



**National Cable and Wire  
Manufacturing Company**

**CABLECO**

*Fire Resistant & Flame Retardant Cables*







الشركة الوطنية لصناعة الكوابل والاسلاك الكهربائية  
NATIONAL CABLE & WIRE MANUFACTURING CO.



## Fire Resistant Cables

- long term circuit integrity in fire
- low smoke and toxic gas emissions
- zero halogen gases
- high temperature installations up to 950 °C





# INDEX

## Contents

## Page

Introduction-----	7
1-Fire Hazards -----	8
2-Materials and Compounds in Use -----	8
3-Construction of Fire Resistant Cables -----	10
4- Characteristics of Fire Resistant Cables -----	10
5- Technical Data of Fire Resistant Cables -----	11
6- Fire Resistant of Single Core Cables -----	11
7- Fire Resistant of Multi Core Cables -----	12
8- Construction of Flame Retardant Cables -----	13
9- Flame Retardant Cables (Single and Two Cores) -----	14
10- Flame Retardant of Multi Cores Cables -----	15
11-Ordering Guide -----	16





## Introduction

تأسست الشركة الوطنية لصناعة الكوابل والأسلاك الكهربائية (كيبلكو) في الأردن عام ١٩٨٣ لإنتاج الأسلاك والكوابل الكهربائية وقد أقيم مصنع الشركة في مدينة الزرقاء، وهو مجهز بسلسلة من الخطوط الإنتاجية لتصنيع الأسلاك والكوابل (العادية و المسلحة ) ذات الموصل النحاسي أو الألمنيوم المعزولة بمادة ال ( PVC ) العادية أو الخاصة والتي تصنع حسب الطلب أو (XLPE) أو (P.E) أو المطاط الصناعي (EPR) أو (XLLSHF,LSHF HALOGEN FREE) على حسب المواصفات الدولية أو البريطانية أو الألمانية (IEC,BS,VDE) للتوافق مع السوق الأردني والعالمي ، وقد زود المصنع بسلسلة من الأجهزة الخاصة للقياس والمعايرة حسب المتطلبات الدولية (International Traceability) ليتم مراقبة وضبط الجودة لمنتجاتنا بداية من المواد الأولية ومرورا بمراحل التصنيع المختلفة وحتى تسليم المنتج بالشكل النهائي للزبون.

وفي عام ٢٠١١ تم العمل على إنتاج كوابل ذات مواصفات خاصة عالمية مثل: (LAN Data Cables & Fire Resistant Cables) لتواكب التطور الحاصل على أنظمة التكنولوجيا الحديثة ومعايير السلامة العامة في المؤسسات والمباني الحكومية والخاصة.

وقد ارتأت الشركة إثباتا لقدرتها وتميزها بالجودة لزبائنها الكرام أن تستوفي متطلبات التأهيل حسب مواصفات الآيزو (ISO 9000) حيث قد تم الحصول على شهادة الآيزو ISO 9002/1994 في عام 1996 وكذلك شهادة الآيزو ISO 9001/2000 في عام 2003 .

وفي عام 2009 تم الحصول على شهادة الآيزو ISO 9001/2008 من الجهات المعتمدة في هذا المجال.

National Cable and Wire Manufacturing Company (CABLECO) was established in 1983 in Jordan, for production of electrical wires and cables (Armoured and Non Armoured).

The factory is located at Zarqa city, and equipped with series Of production lines designed to produce wires and cables of copper or Aluminum conductors insulated /sheathed by (ordinary PVC or special types of PVC) or (XLPE) or (P.E) or (synthetic rubber EPR) or (XLLSHF, LSHF HALOGEN FREE) according to the International, British or German standards (IEC, BS, VDE) to comply with Jordanian and international markets.

The factory is also equipped with series of (Testing and Measuring) equipments calibrated according to international standards/Traceability to monitor and to control the quality of our production, starting from raw material, going through various productions /manufacturing stages and up to delivery stages/finished products.

In 2011, the company has produced cables with special international standards like (LAN Data cables & Fire Resistant Cables), to be compatible with modern technologies and international safety standards in public and private buildings.

Our objective is to produce high quality cables to satisfy the customer requirements therefore, we have achieved registration to ISO 9002/1994 in year 1996 and ISO 9001/2000 in year 2003, and in year 2009 we have achieved registration to ISO 9001/2008.

