

FIREZERO ***FIRE*SURVIVOR**



ACL CABLES PLC ACL FIRE ZERO

PAGE

5 - 6
7 -12

DATA TABLES-ACL FIRE ZERO

1 CORE EARTH CABLES - CU / LSHF	450/750 V	13
1 CORE EARTH CABLES -FLAXIBLE CU / LSHF	450/750 V	13
1 CORE UNARMoured CABLES - Cu / XLPE / LSHF	450/750 V	14
2 CORE UNARMoured CABLES - Cu / XLPE / LSHF	450/750 V	14
3 CORE UNARMoured CABLES - Cu / XLPE / LSHF	450/750 V	15
4 CORE UNARMoured CABLES - Cu / XLPE / LSHF	450/750 V	15
5 CORE UNARMoured CABLES - Cu / XLPE / LSHF	450/750 V	16
2,3,4 CORE UNARMoured CABLES - Cu / LSHF / LSHF	600/1000 V	16
2,3,4 CORE UNARMoured CABLES -FLEXIBLE CU / LSHF / LSHF	300/300 V	17
2,3,4 ,5CORE UNARMoured CABLES -FLEXIBLE CU / LSHF / LSHF	300/500 V	17
1 CORE UNARMoured CABLES - Cu / XLPE / LSHF	600/1000 V	18
2 CORE UNARMoured CABLES - Cu / XLPE / LSHF	600/1000 V	18
3 CORE UNARMoured CABLES - Cu / XLPE / LSHF	600/1000 V	19
4 CORE UNARMoured CABLES - Cu / XLPE / LSHF	600/1000 V	19
5 CORE UNARMoured CABLES - Cu / XLPE / LSHF	600/1000 V	20
1 CORE ARMoured CABLES - Cu / XLPE /AWA/ LSHF	600/1000 V	20
2 CORE ARMoured CABLES - Cu / XLPE /SWA/ LSHF	600/1000 V	21
3 CORE ARMoured CABLES - Cu / XLPE /SWA/ LSHF	600/1000 V	21
4 CORE ARMoured CABLES - Cu / XLPE /SWA/ LSHF	600/1000 V	22
5 CORE ARMoured CABLES - Cu / XLPE /SWA/ LSHF	600/1000 V	22
ARMoured AUXLIARY CABLES - Cu / XLPE /SWA/ LSHF	600/1000 V	23
1 CORE UNARMoured CABLES - Cu /LSHF / LSHF	600/1000 V	23

ACL FIRE SURVIVOUR

24-26

DATA TABLES-ACL FIRE SURVIVOUR

1 CORE EARTH CABLES - CU / MGT/LSHF	450/750 V	27
2,3,4 ,5CORE UNARMoured CABLES -FLEXIBLE CU /MGT/ LSHF / LSHF	300/500 V	27
1 CORE UNARMoured CABLES - Cu / MGT/ XLPE / LSHF	600/1000 V	28
2 CORE UNARMoured CABLES - Cu / MGT/ XLPE / LSHF	600/1000 V	28
3 CORE UNARMoured CABLES - Cu / MGT/ XLPE / LSHF	600/1000 V	29
4 CORE UNARMoured CABLES - Cu / MGT/ XLPE / LSHF	600/1000 V	29
5 CORE UNARMoured CABLES - Cu / MGT/ XLPE / LSHF	600/1000 V	30
1 CORE ARMoured CABLES - Cu / MGT/XLPE /AWA/ LSHF	600/1000 V	30
2 CORE ARMoured CABLES - Cu / MGT / XLPE /SWA/ LSHF	600/1000 V	31
3 CORE ARMoured CABLES - Cu / MGT / XLPE /SWA/ LSHF	600/1000 V	31
4 CORE ARMoured CABLES - Cu / MGT / XLPE /SWA/ LSHF	600/1000 V	32
5 CORE ARMoured CABLES - Cu / MGT / XLPE /SWA/ LSHF	600/1000 V	32
ARMoured AUXILIARY CABLES - Cu / MGT /XLPE /SWA/ LSHF	600/1000 V	33
2,3,4 CORE UNARMoured CABLES - Cu /MGT/LSHF / LSHF	600/1000 V	33
1 CORE UNARMoured CABLES - Cu /MGT /LSHF / LSHF	600/1000 V	34
2 CORE FLAT UNARMoured CABLES - Cu / LSHF/ LSHF	300/500 V	35
1 CORE UNARMoured CABLES - Cu / LSHF/ LSHF	300/500 V	35
2 CORE FLAT UNARMoured CABLES - Cu / MGT /LSHF/ LSHF	300/500 V	36
1 CORE UNARMoured CABLES - Cu / MGT /LSHF/ LSHF	300/500 V	36

