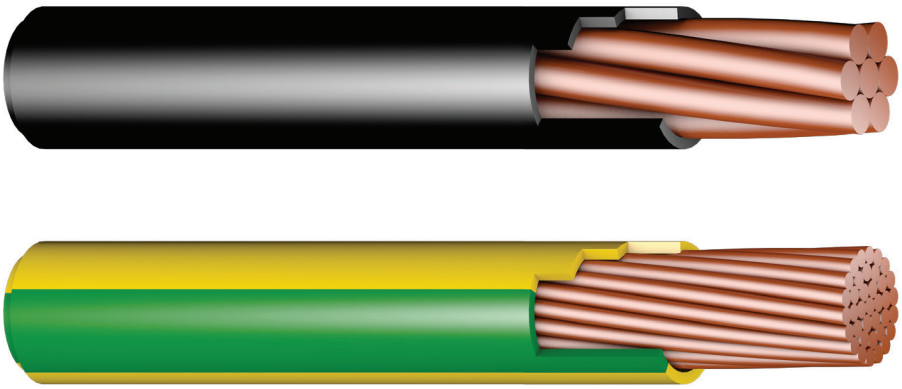
Item Code	Nominal Cross Section	Conductor		Insulation Thickness	Overall Diameter	Weight of Finished Cable Approx.	Maximum DC Resistance at 20°C	Standard Packing Length
		Number of Wires in Conductor	Diameter of Conductor Approx.					
	mm^2	No.	mm	mm	mm	Kg / Km	Ohm / Km	Yards
OC 063004xx	1 x 1.5	1	1.38	0.7	3.0	20	12.1	100 C
OC 063005xx	1 x 2.5	1	1.78	0.8	3.5	30	7.41	100 C
OC 063006xx	1 x 4	1	2.25	0.8	4.0	50	4.61	100 C
OC 063007xx	1 x 6	1	2.76	0.8	5.0	65	3.08	100 C
OC 063008xx	1 x 10	1	3.57	1.0	6.0	110	1.83	100 C

Color : Green / Yellow, Blue, Black, Green, Red, Yellow, Brown, Grey, Orange, White,
Code : 01 02 03 04 05 06 07 08 09 10

For required colour replace the last two digits - xx, by color code.

450 - 750 VOLTS Copper Conductor LSHF insulated Wires to BS EN 50525-3-41

HO7Z-R with Stranded Conductor



For internal wiring of equipment rated voltage up to 1000 V AC and up to 750 V DC to earth.

Item Code	Nominal Cross Section	Conductor		Insulation Thickness	Overall Diameter	Weight of Finished Cable Approx.	Maximum DC Resistance at 20°C	Standard Packing Length
		Number of Wires in Conductor	Diameter of Conductor Approx.					
	mm^2	No.	mm	mm	mm	Kg / Km	Ohm / Km	M ± 5%
OC 063104xx	1 x 1.5	7	1.50	0.7	3.0	20	12.1	100 C
OC 063105xx	1 x 2.5	7	12.0	0.8	3.7	35	7.41	100 C
OC 063106xx	1 x 4	7	2.6	0.8	4.2	50	4.61	100 C
OC 063107xx	1 x 6	7	3.1	0.8	4.8	70	3.08	100 C
OC 063108xx	1 x 10	7	4.0	1.0	6	115	1.83	100 C
OC 063109xx	1 x 16	7	5.0	1.0	7	170	1.15	100 C
OC 063110xx	1 x 25	7	6.3	1.2	8.7	265	0.727	100 C
OC 063111xx	1 x 35	7	7.4	1.2	10	360	0.524	100 C
000631xx12	1 x 50	19	8.8	1.4	11.6	485	0.387	3000 D
000631xx13	1 x 70	19	10.6	1.4	13.4	685	0.268	3000 D
000631xx14	1 x 95	19	12.4	1.6	15.6	950	0.193	3000 D
000631xx15	1 x 120	37	14.0	1.6	17.5	1175	0.153	2000 D
000631xx16	1 x 150	37	15.5	1.8	19.0	1450	0.124	2000 D
000631xx17	1 x 185	37	17.4	2.0	21.5	1825	0.0991	2000 D
000631xx18	1 x 240	61	20.0	2.2	25	2375	0.0754	1000 D
000631xx19	1 x 300	61	22.5	2.4	27.5	2980	0.0601	1000 D
000631xx20	1 x 400	61	25.5	2.6	31	3800	0.0470	500 D
000631xx21	1 x 500	61	28.5	2.8	35	4850	0.0366	500 D
000631xx22	1 x 630	91	32.8	2.8	39	6250	0.0283	500 D

Color :	Green / Yellow,	Blue,	Black,	Green,	Red,	Yellow,	Brown,	Grey,	Orange,	White,
Code :	01	02	03	04	05	06	07	08	09	10

For required colour replace the last two digits - xx, by color code.

450 - 750 VOLTS Copper Conductor LSHF insulated Wires to BS EN 50525-3-41

HO7Z-K with Flexible Conductor

For internal wiring of equipment rated voltage up to 1000 V AC and up to 750 V DC to earth.

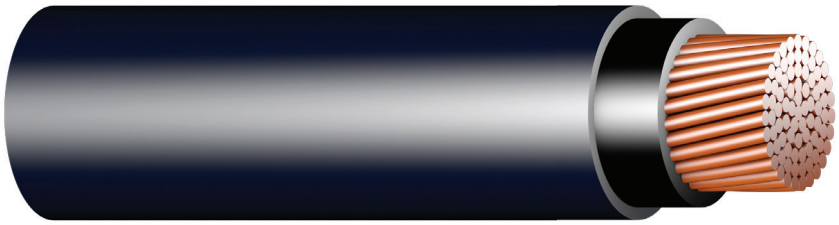
Item Code	Nominal Cross Section	Conductor		Insulation Thickness	Overall Diameter	Weight of Finished Cable Approx.	Maximum DC Resistance at 20°C	Standard Packing Length
		Approx No & Nom. strand Diameter.	Diameter of Conductor Approx.					
	mm^2	No. x mm	mm	mm	mm	Kg / Km	Ohm / Km	M ± 5%
OC 063504xx	1 x 1.5	27 x 0.25	1.55	0.7	3.0	20	13.3	100 C
OC 063505xx	1 x 2.5	46 x 0.25	2.0	0.8	3.6	30	7.98	100 C
OC 063506xx	1 x 4	51 x 0.30	2.5	0.8	4.1	45	4.95	100 C
OC 063507xx	1 x 6	77 x 0.30	3.0	0.8	4.7	65	3.30	100 C
OC 063508xx	1 x 10	74 x 0.40	4.0	1.0	6.1	105	1.91	100 C
OC 063509xx	1 x 16	118 x 0.40	5.1	1.0	7.1	165	1.21	100 C
OC 063510xx	1 x 25	182 x 0.40	6.4	1.2	9	250	0.780	100 C
OC 063511xx	1 x 35	257 x 0.40	7.5	1.2	10	350	0.554	100 C
000635xx12	1 x 50	371 x 0.40	9.0	1.4	12	500	0.386	1000 D
000635xx13	1 x 70	336 x 0.50	10.7	1.4	14	685	0.272	1000 D
000635xx14	1 x 95	444 x 0.50	12.3	1.6	16	900	0.206	1000 D
000635xx15	1 x 120	568 x 0.50	14.0	1.6	18	1150	0.161	1000 D
000635xx16	1 x 150	708 x 0.50	15.6	1.8	20	1425	0.129	1000 D
000635xx17	1 x 185	864 x 0.50	17.2	2.0	22	1725	0.106	1000 D
000635xx18	1 x 240	1134x0.50	20.0	2.2	25	2250	0.0801	1000 D
000635xx19	1 x 300	1414x0.50	22.0	2.4	27	2800	0.0641	1000 D

Color :	Green / Yellow,	Blue,	Black,	Green,	Red,	Yellow,	Brown,	Grey,	Orange,	White,
Code :	01	02	03	04	05	06	07	08	09	10

For required colour replace the last two digits - xx, by color code.