## 1. Fire Hazards

In all fire events, fire propagation, dense, smoke, acid gases, toxic and irritant, fumes, are the main obstacles for the safe evacuation of crowded areas. They limit the means of escape in public areas, high-rise buildings, shopping centers and malls, hotels, hospitals, old age homes, conference centers, hazardous areas, ships, educational centers, airports, etc...

With the emission of hydrogen chloride gas, it forms hydrochloric acid in the presence of humidity. This causes irritation to humans and corrosive damage to electronic equipments and risks to areas like those, including:

- Storage areas especially electronic equipments.
- Telephone exchanges, computer and data transmission centers.
- Military installations.

Such problems initiated the researches to develop materials, and compounds, which have long-term integrity in fire, with high burning temperature, fire resistance, fire retardant, low smoke, low toxic fume emission, halogen free, and more difficult

## 2 . Materials and Compounds in Use

- **LSFOH** compound (Low Smoke, Fire & Flame Retardant and Zero Halogen). This is for fire and flame retardation with low smoke, low toxic irritant flame.
- **SR (Silicon Rubber):** for fire resistance up to 200 - 250 °C.
- **Mica / Glass Tapes:** they are used for the highest circuit integrity; they ensure operation of circuits and equipment up to 900 °C. They provide the maximum degree of safety for people and environment, they are now mostly used for the following systems :
  - Smoke detection
  - Alarm system
  - Telephone centers
  - Passengers elevators
  - Control, computer and data transmission, communication centers.
  - Emergency power supplies.
  - Lighting.
  - Survival systems.
  - Public address systems.



**CABLECO** is producing fire resistant cables for the highest circuit integrity up to 900 C°, by using Mica/ Glass tapes and LSFOH (Low Smoke, Fire & Flame Retardant and Zero Halogen Compound).

Such cables comply with:

- IEC-331
- BS6387 CAT C

These cables are also meeting the following standards, which are related to fire hazard:

**1- Fire Retardant - according to :**

- IEC 332 -3
- BS 4066 -3

**2- Flame Retardant - according to :**

- IEC 332 -1
- BS 4066 -1

**3- Low Smoke - according to :**

- IEC 61034
- BS 7622-93
- BS 6724

**4- Non-Corrosivity , Non-Toxicity, Zero Halogen - according to :**

- IEC 60754 – 1
- IEC 60754 - 2
- BS 6425 - 1



### 3. Construction of Fire Resistant Cables



- **Conductor:** solid or standard, annealed copper to class 1 or 2 to BS 6360 or IEC 60228. In addition, tinned copper is used if required.
- **Mica / glass backed Tape:** with stand temperature up to 900 C° at 1.1 KV for 3 hours. It is wrapped with one layer or 2 layers as required in contact with the conductor.
- **Insulation:** with low smoke, zero halogen, cross linked polyethylene (XLPE), and colored.
- **PET Tape:** Tape wrapping after laying up of cores for multi core cables (optional)
- **Drain / Earth Wire:** same section as the conductor, solid, it is run along the lay up cores.
- **Screening:** Aluminum / PET Tape helically wrapped with 100% coverage or with 20-25% overlap. Drain wire is in contact with the Alum. Layer.
- **Bedding:** for Armoured cables, extruded with LSZH - XLPE.
- **Armouring:** Aluminum wires for single core cables and galvanized steel wires for multi-core cables.
- **Sheath :** cable is sheathed (Jacketed) LSZH Compound to BS7655 section 6-1 or LTS3
- **Colour:** Red or as required.
- **Rated Voltage:** 300 / 500 Volts.

### 4. Characteristics of Fire Resistant Cables

- Resistance to fire according to BS6387 CAT C
- Resistance to fire with water.
- Resistance to flame propagation.
- Low smoke, emission.
- No corrosivity, no acid.
- None toxic.