SCHEDULE OF INSTALLATION METHODS OF CABLES

37-39

SUSTAINED CURRENT CARRYING

Single core unarmoured CU/LSHF cables with or without LSHF sheath	40
Multi core unarmoured CU/LSHF cables with LSHF sheath	41
Single core armoured CU/LSHF cables with LSHF sheath	42
Multi core armoured CU/LSHF cables with LSHF sheath	43
Single core unarmoured CU/XLPE cables with or without LSHF sheath	44
Multi core unarmoured CU/XLPE cables with LSHF sheath	45
Single core armoured CU/XLPE cables with LSHF sheath	46
Multi core armoured CU/XLPE cables with LSHF sheath	47

ADJUSTMENT TABLES

ADJ TABLE 1 & 2 - Variation in Ambient Temperature/ Variation in Ground Temperature -90°C	48
ADJ TABLE 3 & 4 - Variation in Ambient Temperature/ Variation in Ground Temperature -70°C	49
ADJ TABLE 5 - Variation in Soil Thermal Resistivity	50
ADJ TABLE 6 - Variation in Depth of Laying	50
ADJ TABLE 7 Rating factors for more than one circuit, cables buried directly in the ground	51
ADJ TABLE 8 Rating factors for more than one circuit, cables in ducts buried in the ground	52
ADJ TABLE 9 Rating factors for one circuit or one multicore cable or for a group of circuits, or a group of multicore cables	53

ACL - SINCE 1962

ACL is the largest manufacturer of cables in Sri Lanka having pioneered the industry in 1962. ACL holds 45% share of the local market and produces the widest range of cables in Sri Lanka. Today, ACL has grown to be a Group of companies holding 70% share of the cable market in Sri Lanka.

ACL is the most sought-after brand of cables in Sri Lanka, having supplied 80% of the requirements of Duty Free projects owned by overseas investors and approved by the Board of Investment, beating foreign suppliers of cables. All leading factories, hotels, commercial buildings and warehouses have used ACL Cables.

ACL continues to innovate and lead the field in the introduction of new products, modern technology and machinery. In the five decades of its existence, the Company has evolved as a specialized manufacturer and supplier of the widest range of quality cables and conductors in the country, while possessing the **most advanced technology in the Asian region** for the manufacture of low voltage Fire Retardent Cross Linked Polyethylene cables (XLPE).

CONCEPT AT ACL

Modern industries and technologies have opened forth a wide range of endeavours and ventures in the Island of Sri Lanka. ACL ushered a new era in the power sector and dedicated itself to the cause of transmission, distribution and utilization of electrical energy for all cross sections of the country.

With a rich heritage of over five decades, ACL offers its products, which not only meet the stipulated requirements of the governing National and International specifications, but far exceeding them.

Excellence through “Total Quality Management” is the catchword at ACL. Since its inception ACL has striven not only to upgrade the product quality but to bring into practice superior management of men to make its place in the international market. Professionalism, advanced know-how and technology, customer services have been the hallmark of ACL. Its quality concept is translated into every length of product through co-ordinated efforts of professionals on job.

ACL TECHNOLOGY

From the inception ACL has been acquiring foreign technology for the development of existing and new products. In the year 1962, ACL commenced business with technical assistance arranged through the Colombo based liaison office of Mitsui. The Japanese Technology, Machinery, & Engineers helped ACL to establish a Foundation of Quality

products. Thereafter, ACL joined hands with two cable companies in India to establish the manufacture of Aluminium Conductors and Armoured Cables.

One of the company's most notable technology transfer agreements in recent times have been with NOKIA Cables of Finland for the manufacture of XLPE Insulated Cables, Aerial Bundled Cables and Aluminium Alloy Conductors.

Having obtained technology from NOKIA on two occasions in the years 1989 and 1993, ACL upgraded its technology on XLPE insulated Aerial Bundled Cables to surpass National French Standard NFC 33-209 in the year 1998 through its own Research and Development. This is a feat not matched in the region by any other manufacturer at that time. The technology so achieved is employed in the manufacture of XLPE insulated Armoured and Unarmoured power cables. These developments offer many benefits to valued customers and in order to highlight those benefits it was decided to name all our XLPE insulated cables under the brand name **Power-X**.

Having obtained ISO 9002 certification in the year 1998, ACL was awarded the prestigious ISO 9001-2000 certificate in the Year 2002. In the same year ACL was awarded ISO 14001: 1997 Environmental Management System Certification.