XLPE INSULATED, LSHF SHEATHED CABLES

COPPER CONDUCTORS STANDARD : IEC 60502-1 600/1000 VOLTS



CABLE CORE(S) — UNARMOURED

Nominal Area	No. of wires	Approx. Conductor diameter	Nominal Insulation thickness	Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm^2	No.	mm	mm	mm	mm	Kg/Km	meters
1x1.5 re	1	1.38	0.7	1.4	6	45	1000
1x1.5 rm	7	1.56	0.7	1.4	6	50	1000
1x2.5 re	1	1.78	0.7	1.4	6	60	1000
1x2.5 rm	7	2.01	0.7	1.4	7	60	1000
1x4 re	1	2.25	0.7	1.4	7	75	1000
1x4 rm	7	2.55	0.7	1.4	7	80	1000
1x6 re	1	2.76	0.7	1.4	7	95	1000
1x6 rm	7	3.12	0.7	1.4	8	100	1000
1x10 rm	7	4.01	0.7	1.4	9	145	1000
1x16 rm	7	5.03	0.7	1.4	10	200	1000
1x25 rm	7	6.3	0.9	1.4	11	300	1000
1x35 rm	7	7.44	0.9	1.4	13	400	1000
1x50 rm	19	8.8	1.0	1.4	14	525	1000
1x70 rm	19	10.6	1.1	1.4	16	725	1000
1x95 rm	19	12.4	1.1	1.5	18	1000	1000
1x120 rm	37	14.0	1.2	1.5	20	1225	1000
1x150 rm	37	15.5	1.4	1.6	22	1500	1000
1x185 rm	37	17.4	1.6	1.6	24	1875	1000
1x240 rm	61	20.0	1.7	1.7	27	2450	1000
1x300 rm	61	22.5	1.8	1.8	30	3050	1000
1x400 rm	61	25.4	2.0	1.9	34	3900	500
1x500 rm	61	28.5	2.2	2.0	37	4975	500
1x630 rm	91	32.8	2.4	2.2	42	6425	500

CABLE CORE(S) — UNARMOURED

2x1.5 re	1	1.38	0.7	1.8	12	175	1000
2x1.5 rm	7	1.56	0.7	1.8	13	200	1000
2x2.5 re	1	1.78	0.7	1.8	13	225	1000
2x2.5 rm	7	2.01	0.7	1.8	13	225	1000
2x4 re	1	2.25	0.7	1.8	14	275	1000
2x4 rm	7	2.55	0.7	1.8	14	275	1000
2x6 re	1	2.76	0.7	1.8	15	325	1000
2x6 rm	7	3.12	0.7	1.8	16	350	1000
2x10 rm	7	4.01	0.7	1.8	17	475	1000
2x16 rm	7	5.03	0.7	1.8	19	650	1000
2x25 rm	7	6.3	0.9	1.8	23	925	1000
2x35 rm	7	7.44	0.9	1.8	25	1200	1000

re : Round Solid
rm : Round Stranded

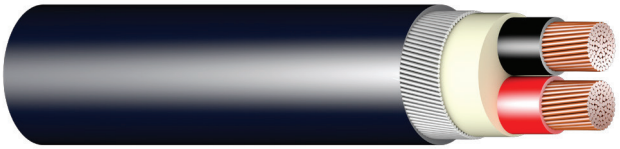
Colour code (1)
1 Core : Black (Red on request)
2 Core : Red, Black

Colour code (2)
1 Core : Brown or Blue
2 Core : Brown, Blue.

Single core cables are Aluminium Armoured as per IEC 60502-1 recommendation.

XLPE INSULATED, LSHF SHEATHED CABLES

COPPER CONDUCTORS | STANDARD : IEC 60502-1 | 600/1000 VOLTS



ALUMINIUM WIRE ARMOURED

Nominal Alum/Steel Wire dia.	Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm	mm	mm	Kg/Km	meters
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
0.8	1.8	16	475	1000
0.8	1.8	17	575	1000
1.25	1.8	19	775	1000
1.25	1.8	21	1000	1000
1.25	1.8	23	1300	1000
1.6	1.8	26	1600	1000
1.6	1.8	28	1925	1000
1.6	1.8	30	2325	1000
1.6	1.9	33	2950	500
1.6	1.9	36	3575	500
2.0	2.1	40	4650	500
2.0	2.2	44	5775	500
2.0	2.3	49	7325	500

ALUMINIUM TAPE ARMOURED

Nominal Alum/Steel tape thickness	Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm	mm	mm	Kg/Km	meters
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
0.5	1.8	16	475	1000
0.5	1.8	17	575	1000
0.5	1.8	19	725	1000
0.5	1.8	21	975	1000
0.5	1.8	23	1250	1000
0.5	1.8	24	1500	1000
0.5	1.8	26	1800	1000
0.5	1.8	29	2175	1000
0.5	1.8	31	2775	500
0.5	1.9	34	3400	500
0.5	2.0	38	4325	500
0.5	2.1	42	5450	500
0.5	2.3	47	6950	500

STEEL WIRE ARMOURED

-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
0.8	1.8	15	450	1000
0.8	1.8	16	475	1000
0.8	1.8	16	525	1000
0.8	1.8	17	550	1000
1.25	1.8	20	835	1000
1.25	1.8	22	1050	1000
1.6	1.8	26	1575	1000
1.6	1.8	28	1900	1000

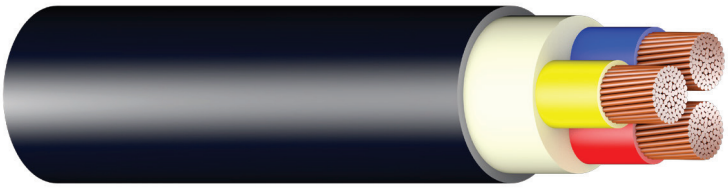
STEEL TAPE ARMOURED

-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
0.2	1.8	15	350	1000
0.2	1.8	15	375	1000
0.2	1.8	16	400	1000
0.2	1.8	16	450	1000
0.2	1.8	18	575	1000
0.2	1.8	20	750	1000
0.2	1.8	24	1075	1000
0.2	1.8	26	1350	1000

Tolerence range :
Overall diameter -2%, +8%
Packing ± 5%

XLPE INSULATED, LSHF SHEATHED CABLES

COPPER CONDUCTORS | STANDARD : IEC 60502-1 | 600/1000 VOLTS



CABLE CORE(S) — UNARMOURED

Nominal Area	No. of wires	Approx. Conductor diameter	Nominal Insulation thickness	Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm^2	No.	mm	mm	mm	mm	Kg/Km	meters
3x1.5 re	1	1.38	0.7	1.8	13	200	1000
3x1.5 rm	7	1.56	0.7	1.8	13	210	1000
3x2.5 re	1	1.78	0.7	1.8	13	250	1000
3x2.5 rm	7	2.01	0.7	1.8	14	275	1000
3x4 re	1	2.25	0.7	1.8	14	325	1000
3x4 rm	7	2.55	0.7	1.8	15	325	1000
3x6 re	1	2.76	0.7	1.8	15	400	1000
3x6 rm	7	3.12	0.7	1.8	16	400	1000
3x10 rm	7	4.01	0.7	1.8	18	575	1000
3x16 rm	7	5.03	0.7	1.8	20	800	1000
3x25 rm	7	6.3	0.9	1.8	24	1150	1000
3x35 rm	7	7.44	0.9	1.8	27	1375	1000
3x50 rm	19	8.8	1.0	1.8	30	1775	1000
3x70 rm	19	10.55	1.1	1.9	35	2490	500
3x95 rm	19	12.4	1.1	2.0	39	3335	500
3x120 rm	37	14.0	1.2	2.1	43	4135	500
3x150 rm	37	15.47	1.4	2.3	48	5100	500
3x185 rm	37	17.36	1.6	2.4	53	6330	500
3x240 rm	61	20.25	1.7	2.6	60	8250	500
3x300 rm	61	22.68	1.8	2.8	67	10240	500
3x400 rm	61	25.38	2.0	3.1	74	13010	250
3x500 rm	61	28.8	2.2	3.3	83	16570	250