## 5. Technical Data of Fire Resistant Cables

- Test voltage core to core 500 volt
- Test voltage core to screen 2000 volt.
- Insulation resistance 100 M Ohm / Km
- Bending Radius ~ (Approx)  $\Omega$  6 X Cable  $\emptyset$



## 6. Fire Resistant Cables

CU/Mica Tape/XLLSHF Single Core 300/500 V According to BS 7629

Cable Code	Cores No	Size mm <sup>2</sup>	Strand Diameter No. X mm Class 1 Solid Class 2 Stranded	Insulation Thickness mm	Overall Diameter mm	Approx Weight Kg/Km
01509BS1.0SDT 01509BS1.0SRT	1	1.0	<u>1X1.13</u> <u>7X0.43</u>	0.6	2.9 3.1	15 15
01509BS1.5SDT 01509BS1.5SRT	1	1.5	<u>1X1.38</u> <u>7X0.53</u>	0.7	3.4 3.6	21 22
01509BS2.5SDT 01509BS2.5SRT	1	2.5	<u>1X1.78</u> <u>7X0.67</u>	0.8	4.0 4.2	32 33
01509BS4SRT	1	4.0	<u>7X0.85</u>	0.8	4.7	48

## 7. Fire Resistant Cables

CU/Mica Tape/XLLSHF/Screening/LSZH Multi Cores 300/500 V According to BS 7629

Cable Code	Cores No	Size mm <sup>2</sup>	Strand Diameter No. X mm Class 1 Solid Class 2 Stranded	Insulation Thickness mm	Sheathing Thickness mm	Overall Diameter mm	Approx Weight Kg/Km
01510BS2X1SDT 01510BS2X1SRT	2	1.0	<u>1X1.13</u> <u>7X0.43</u>	0.6	0.9	7.7 8.0	88 93
01510BS2X1.5SDT 01510BS2X1.5SRT	2	1.5	<u>1X1.38</u> <u>7X0.53</u>	0.7	0.9	8.6 9.0	115 123
01510BS2X2.5SDT 01510BS2X2.5SRT	2	2.5	<u>1X1.78</u> <u>7X0.67</u>	0.8	1.0	10.0 10.4	166 174
01510BS2X4SRT	2	4.0	<u>7X0.85</u>	0.8	1.1	11.7	241
01510BS3X1SDT 01510BS3X1SRT	3	1.0	<u>1X1.13</u> <u>7X0.43</u>	0.6	0.9	8.1 8.4	100 106
01510BS3X1.5SDT 01510BS3X1.5SRT	3	1.5	<u>1X1.38</u> <u>7X0.53</u>	0.7	0.9	9.1 9.5	132 141
01510BS3X2.5SDT 01510BS3X2.5SRT	3	2.5	<u>1X1.78</u> <u>7X0.67</u>	0.8	1.0	10.6 11.1	193 202
01510BS3X4SRT	3	4.0	<u>7X0.85</u>	0.8	1.1	12.5	282
01510BS4X1SDT 01510BS4X1SRT	4	1.0	<u>1X1.13</u> <u>7X0.43</u>	0.6	1.0	9.0 9.4	121 128
01510BS4X1.5SDT 01510BS4X1.5SRT	4	1.5	<u>1X1.38</u> <u>7X0.53</u>	0.7	1.0	10.1 10.6	160 171
01510BS4X2.5SDT 01510BS4X2.5SRT	4	2.5	<u>1X1.78</u> <u>7X0.67</u>	0.8	1.1	11.8 12.3	234 245
01510BS4X4SRT	4	4.0	<u>7X0.85</u>	0.8	1.2	13.8	342
01510BS5X1SDT 01510BS5X1SRT	5	1.0	<u>1X1.13</u> <u>7X0.43</u>	0.6	1.0	9.9 10.3	141 148
01510BS5X1.5SDT 01510BS5X1.5SRT	5	1.5	<u>1X1.38</u> <u>7X0.53</u>	0.7	1.0	11.1 11.7	186 200
01510BS5X2.5SDT 01510BS5X2.5SRT	5	2.5	<u>1X1.78</u> <u>7X0.67</u>	0.8	1.1	12.9 13.6	273 285
01510BS5X4SRT	5	4.0	<u>7X0.85</u>	0.8	1.2	15.2	400
01510BS6X1SDT 01510BS6X1SRT	6	1.0	<u>1X1.13</u> <u>7X0.43</u>	0.6	1.0	10.7 11.2	160 168
01510BS6X1.5SDT 01510BS6X1.5SRT	6	1.5	<u>1X1.38</u> <u>7X0.53</u>	0.7	1.1	12.3 12.9	218 233
01510BS6X2.5SDT 01510BS6X2.5SRT	6	2.5	<u>1X1.78</u> <u>7X0.67</u>	0.8	1.2	14.3 15.0	319 333
01510BS6X4SRT	6	4.0	<u>7X0.85</u>	0.8	1.3	16.8	466

## 8. Construction of Flame Retardant Cables

Flame retardant cables are designed for use in fire situations where the spread of flames along a cable route needs to be retarded, so flame retardant cables are widely used as fire survival cables.