ACL - TECHNOLOGICAL DEVELOPMENT

- 1962 - Establishment of ACL with technical assistance from Mitsui of Japan.
- 1978 - Introduction of Wire Drawing facility.
- 1981 - Acquisition of Technology from Alind of India for drawing and processing of Aluminium Conductors to jointly manufacture and supply 1400 MT of AAC-Fly Conductor to Ceylon Electricity Board.
- 1985 - Manufacture of Armoured Power and Control Cables for the first time in Sri Lanka with Indian Technical assistance.
- 1989 - Acquisition of Technology from NOKIA of Finland to jointly manufacture XLPE insulated Aerial Bundled Cables to execute an order for 800 km of that product on an ADB funded tender floated by Lanka Electricity Company.
- 1993 - Acquisition of Technology from NOKIA of Finland to draw and age Aluminium Alloy and establishment of aging furnace.
- 1993 - Establishment of ACL Plastics Limited for the manufacture of our own PVC Compound.
- 1994 - Pilot Project for 11kV partially insulated conductors working with Ceylon Electricity Board.

- 1998 - Successfully upgraded XLPE Extrusion Technology to National French Standard NFC 33-209 and won 500 km order for Aerial Bundled Cables from Ceylon Electricity Board.
- 2005 - Introduction of Flame Retardant (FR), Flame Retardant Low Smoke (FRLS) and Low Smoke Halogen Free (LSHF) cables with technical assistance from a British Company.
- 2007 - Setting up of Aluminium Rod Plant with a total capacity of 24000 Metric Tons per annum
- 2010 - Re –launch of 11kV & 33 kV ACL SAX as per new specifications of CEB with the second pilot project
- 2013 - Manufacture of Fire Survival cables to maintain circuit integrity under fire conditions in accordance with BS 6387:1994, for the first time in Sri Lanka.

ACL - CORPORATE HIGHLIGHTS

- 1962 - Commencement as a member of Associated Motorways Group (AMW) of Companies under the name Associated Cables Ltd.
- 1976 - Converted to a Public Limited Liability Company.
- 1978 - Moved out of AMW Group.
- 1982 - Establishment of own islandwide distribution network.
- 1990 - Change of Company name in to ACL Cables Limited
- 1991 - Establishment of ACL Plastics Limited
- 1995 - Acquisition of Ceylon Bulbs and Electricals Limited.
- 1999 - Purchase of 75% of shares of the second largest cable manufacturer in the Island.
- 2002 - Setting up of state of the art Magnet Wire project.
- 2007 - Establishment of ACL Metals & Alloys (PVT)Ltd.
- 2011 - Setting up of Copper Plant
- 2011 - Shifting of ACL Head Office to newly constructed four storied own building at Colombo 08.
- 2013 - Establishment of ACL Electric PVT (Ltd) for manufacture of switches

OTHER ACHIEVEMENTS OF ACL

- 1995 - **Commencement of Export of Cables**
In August 1995 US\$ 269,650/- worth of Alloy Conductors were exported to Rural Electrification Board, Bangladesh.
In November 1995 US\$ 117,609/- worth of Armoured Cables were exported to Maldives Electricity Board, Maldives.
- 1998 - **Achievement of ISO 9002:1994 Quality Management System Certificate**
Achieved prestigious ISO 9002:1994 Quality Management System Certificate.
- 2002 - **Achievement of ISO 9001: 2000 Quality Management System Certificate**
Achieved prestigious ISO 901:2000 Quality Management System certificate
- 2002 - **Introduction of “ACL FLEXI” cables to the Sri Lanka market.**
Introduced a series of domestic wires with super flexibility in the range of 1.0mm² - 6mm².
- 2002 - **Achievement of ISO 14001:1997 Environmental Management System Certificate**
Achieved prestigious ISO 14001:1997 Environmental Management System Certificate.
- 2004 - Large scale export of Aerial Bundled Cables to India.
- 2004 - Achievement of IS 694 Product Certificate from Bureau of Indian Standards.
- 2007 - Taiki Akimoto 5 S Merit Award
- 2007/2008 - Industrial Excellence Gold Award in Extra Large Manufacturing category
- 2007 - National Quality Award - Large Scale Manufacturing category (highest award for Quality in Sri Lanka)
- 2007 - National Productivity Award - Large Scale Manufacturing category (highest award for Productivity in Sri Lanka)
- 2008 - Highest Award of Asia Pacific Quality Organization called the World Class Award (A record to date among all Sri Lankan manufactures)
- 2008 - Commencement of Export of cable to Australia
- 2009 - Industrial Excellence Crystal Award in Extra Large Manufacturing category
- 2011 - Commencement of Export of cable to New Zealand
- 2013 - National Cleaner Production Award in recognition of Excellence in Resource Efficient & Production Practices in Manufacturing Large Category.
- 2013 - Special Award for Excellence Performance in Material Efficiency in Manufacturing Large Category

ACL Fire Zero

LOW SMOKE HALOGEN FREE (LSHF) CABLES

Why ACL Fire Zero ?