CABLE CORE(S) — UNARMOURED

	Ph	Ne	Ph	Ne	Ph	Ne				
3x10 rm+6	7	7	4.01	3.12	0.7	0.7	1.8	19	640	1000
3x16 rm+10	7	7	5.03	4.01	0.7	0.7	1.8	22	900	1000
3x25 rm+16	7	7	6.30	5.03	0.9	0.7	1.8	25	1325	1000
3x35 sm+16	6	7	-	5.03	0.9	0.7	1.8	25	1475	1000
3x50 sm+25	6	7	-	6.3	1.0	0.9	1.8	29	1950	1000
3x70 sm+35	12	7	-	7.44	1.1	0.9	1.9	33	2750	500
3x95 sm+50	15	19	-	8.8	1.1	1.0	2.1	37	3675	500
3x120 sm+70	18	19	-	10.6	1.2	1.1	2.2	40	4600	500
3x150 sm+70	18	19	-	10.6	1.4	1.1	2.3	45	5550	500
3x185 sm+95	30	19	-	12.4	1.6	1.1	2.5	50	6975	500
3x240 sm+120	34	37	-	14.0	1.7	1.2	2.7	55	9275	500
3x300 sm+150	34	37	-	15.5	1.8	1.4	2.9	61	11150	250
3x400 sm+185	53	37	-	17.4	2.0	1.6	3.1	68	14500	250
3x500 sm+240	53	61	-	20.0	2.2	1.7	3.4	76	18050	250

re : Round Solid
rm : Round Stranded
sm : Sectoral Stranded

Colour code (1)

3 Cores : Red, Yellow, Blue
3 1/2 Cores : Red, Yellow, Blue, Black

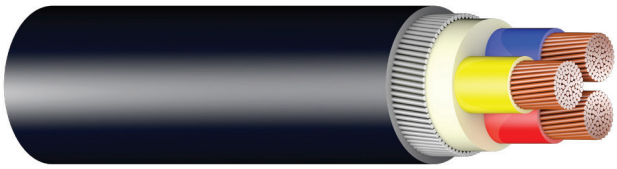
Colour code (2)

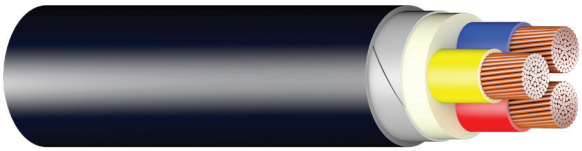
3 Cores : Brown, Black, Grey
3 1/2 Cores : Blue, Brown, Black, Grey

For 3 1/2 cores, neutral conductors are round stranded.
For sectoral conductors, number of wires mentioned is minimum number of wires as per IEC 60228

XLPE INSULATED, LSHF SHEATHED CABLES

COPPER CONDUCTORS | STANDARD : IEC 60502-1 | 600/1000 VOLTS





STEEL WIRE ARMOURED

Steel Wire dia.	Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm	mm	mm	Kg/Km	meters
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
0.8	1.8	17	525	1000
0.8	1.8	17	575	1000
0.8	1.8	18	625	1000
1.25	1.8	21	950	1000
1.25	1.8	23	1225	1000
1.6	1.8	27	1825	1000
1.6	1.8	30	2125	1000
1.6	1.9	33	2635	1000
2.0	2.0	39	3765	500
2.0	2.2	43	4780	500
2.0	2.3	47	5725	500
2.5	2.5	53	7310	500
2.5	2.6	58	8795	500
2.5	2.8	66	11050	500
2.5	3.0	72	13300	250
2.5	3.3	79	16380	250
3.15	3.5	90	21405	250

STEEL TAPE ARMOURED

Steel Tape Thickness	Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm	mm	mm	Kg/Km	meters
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
0.2	1.8	16	410	1000
0.2	1.8	16	475	1000
0.2	1.8	17	500	1000
0.2	1.8	19	675	1000
0.2	1.8	21	900	1000
0.2	1.8	25	1300	1000
0.2	1.8	27	1525	1000
0.2	1.8	31	1950	1000
0.2	2.0	36	2710	500
0.2	2.1	40	3585	500
0.5	2.3	45	4840	500
0.5	2.4	50	5865	500
0.5	2.6	55	7205	500
0.5	2.7	63	9220	250
0.5	2.9	69	11305	250
0.5	3.2	76	14190	250
0.5	3.4	85	17900	250

STEEL WIRE ARMOURED

1.25	1.8	22	1050	1000
1.25	1.8	24	1350	1000
1.6	1.8	28	2000	1000
1.6	1.8	28	2175	1000
1.6	1.9	32	2775	500
2.0	2.1	37	3950	500
2.0	2.2	41	5000	500
2.0	2.4	45	6100	500
2.5	2.5	50	7650	500
2.5	2.7	55	9275	500
2.5	2.9	61	11575	250
2.5	3.0	66	13900	250
3.15	3.4	76	18250	250
3.15	3.6	83	22650	250

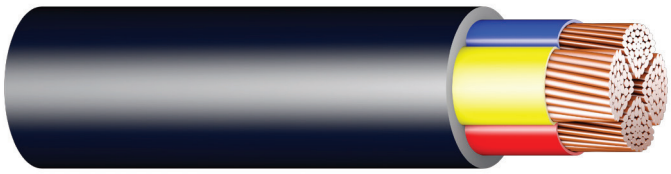
STEEL TAPE ARMOURED

0.2	1.8	20	750	1000
0.2	1.8	22	1025	1000
0.2	1.8	26	1475	1000
0.2	1.8	26	1625	1000
0.2	1.9	30	2150	1000
0.2	2.0	34	2950	500
0.5	2.2	39	4250	500
0.5	2.3	43	5250	500
0.5	2.5	47	6275	500
0.5	2.6	52	7775	500
0.5	2.8	58	9900	500
0.5	3.0	63	12125	250
0.5	3.3	71	15250	250
0.5	3.5	78	19275	250

Tolerence range :
Overall diameter -2%, +8%
Packing ± 5%

XLPE INSULATED, LSHF SHEATHED CABLES

COPPER CONDUCTORS | STANDARD : IEC 60502-1 | 600/1000 VOLTS



CABLE CORE(S)