LSF and Flame Retardant PVC or Low Smoke Zero Halogen (LSZH) cables are designed to reduce the spread of fire, toxic gases and smoke during fire.

Flame Retardant cables are constructed in the following steps:

**Conductor:** Stranded Annealed Copper to IEC 60228 Class 2

**Insulation:** XLPE or Cross Link Low Smoke and Halogen Free (XLSHF)

**Laying Up:** Insulated Cores are laid up in circular form

**Bedding:** LSF and Flame Retardant PVC or Low Smoke Zero Halogen (LSZH)

**Armouring:** Aluminum wires for single core cables and galvanized steel wires for multi-core cables

**Sheathing:** LSF and Flame Retardant PVC or Low Smoke Zero Halogen (LSZH)



## 9. Flame Retardant Power Cable CU/XLPE/LSZH/LSZH or (L.S.F PVC) According to IEC 60502-1

Cable Code	Cross Section Area	Conductor Dimension Round Sector	Insulation Thickness	One Core		Two Cores		
				Sheathing Thickness	Diameter	Bedding Thickness	Sheathing Thickness	Diameter
				mm	mm	mm	mm	mm
0129(-)IE(*)X1.5SRC	1.5	<u>7X0.53</u>	0.7	1.4	5.95	1.0	1.8	11.9
0129(-)IE(*)X2.5SRC	2.5	<u>7X0.67</u>	0.7	1.4	6.35	1.0	1.8	12.7
0129(-)IE(*)X4SRC	4	<u>7X0.85</u>	0.7	1.4	6.9	1.0	1.8	13.8
0129(-)IE(*)X6SRC	6	<u>7X1.04</u>	0.7	1.4	7.5	1.0	1.8	15.0
0129(-)IE(*)X10SRC	10	<u>7X1.35</u>	0.7	1.4	8.4	1.0	1.8	16.8
0129(-)IE(*)X16SRC	16	<u>7X1.70</u>	0.7	1.4	9.5	1.0	1.8	19.0
0129(-)IE(*)X25SRC	25	<u>7X2.14</u>	0.9	1.4	11.2	1.0	1.8	22.4
0129(-)IE(*)X35SRC	35	<u>7X2.52</u>	0.9	1.4	12.35	1.0	1.8	24.7
01252IE(*)X50SRC	50	<u>19X1.78</u> <u>19X1.805</u>	1.0	1.4	13.9	1.0	1.8	27.8
0129(-)IE(*)X70SRC	70	<u>19X2.14</u> <u>19X2.165</u>	1.1	1.4	15.9	1.0	1.8	31.8
0129(-)IE(*)X95SRC	95	<u>19X2.52</u> <u>19X2.535</u>	1.1	1.5	18	1.2	2.0	36.4
0129(-)IE(*)X120SRC	120	<u>37X2.03</u> <u>37X2.045</u>	1.2	1.5	19.8	1.2	2.1	40.2
0129(-)IE(*)X150SRC	150	<u>37X2.25</u> <u>37X2.265</u>	1.4	1.6	21.95	1.2	2.2	44.3
0129(-)IE(*)X185SRC	185	<u>37X2.52</u> <u>37X2.535</u>	1.6	1.7	24.45	1.4	2.3	49.5
0129(-)IE1X240SRC	240	<u>61X2.25</u> <u>61X2.265</u>	1.7	1.7	27.25	1.4	2.5	55.5
0129(-)IE1X300SRC	300	<u>61X2.52</u> <u>61X2.535</u>	1.8	1.8	30.1	-	-	-
0129(-)IE1X400SRC	400	<u>61X2.85</u> <u>61X2.90</u>	2.0	1.9	33.65	-	-	-
0129(-)IE1X500SRC	500	<u>61X3.2</u>	2.2	2.0	37.4	-	-	-
0129(-)IE1X630SRC	630	<u>91X2.98</u>	2.4	2.2	42.2	-	-	-
0129(-)IE1X800SRC	800	<u>91X3.35</u>	2.6	2.3	46.8	-	-	-