Fire Risk is an ever increasing phenomenon challenging the Electrical Engineers with the continued increase in usage of Electricity in myriad of ways in large commercial buildings and residential properties.

An electrical short circuit could occur even if the building is perfectly wired using the best of Designs, best of Materials and best of Installation Teams. This is due to factors beyond the control of Electrical Engineers such as human error in wiring, subsequent disturbances by maintenance or repair staff, rodents attacking the system, disturbances due to earth quakes etc. An Electrical short circuit leads to release of enormous amount of heat energy in a few seconds and it leads to fire. Ordinary PVC Cables being flammable, spread such a fire along its length setting ablaze anything on its path. This is the danger ACL Fire Zero helps to prevent.

ACL Fire Zero being highly fire retardant offers perfect guarantee that fire generated due to an electrical short circuit (occurring due to any fault mentioned earlier) would be immediately extinguished without allowing it to spread along the Cables. So, what ACL Fire Zero does, can be equated to what an air bag does in a motor vehicle accident. In the same manner that an Air Bag cannot prevent an accident but it can protect a passenger in the event of an accident, ACL Fire Zero cannot guarantee occurrence of a short circuit but can prevent a building catching fire due to a short circuit. ACL Fire Zero is an absolute necessity and an added insurance against fires that could originate due to an electrical short circuit, destroying life and property.

Prevent Danger

“In the event of a short circuit, normal PVC insulated Cables catch fire and spread it along its length.

But ACL Fire Zero being Non Flammable, do not spread the fire. Buildings are safer with ACL Fire Zero.”



“In a fire accident some people die because of fire, others die because of suffocation due to smoke.”

Another benefit of ACL Fire Zero is that, even if it is caught in a fire arising due to any other reason, it will not emit either acidic gasses or black smoke while it is burning under extreme conditions. Normal PVC insulated cables caught in fire burns furiously emitting black smoke and acidic gasses since those contain Chlorine as an element. Thick black smoke emitted during a fire reduces visibility drastically and people who are caught in the fire find it extremely difficult to locate an escape route. This is further complicated by Acidic/Toxic gasses emitted by burning PVC which irritates eyes and burn the lining of lungs of people and make breathing difficult. In such a situation, not only people who are trapped find it difficult to escape a fire due to burning PVC, but also the Firemen too will find it extremely difficult to carry out their firefighting and rescue work

The advanced cable design and process technology of ACL, make ACL Fire Zero cables superior to any available in the market.

Insulating material, Sheathing material, Bedding material, Tapes, Fillers etc. which are used in the manufacture of ACL Fire Zero Cables are completely free of any halogenated compounds and material which produce acidic gasses or black smoke when burnt.

Disadvantages associated with the PVC cables caught in a fire

1. Emission of black smoke reducing visibility.
2. Emission of acidic gases which irritate eyes and burn lining of lungs. Acidic gases emitted also damage valuable electronic and sensitive equipment. Acidic gases consists mostly hydrogen chloride (HCl) and traces of Hydrogen Fluoride (HF) and Hydrogen Bromide (HBr) due to presence of Halogen (Chlorine, Bromine and Iodine in PVC).
3. Emission of toxic gases such as Dioxin and gases containing poisonous Lead.

Benefits provided by ACL Fire Zero caught in a fire

1. No emission of black smoke
2. No emission of acidic gases
3. Retard the spread of fire
4. No emission of toxic gases

“Say No to PVC insulated Cables where there is risk of Fire.”

Instead of PVC insulated cables, ACL Fire Zero range of cables is recommended for use in the following areas.