UNARMOURED

Nominal Area	No. of wires	Approx. Conductor diameter	Nominal Insulation thickness	Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm^2	No.	mm	mm	mm	mm	Kg/Km	meters
4x1.5 re	1	1.38	0.7	1.8	13	230	1000
4x1.5 rm	7	1.56	0.7	1.8	14	250	1000
4x2.5 re	1	1.78	0.7	1.8	14	300	1000
4x2.5 rm	7	2.01	0.7	1.8	15	300	1000
4x4 re	1	2.25	0.7	1.8	15	375	1000
4x4 rm	7	2.55	0.7	1.8	16	400	1000
4x6 re	1	2.76	0.7	1.8	17	475	1000
4x6 rm	7	3.12	0.7	1.8	17	500	1000
4x10 rm	7	4.01	0.7	1.8	20	700	1000
4x16 rm	7	5.03	0.7	1.8	22	975	1000
4x25 rm	7	6.3	0.9	1.8	26	1450	1000
4x35 sm	6	-	0.9	1.8	26	1650	1000
4x50 sm	6	-	1.0	1.9	30	2175	1000
4x70 sm	12	-	1.1	2.0	34	3050	500
4x95 sm	15	-	1.1	2.1	38	4100	500
4x120 sm	18	-	1.2	2.3	43	5125	500
4x150 sm	18	-	1.4	2.4	47	6300	500
4x185 sm	30	-	1.6	2.6	52	7825	500
4x240 sm	34	-	1.7	2.8	58	10150	500
4x300 sm	34	-	1.8	3.0	64	12575	500
4x400 sm	53	-	2.0	3.3	73	16075	250
4x500 sm	53	-	2.2	3.5	80	20375	250

re : Round Solid
rm : Round Stranded
sm : Sectoral Stranded

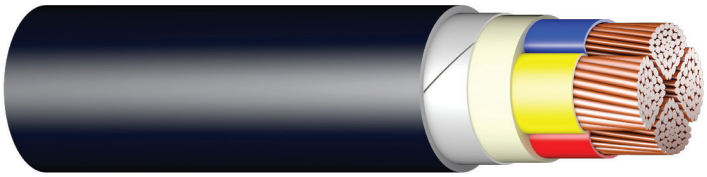
Colour code (1)
4 cores : Red, Yellow, Blue, Black

Colour code (2)
4 cores : Blue, Brown, Black, Grey

For sectoral conductors, number of wires mentioned is minimum number of wires in accordance with IEC 60228

XLPE INSULATED, LSHF SHEATHED CABLES

COPPER CONDUCTORS | IEC 60502-1 | 600/1000 VOLTS



STEEL WIRE ARMOURED

Steel Wire dia.	Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm	mm	mm	Kg/Km	meters
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
0.8	1.8	18	600	1000
1.25	1.8	19	800	1000
1.25	1.8	20	850	1000
1.25	1.8	22	1100	1000
1.6	1.8	25	1600	1000
1.6	1.8	29	2175	1000
1.6	1.9	30	2400	1000
1.6	2.0	33	3025	500
2.0	2.2	39	4325	500
2.0	2.3	43	5500	500
2.5	2.5	48	7075	500
2.5	2.6	52	8425	500
2.5	2.8	57	10200	500
2.5	3.0	64	12850	250
2.5	3.2	70	15550	250
3.15	3.5	80	20450	250
3.15	3.8	88	25225	250

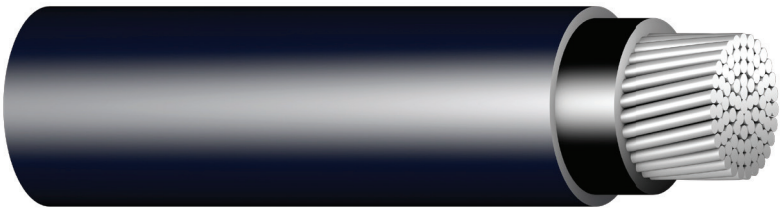
STEEL TAPE ARMOURED

St. Tape Thickness	Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm	mm	mm	Kg/Km	meters
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
0.2	1.8	17	475	1000
0.2	1.8	17	550	1000
0.2	1.8	18	600	1000
0.2	1.8	20	800	1000
0.2	1.8	23	1100	1000
0.2	1.8	27	1600	1000
0.2	1.8	27	1800	1000
0.2	1.9	31	2350	1000
0.2	2.1	35	3275	500
0.5	2.3	41	4725	500
0.5	2.4	45	5800	500
0.5	2.6	49	7050	500
0.5	2.7	54	8650	500
0.5	2.9	60	11075	500
0.5	3.1	66	13600	250
0.5	3.4	75	17250	250
0.8	3.7	84	22475	250

Tolerence range :
Overall diameter -2%, +8%
Packing ± 5%

XLPE INSULATED, LSHF SHEATHED CABLES

ALUMINIUM CONDUCTORS STANDARD : IEC 60502-1 600/1000 VOLTS



CABLE CORE(S) — UNARMOURED

Nominal Area	No. of wires	Approx. Conductor diameter	Nominal Insulation thickness	Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm^2	No.	mm	mm	mm	mm	Kg/Km	meters
1x16 rm	7	5.0	0.7	1.4	10	110	1000
1x25 rm	7	6.30	0.9	1.4	11	150	1000
1x35 rm	7	7.41	0.9	1.4	12	200	1000
1x50 rm	19	8.75	1.0	1.4	14	250	1000
1x70 rm	19	10.55	1.1	1.4	16	325	1000
1x95 rm	19	12.4	1.1	1.5	18	425	1000
1x120 rm	37	14.0	1.2	1.5	20	525	1000
1x150 rm	37	15.5	1.4	1.6	22	650	1000
1x185 rm	37	17.4	1.6	1.6	24	775	1000
1x240 rm	61	19.9	1.7	1.7	27	1000	500
1x300 rm	61	22.2	1.8	1.8	30	1200	500
1x400 rm	61	25.2	2.0	1.9	33	1525	500
1x500 rm	61	28.6	2.2	2.0	37	1925	500
1x630 rm	91	32.6	2.4	2.2	42	2475	500

CABLE CORE(S) — UNARMOURED

2x16 rm	7	5	0.7	1.8	19	450	1000
2x25 rm	7	6.30	0.9	1.8	23	625	1000
2x35 rm	7	7.41	0.9	1.8	25	775	1000

CABLE CORE(S) — UNARMOURED

3x16 rm	7	5	0.7	1.8	20	500	1000
3x25 rm	7	6.30	0.9	1.8	24	700	1000
3x35 rm	7	7.41	0.9	1.8	26	750	1000
3x50 rm	19	8.75	1.0	1.8	30	925	500
3x70 rm	19	10.55	1.1	1.9	35	1270	500
3x95 rm	19	12.4	1.1	2.0	39	1620	500
3x120 rm	37	14.0	1.2	2.1	43	1975	500
3x150 rm	37	15.47	1.4	2.3	48	2445	500
3x185 rm	37	17.36	1.6	2.4	53	3000	250
3x240 rm	61	19.89	1.7	2.6	60	3825	250
3x300 rm	61	22.23	1.8	2.8	66	4640	250
3x400 rm	61	25.2	2.0	3.1	73	5845	250
3x500 rm	61	28.62	2.2	3.3	83	7405	250

rm : Round Stranded
sm : Sectoral Stranded

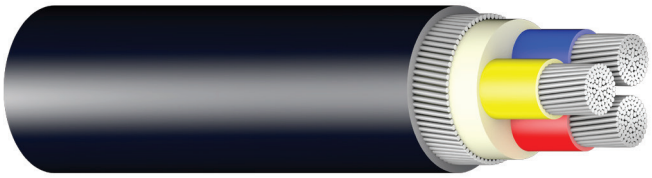
Colour code (1)
1 Cores : Black (Red on request)
2 Cores : Red, Black
3 Cores : Red, Yellow, Blue