## 10. Flame Retardant Power Cable CU/XLPE/LSZH/LSZH or (L.S.F PVC) According to IEC 60502-1

Cable Code	Cross Section Area	Conductor Dimension Round Sector	Insulation Thickness	Three Cores			Four Cores		
				Bedding Thickness	Sheathing Thickness	Diameter	Bedding Thickness	Sheathing Thickness	Diameter
				mm	mm	mm	mm	mm	mm
01298IE(*)x1.5SRC	1.5	<u>7X0.53</u>	0.7	1.0	1.8	12.4	1.0	1.8	13.15
01298IE(*)x2.5SRC	2.5	<u>7X0.67</u>	0.7	1.0	1.8	13.25	1.0	1.8	14.1
01298IE(*)x4SRC	4	<u>7X0.85</u>	0.7	1.0	1.8	14.45	1.0	1.8	15.45
01298IE(*)x6SRC	6	<u>7X1.04</u>	0.7	1.0	1.8	15.75	1.0	1.8	16.9
01298IE(*)x10SRC	10	<u>7X1.35</u>	0.7	1.0	1.8	17.7	1.0	1.8	19.05
01298IE(*)x16SRC	16	<u>7X1.70</u>	0.7	1.0	1.8	20.05	1.0	1.8	21.7
01298IE(*)x25SRC	25	<u>7X2.14</u>	0.9	1.0	1.8	23.7	1.0	1.8	25.8
01298IE(*)x35SRC	35	<u>7X2.52</u>	0.9	1.0	1.8	26.2	1.0	1.8	26.5
01298IE(*)x50SRC	50	<u>19X1.78</u> <u>19X1.805</u>	1.0	1.0	1.8	26.3	1.0	1.9	29.85
01298IE(*)x70SRC	70	<u>19X2.14</u> <u>19X2.165</u>	1.1	1.0	1.9	30.2	1.2	2.0	34.6
01298IE(*)x95SRC	95	<u>19X2.52</u> <u>19X2.535</u>	1.1	1.2	2.0	34.5	1.2	2.2	39.0
01298IE(*)x120SRC	120	<u>37X2.03</u> <u>37X2.045</u>	1.2	1.2	2.1	37.7	1.4	2.3	44.1
01298IE(*)x150SRC	150	<u>37X2.25</u> <u>37X2.265</u>	1.4	1.4	2.3	42.0	1.4	2.5	48.6
01298IE(*)x185SRC	185	<u>37X2.52</u> <u>37X2.535</u>	1.6	1.4	2.4	46.9	1.4	2.6	55.5
01298IE(*)x240SRC	240	<u>61X2.25</u> <u>61X2.265</u>	1.7	1.6	2.6	52.5	1.6	2.8	61.8
01298IE(*)x300SRC	300	<u>61X2.52</u> <u>61X2.535</u>	1.8	1.6	2.8	55.4	1.6	3.0	64.0
01298IE(*)x400SRC	400	<u>61X2.85</u> <u>61X2.90</u>	2.0	1.6	3.05	64.5	1.6	3.2	69.7

Note:

(\*) Refers to number of cores.

(-) Refers to number of cores 5 for Single Core and 8 for Two Cores.

Due to the wide range of cables in the catalogue, it is advisable, when ordering, to provide as much information as possible, please use the following information as a guide.

## Ordering Guide

The following details will ensure that your enquiries and orders will be achieved quickly and efficiently:

- 1- Length of cables and individual drum lengths.
- 2- Voltage designation.
- 3- Relevant British or International Standard.
- 4- Number of Cores.
- 5- Conductor Size.
- 6- Type of Insulation.
- 7- Type of Bedding.
- 8- Type of Armouring.
- 9- Type of Outer Sheathing.
- 10- Any Other Special Requirements, e.g. Special Insulation or Sheath Material, etc.



### Technical Service

Specialist advice and assistance on all matters, you can contact us on:

National Cable and Wire Manufacturing Company (CABLECO)

**P.O.Box 927104, Amman-Jordan**

**Tel: 962-6-5511484/962-6-5511867 Fax: 962-6-5532081**

**E-mail: [hourani@cableco.com.jo](mailto:hourani@cableco.com.jo)**

**[sales@cableco.com.jo](mailto:sales@cableco.com.jo)**

**[factory@cableco.com.jo](mailto:factory@cableco.com.jo)**

**Website: [www.cableco.com.jo](http://www.cableco.com.jo)**