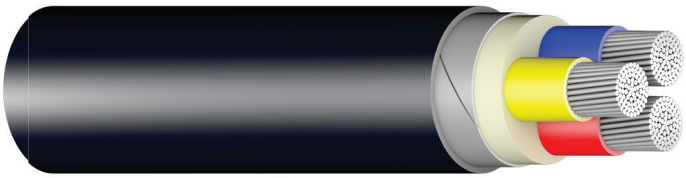
Colour code (2)
1 Cores : Brown or Blue
2 Cores : Brown, Blue
3 Cores : Brown, Black, Grey

Single core cables are Aluminium Armoured as per IEC 60502-1 recommendation.
For sectoral conductors, number of wires mentioned is minimum number of wires in accordance with IEC 60228

XLPE INSULATED, LSHF SHEATHED CABLES

ALUMINIUM CONDUCTORS STANDARD : IEC 60502-1 600/1000 VOLTS





ALUMINIUM WIRE ARMOURED

Nominal Alum/Steel Wire dia.	Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm	mm	mm	Kg/Km	meters
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
1.25	1.8	19	500	1000
1.25	1.8	21	600	500
1.25	1.8	23	725	500
1.6	1.8	26	900	500
1.6	1.8	27	1025	500
1.6	1.8	30	1225	500
1.6	1.9	33	1475	500
1.6	1.9	35	1725	500
2.0	2.1	40	2275	500
2.0	2.2	44	2750	250
2.0	2.3	49	3350	250

ALUMINIUM TAPE ARMOURED

Nominal Alum/Steel tape thickness	Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm	mm	mm	Kg/Km	meters
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
0.5	1.8	19	450	500
0.5	1.8	21	550	500
0.5	1.8	23	675	500
0.5	1.8	24	775	500
0.5	1.8	26	900	500
0.5	1.8	29	1075	500
0.5	1.8	31	1300	500
0.5	1.9	34	1550	500
0.5	2.0	38	1950	500
0.5	2.1	42	2400	250
0.5	2.3	47	3000	250

STEEL WIRE ARMOURED

1.25	1.8	22	850	1000
1.6	1.8	26	1265	1000
1.6	1.8	28	1475	500

STEEL TAPE ARMOURED

0.2	1.8	20	550	1000
0.2	1.8	24	750	1000
0.2	1.8	26	925	500

STEEL WIRE ARMOURED

1.25	1.8	23	925	1000
1.6	1.8	27	1375	1000
1.6	1.8	30	1475	500
1.6	1.9	33	1775	500
2.0	2.0	39	2540	500
2.0	2.2	43	3075	500
2.0	2.3	47	3565	500
2.5	2.5	53	4655	250
2.5	2.6	58	5460	250
2.5	2.8	65	6590	250
2.5	3.0	71	7665	250
2.5	3.3	79	9175	250
3.15	3.5	89	12240	250

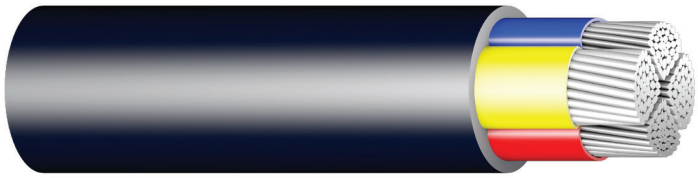
STEEL TAPE ARMOURED

0.2	1.8	21	625	1000
0.2	1.8	25	850	1000
0.2	1.8	27	900	500
0.2	1.8	31	1100	500
0.2	2.0	36	1500	500
0.2	2.1	40	1880	500
0.5	2.3	45	2685	500
0.5	2.4	50	3210	250
0.5	2.6	55	3870	250
0.5	2.7	62	4780	250
0.5	2.9	68	5690	250
0.5	3.2	76	7020	250
0.5	3.4	85	8730	250

Tolerence range :
Overall diameter -2%, +8%
Packing ± 5%

XLPE INSULATED, LSHF SHEATHED CABLES

ALUMINIUM CONDUCTORS STANDARD : IEC 60502-1 600/1000 VOLTS



CABLE CORE(S) UNARMOURED

Area	wires		diameter		thickness		Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm^2	No.		mm		mm		mm	mm	Kg/Km	meters
	Ph	Ne	Ph	Ne	Ph	Ne				
3x25 rm+16	7	7	6.3	4.98	0.9	0.7	1.8	25	775	1000
3x35 sm+16	6	7	-	4.98	0.9	0.7	1.8	25	750	500
3x50 sm+25	6	7	-	6.3	1.0	0.9	1.8	29	950	500
3x70 sm+35	12	7	-	7.41	1.1	0.9	1.9	33	1275	500
3x95 sm+50	15	19	-	8.75	1.1	1.0	2.1	37	1650	500
3x120 sm+70	15	19	-	10.55	1.2	1.1	2.2	40	2000	500
3x150 sm+70	15	19	-	10.55	1.4	1.1	2.3	45	2425	500
3x185 sm+95	30	19	-	12.4	1.6	1.1	2.5	50	3000	250
3x240 sm+120	30	37	-	14.0	1.7	1.2	2.7	55	3850	250
3x300 sm+150	30	37	-	15.47	1.8	1.4	2.9	61	4650	250
3x400 sm+185	53	37	-	17.36	2.0	1.6	3.1	68	5875	250
3x500 sm+240	53	61	-	19.89	2.2	1.7	3.4	76	7425	250

CABLE CORE(S) UNARMOURED

4x16 rm	7	4.98	0.7	1.8	22	600	1000
4x25 rm	7	6.30	0.9	1.8	26	850	1000
4x35 sm	6	-	0.9	1.8	26	800	500
4x50 sm	6	-	1.0	1.9	30	1025	500
4x70 sm	12	-	1.1	2.0	34	1375	500
4x95 sm	15	-	1.1	2.1	38	1775	500
4x120 sm	15	-	1.2	2.3	43	2200	500
4x150 sm	15	-	1.4	2.4	47	2675	500
4x185 sm	30	-	1.6	2.6	52	3275	250
4x240 sm	30	-	1.7	2.8	58	4225	250
4x300 sm	30	-	1.8	3.0	64	5100	250
4x400 sm	53	-	2.0	3.3	73	6550	250
4x500 sm	53	-	2.2	3.5	80	8175	250

re : Round Solid
rm : Round Stranded
sm : Sectoral Stranded
Ph : Phase Conductor
Ne : Neutral Conductor

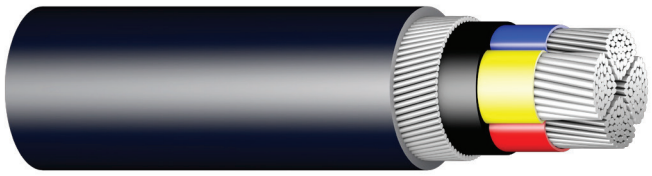
Colour code (1)
3 1/2 Cores : Red, Yellow, Blue, Black
4 cores : Red, Yellow, Blue, Black

Colour code (2)
3 1/2 Cores : Blue, Brown, Black, Grey
4 cores : Blue, Brown, Black, Grey

For 3 1/2 cores, neutral conductors are round stranded.
For sectoral conductors, number of wires mentioned is minimum number of wires in accordance with IEC 60228

XLPE INSULATED, LS FHSHEATHED CABLES

ALUMINIUM CONDUCTORS STANDARD : IEC 60502-1 600/1000 VOLTS



STEEL WIRE ARMOURED

Steel Wire dia.	Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm	mm	mm	mm	mm
1.6	1.8	28	1475	500
1.6	1.8	28	1450	500
1.6	1.9	32	1775	500
2.0	2.1	37	2475	500
2.0	2.2	41	2975	500
2.0	2.4	45	3500	500
2.5	2.5	50	4510	250
2.5	2.7	55	5300	250
2.5	2.9	61	6400	250
2.5	3.0	66	7400	250
3.15	3.4	76	9875	250
3.15	3.6	83	11875	250

STEEL TAPE ARMOURED

Steel Tape Thickness	Nominal Sheath thickness	Approx. Overall diameter	Approx. Weight	Packing
mm	mm	mm	Kg/Km	meters
0.2	1.8	26	925	500
0.2	1.8	26	885	500
0.2	1.9	30	1125	500
0.2	2.0	34	1485	500
0.5	2.2	39	2225	500
0.5	2.3	43	2650	500
0.5	2.5	47	3175	250
0.5	2.6	52	3800	250
0.5	2.8	58	4725	250
0.5	3.0	63	5625	250
0.5	3.3	71	7000	250
0.5	3.5	78	8650	250

STEEL WIRE ARMOURED

1.6	1.8	25	1200	1000
1.6	1.8	29	1575	500
1.6	1.9	30	1550	500
1.6	2.0	33	1875	500
2.0	2.2	39	2650	500
2.0	2.3	43	3175	500
2.5	2.5	48	4175	250
2.5	2.6	52	4850	250
2.5	2.8	57	5650	250
2.5	3.0	64	6900	250
2.5	3.2	70	8175	250
3.15	3.5	80	10950	250
3.15	3.8	88	13000	250

STEEL TAPE ARMOURED

0.2	1.8	23	725	1000
0.2	1.8	27	1000	500
0.2	1.8	27	950	500
0.2	1.9	31	1200	500
0.2	2.1	35	1600	500
0.5	2.3	41	2400	500
0.5	2.4	45	2875	250
0.5	2.6	50	3450	250
0.5	2.7	54	4000	250
0.5	2.9	60	5150	250
0.5	3.1	66	6125	250
0.5	3.4	75	7700	250
0.8	3.7	84	10250	250

Tolerence range :
Overall diameter -2%, +8%
Packing ± 5%

LOW VOLTAGE SINGLE CORE CABLE
(IN TREFOIL FORMATION)
LINEAR RESISTANCE , REACTANCE AND VOLTAGE DROP
XLPE INSULATED (90 °C) COPPER CONDUCTOR

SIZE mm²	R (DC) 20	R (DC) 90	R (AC) 90	X	Z 90	VD
1.5	12.1	15.43	15.43	0.165	15.43	21.43
2.5	7.41	9.45	9.45	0.149	9.45	13.85
4	4.61	5.88	5.88	0.143	5.88	8.30
6	3.08	3.93	3.93	0.134	3.93	5.58
10	1.83	2.333	2.333	0.132	2.337	3.37
16	1.15	1.466	1.466	0.124	1.471	2.16
25	0.727	0.927	0.927	0.121	0.935	1.41
35	0.524	0.668	0.669	0.115	0.679	1.046
50	0.387	0.493	0.494	0.111	0.506	0.800
70	0.268	0.342	0.343	0.105	0.359	0.584
95	0.193	0.246	0.248	0.103	0.269	0.451
120	0.153	0.195	0.197	0.100	0.221	0.377
150	0.124	0.158	0.160	0.100	0.189	0.326
185	0.0991	0.126	0.129	0.099	0.163	0.282
240	0.0754	0.0961	0.0993	0.097	0.139	0.238
300	0.0601	0.0766	0.0812	0.096	0.126	0.212
400	0.0470	0.0599	0.0636	0.094	0.114	0.186
500	0.0366	0.0467	0.0513	0.092	0.105	0.167
630	0.0283	0.0361	0.0420	0.091	0.100	0.153

LOW VOLTAGE MULTI CORE CABLE
LINEAR RESISTANCE , REACTANCE AND VOLTAGE DROP
XLPE INSULATED (90 °C) COPPER CONDUCTOR

SIZE mm²	R (DC) 20	R (DC) 90	R (AC) 90	X	Z 90	VD
1.5	12.1	15.43	15.43	0.165	15.43	21.55
2.5	7.41	9.45	9.45	0.143	9.45	13.24
4	4.61	5.88	5.88	0.132	5.88	8.28
6	3.08	3.93	3.93	0.121	3.93	5.57
10	1.83	2.333	2.333	0.109	2.336	3.35
16	1.15	1.466	1.466	0.106	1.470	2.14
25	0.727	0.927	0.927	0.103	0.933	1.39
35	0.524	0.668	0.669	0.098	0.676	1.03
50	0.387	0.493	0.494	0.098	0.504	0.786
70	0.268	0.342	0.343	0.095	0.356	0.574
95	0.193	0.246	0.248	0.093	0.264	0.440
120	0.153	0.195	0.197	0.091	0.217	0.370
150	0.124	0.158	0.160	0.091	0.184	0.316
185	0.0991	0.126	0.129	0.091	0.1579	0.273
240	0.0754	0.0961	0.0993	0.090	0.1340	0.231
300	0.0601	0.0766	0.0812	0.090	0.1212	0.206
400	0.0470	0.0599	0.0636	0.089	0.1094	0.181
500	0.0366	0.0467	0.0513	0.088	0.1019	0.163
630	0.0283	0.0361	0.0420	0.088	0.0975	0.150

R(DC) : Direct Current Resistance at 20 °C, Ohm/Km 20
R(DC) : Direct Current Resistance at 90 °C, Ohm/Km 90
R(AC) : Alternating Current Resistance at 90 °C, Ohm/Km 90

X : Reactance,Ohm / Km
Z : Impedance, Ohm / Km
VD : Voltage Drop (Phase to Phase), V/A.Km

LOW VOLTAGE SINGLE CORE CABLE
(IN TREFOIL FORMATION)
LINEAR RESISTANCE , REACTANCE AND VOLTAGE DROP
XLPE INSULATED (90 °C) ALUMINIUM CONDUCTOR

SIZE mm^2	R (DC) 20	R (DC) 90	R (AC) 90	X	Z 90	VD
16	1.91	2.449	2.449	0.124	2.452	3.522
25	1.20	1.539	1.539	0.121	1.544	2.258
35	0.868	1.113	1.113	0.115	1.119	1.662
50	0.641	0.822	0.822	0.111	0.829	1.254
70	0.443	0.568	0.568	0.105	0.578	0.896
95	0.320	0.410	0.411	0.103	0.424	0.677
120	0.253	0.324	0.325	0.100	0.340	0.554
150	0.206	0.264	0.265	0.100	0.283	0.471
185	0.164	0.210	0.211	0.099	0.233	0.395
240	0.125	0.160	0.162	0.097	0.189	0.325
300	0.100	0.128	0.130	0.096	0.162	0.280
400	0.0778	0.100	0.102	0.094	0.139	0.239
500	0.0605	0.078	0.081	0.092	0.123	0.208
630	0.0469	0.060	0.064	0.091	0.111	0.183

LOW VOLTAGE MULTI CORE CABLE
(IN TREFOIL FORMATION)
LINEAR RESISTANCE , REACTANCE AND VOLTAGE DROP
XLPE INSULATED (90 °C) ALUMINIUM CONDUCTOR

SIZE mm^2	R (DC) 20	R (DC) 90	R (AC) 90	X	Z 90	VD
16	1.91	2.449	2.449	0.106	2.451	3.504
25	1.20	1.539	1.539	0.103	1.542	2.240
35	0.868	1.113	1.113	0.098	1.117	1.644
50	0.641	0.822	0.822	0.098	0.828	1.241
70	0.443	0.568	0.568	0.095	0.576	0.886
95	0.320	0.410	0.411	0.093	0.421	0.666
120	0.253	0.324	0.325	0.091	0.337	0.545
150	0.206	0.264	0.265	0.091	0.280	0.462
185	0.164	0.210	0.211	0.091	0.230	0.387
240	0.125	0.160	0.162	0.090	0.185	0.318
300	0.100	0.128	0.130	0.090	0.158	0.274
400	0.0778	0.100	0.102	0.089	0.135	0.234
500	0.0605	0.078	0.081	0.088	0.120	0.204
630	0.0469	0.060	0.064	0.088	0.109	0.180

R(DC) : Direct Current Resistance at 20 °C, Ohm/Km
20

R(DC) : Direct Current Resistance at 90 °C, Ohm/Km
90

R(AC) : Alternating Current Resistance at 90 °C, Ohm/Km
90

X : Reactance,Ohm / Km

Z : Impedance, Ohm / Km

VD : Voltage Drop (Phase to Phase), V/A.Km

HALOGEN-FREE 450/750 V WIRES WITH CROSSLINKED INSULATION, AND LOW EMISSION OF SMOKE

This is to confirm that all Riyadh Cables' standard products of subject 450/750 V WIRES are according to BS EN 50525-3-41: "Electric cables - Low voltage energy cables of rated voltages up to and including 450/750 V (U0/U): Cables with special fire performance - Single core non-sheathed cables".

According to BS EN 50525-3-41, the only given designation to insulation is "halogenfree crosslinked insulation, and low emission of smoke"; consequently, different descriptions such as LSF or FR-XLPE refer to the same wire types which have the following properties as per BS EN 50525-3-41:

- Halogen-free
- Flame retardant as per IEC 60332-1
- Crosslinked insulation
- Low emission of smoke

0.6/1.0 KV CABLES WITH LOW LEVELS OF SMOKE EMISSION AND HALOGEN-FREE GAS EMISSION

This is to confirm that all Riyadh Cables' standard products of subject cables are according to IEC 60502-1, and have the "properties of reduced flame spread, low levels of smoke emission and halogen-free gas emission when exposed to fire".

The only given designation for "cables which exhibit properties of reduced flame spread, low levels of smoke emission and halogen-free gas emission when exposed to fire" is defined as HALOGEN FREE type "ST8" in Table 4 of Clause 4.3 of IEC 60502-1:

Table 4 – Maximum conductor temperatures for different types of sheathing compound

Sheathing compound	Abbreviated designation	Maximum conductor temperature in normal operation °C
a) *Thermoplastic:*		
Polyvinyl chloride (PVC)	ST_1	80
	ST_2	90
Polyethylene	ST_3	80
	ST_7	90
Halogen free	ST_8	90
b) *Elastomeric:*		
Polychloroprene, chlorosulfonated polyethylene or similar polymers	SE_1	85

Common description of subject cables may be any of the followings:

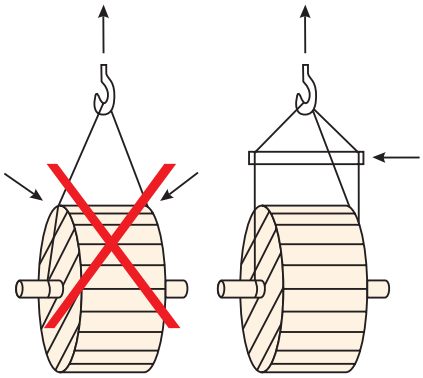
- "LSF": low smoke and fumes
- "LSFR": low smoke and flame retardant
- "LSZH": low smoke zero halogen
- "LS0H": low smoke zero "0" halogen

Based on the above, different descriptions refer to the same cable types which have the following properties as per IEC 60502-1:

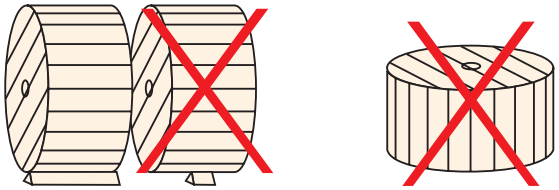
- HALOGEN FREE type where outer sheath is of Type "ST8" material.
- Inner sheath/separation sheath – as applicable – shall be of halogen free type material.
- Smoke emission: light transmittance ≥ 60% as per IEC 61034-2
- Maximum acid gas emission as per IEC 60754-1 is 0.5%.
- Cables are flame retardant as per IEC 60332-3-24 Cat.C

Drum Handling Instructions

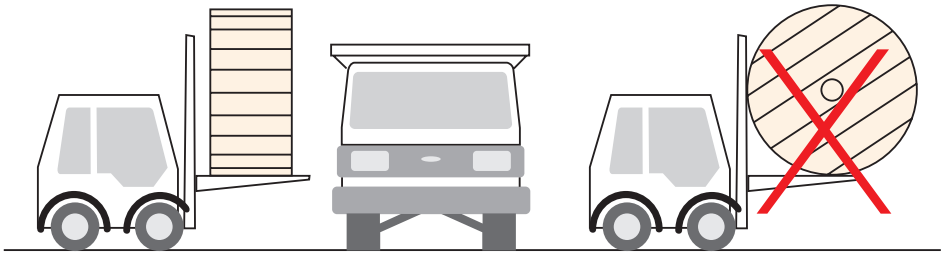
Cables and Conductors should be installed by trained personnel in accordance with good engineering practices, recognized codes of practice, statutory local requirements, IEE wiring regulations and where relevant, in accordance with any specific instructions issued by the company. Cables are often supplied in heavy cable reels and handling these reels can constitute a safety hazard. In particular, dangers may arise during the removal of steel binding straps and during the removal of retaining battens and timbers which may expose projecting nails.



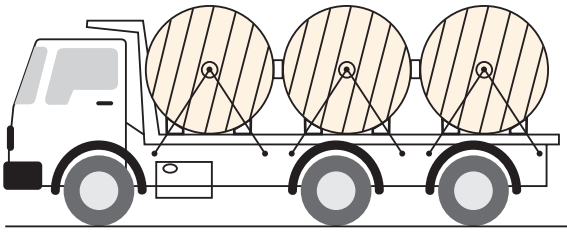
Lifting cable drums using crane.



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



Lift drums on fork trucks correctly.



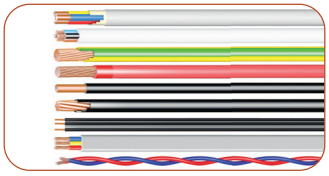
Secure drums adequately before transportation.

Roll in the direction shown by the arrow.

OUR PRODUCTS

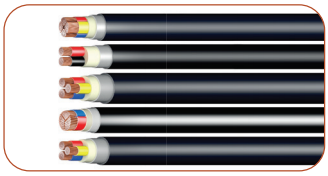
Wires

Riyadh Cables manufactures wires, cords and wiring cables rated 300/300 V, 300/500 V, 600 V and 450/750 V to be used in the supply of electric power, lighting and internal wiring for residences and offices, and other similar environments of a non-industrial nature as specified in IEC 60227, BS 6004,UL 83 and BS EN 50525-3-41



Low Voltage Lead Sheathed

Low Voltage Lead Sheathed Cables are used mainly in the utilities and petrochemical industries owing to the lead sheathing's resistance to sulfides, water, oil and any corrosive chemicals found in the ground water

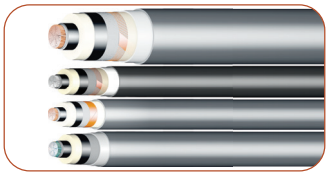


Medium Voltage Cables

Medium Voltage Cables support a voltage range between 6 kV and 36 kV, making them ideal for use in infrastructure, including the distribution and transmission of power

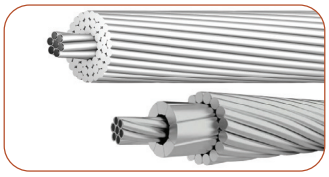
High Voltage & Extra High Voltage Cables

High voltage power cables (HV): Up to 380 kV, ideal for transmission systems. At Riyadh Cables, all XLPE insulations of our High and Extra High Voltage Cables are done pursuant to standards outlined by IEC 60840 and IEC 62067



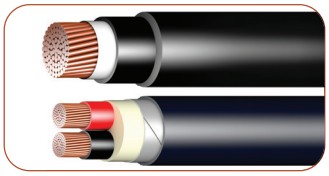
Overhead Lines

We produce a range of Overhead Lines, all of which are manufactured as per the standards outlined in IEC, BS, BS EN and ASTM specifications, as applicable. Overhead conductors for use up to 500 kV



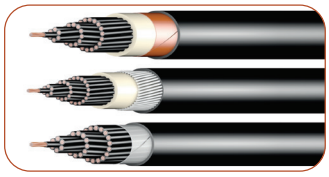
Fire Retardant Cables

Fire Survival Cable
(fire resistant, retardant and low smoke Halogen Free Cables)



Control Cables

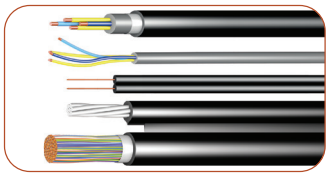
Control Cables are the cables of choice for control circuits. At Riyadh Cables, we offer a range of Control Cables, with XLPE or PVC insulation, with the option of armour and/or screening



OUR PRODUCTS

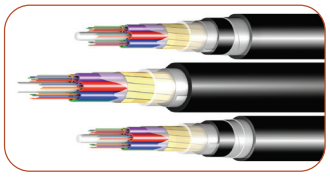
Copper Telephone Cables

We produce an extensive range of telephone cables, up to 3,600 pairs, in accordance with specifications supplied by Saudi Telecom, as well as numerous international standards bodies



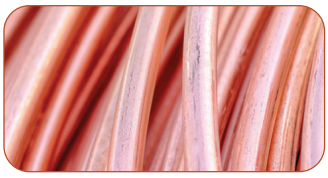
Fiber Optic Cables

At Riyadh Cables, we produce Loose Tube Type Cables and Tight Buffer Types Cables for use as fiber optic cables for outdoor and indoor use respectively



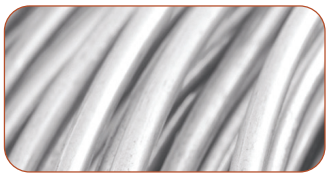
Copper Rods

We produce high purity copper rods of 8 mm diameter. These copper rods are used in producing conductors for all types of cables and metallic screens



Aluminium Rods

We produce high purity aluminium rods of 9.5 mm diameter. These aluminium rods are used in producing conductors for power cables and overhead line conductors and armouring



PVC Granules

We produce the PVC grades that are required for insulation and sheathing material in cables. Our PVC Granules are produced to the best quality specifications using state-of-the-art machines and the most advanced automatic mixing technology

LV XLPE compounds

We produce LV XLPE material, which is used as insulation in low voltage cables. LV XLPE compounds are produced to the very best quality specifications and highest purity levels using state-of-the-art machines and the most advanced automatic mixing technology

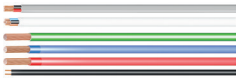
Wooden & Steel Drums

One of the most advanced plants for manufacturing different sizes of wooden and steel drums used in the cables industry. The drums are manufactured on high-speed production lines to the highest quality, with the lowest possible costs

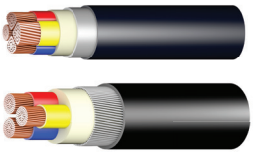
OUR PRODUCTS

Power Cable

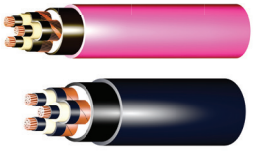
Wires



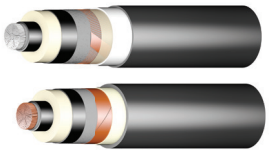
Low Voltage
Lead Sheathed



Medium Voltage
Cables



High Voltage Cables



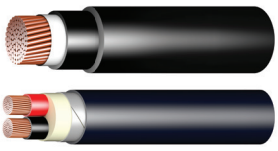
Overhead Lines Conductors

Overhead Lines

Gap Conductor

Fire Retardant Cables

Fire Survival Cable
(fire resistant,
retardant and low
smoke Halogen Free
Cables)



Control Cables

Control Cables

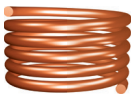
Communication Cables

Telephone Cables

Fiber Optic
Cables

Copper & Aluminum Rods

High Quality
Copper Rods



High Quality
Aluminum Rods

Polymers

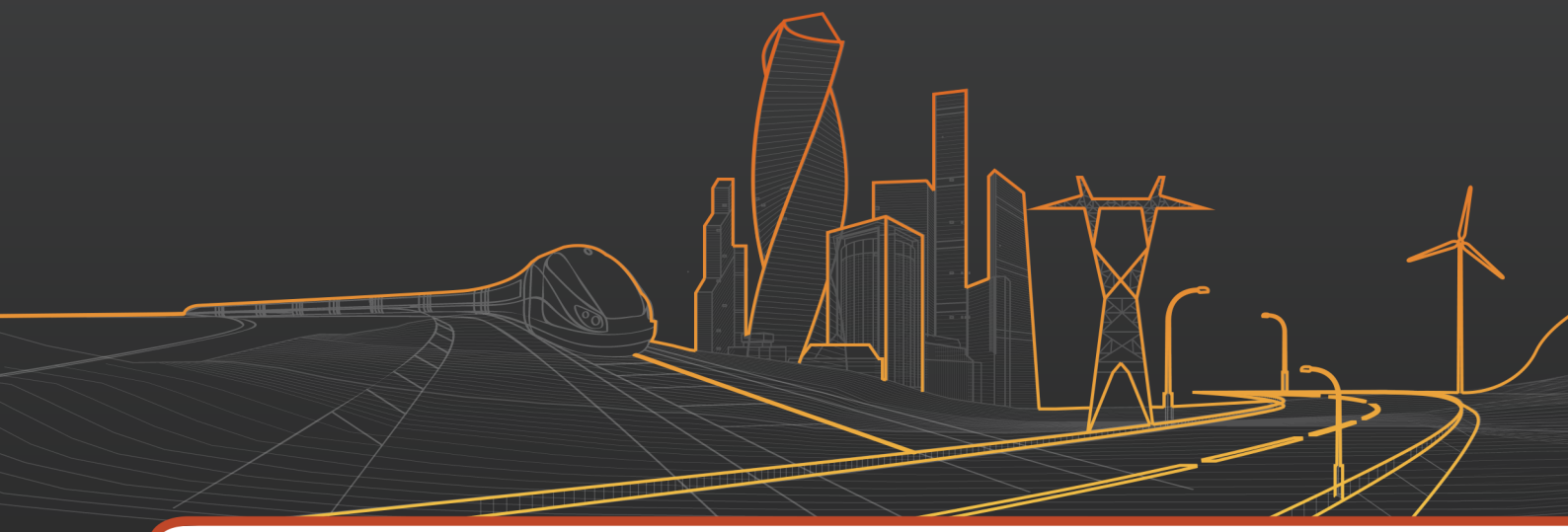
PVC Compounds

LV XLPE Compounds

Wooden & Steel Drums

Wooden & Steel Drums

RIYADH CABLES GROUP



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