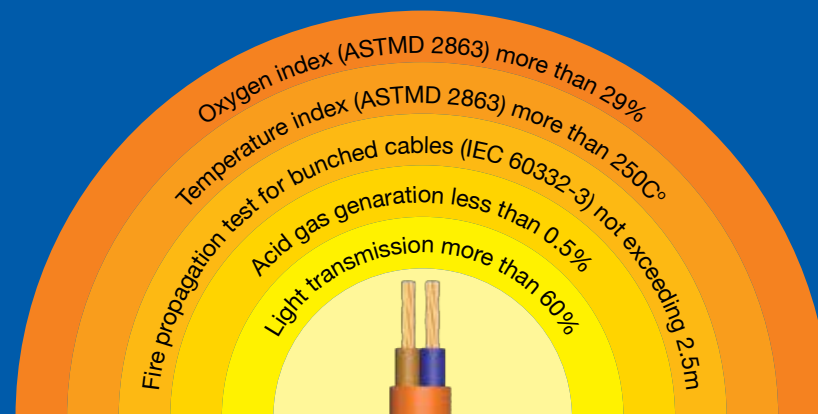
Areas where people gather and in areas with limited means of escape in the event of a fire such as

- Hospitals
- Schools
- Universities
- Recreational places
- Hotels (especially for wooden cabanas/cottages)
- Supermarkets
- Housing complex/apartments
- Airports and railway stations
- Underground mass rapid transit system/tunnels
- Large multi story buildings
- Indoor stadiums and cinemas

Fire Rated Cables are mandatory for use in buildings and factories in developed countries of the world.



CHARACTERISTICS OF FIRE ZERO CABLES



- 1. Fire retardant property** which prevents the flame spread along the cable run. ACL Fire Zero Cables are flame retardant and hence if ignited tend to extinguish itself.

The fire retardant property is ensured by testing ACL Fire Zero using following three tests.

TEST	REQUIRED LEVEL TO BE SATISFIED
Oxygen index (ASTM D 2863)	More than 29 %
Temperature index (ASTM D 2863)	More than 250°C
Flame retardant (Fire Propagation) test for bunched cables (IEC-60332-3)	Not exceeding 2.5 m above the edge of the burner

- 2. Halogen free nature:** When ACL Fire Zero is subject to fire, it does not emit any acidic gases. Neither does it emit poisonous gases. This property also helps to protect people and sensitive electronic/communication equipment.

Gases emitted are free of toxic compounds and metals. ACL Fire Zero is Tested to BSEN 50267/IEC 60754 to determine acidity of gases emitted after it is burnt.

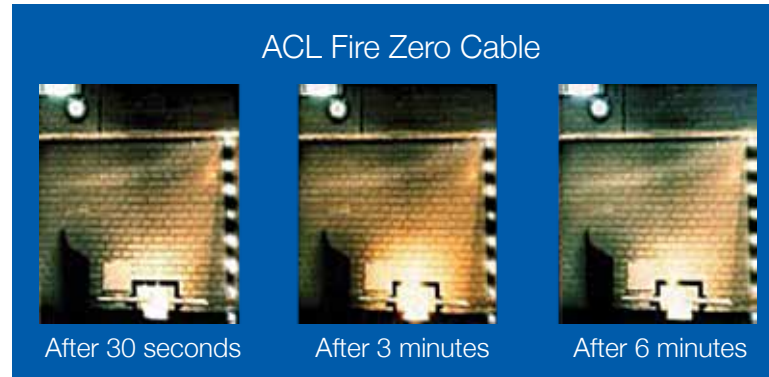
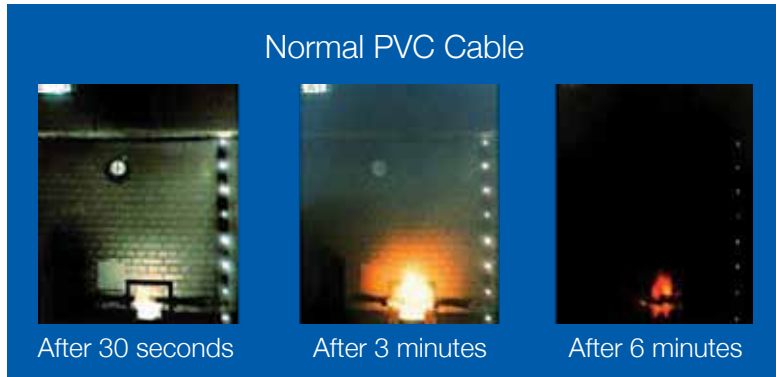
TEST	REQUIRED LEVEL TO BE SATISFIED
Acid Gas Generation	Less than 0.5%

- 3. Low Smoke property:** When ACL Fire Zero is subject to a fire, it does not emit thick black smoke. These cables when ignited will only produce a limited amount of smoke. This property helps to improve visibility in areas where there are limited means of escape in the event of a fire emergency.

The low smoke feature is measured by the testing the smoke density of ACL Fire Zero cables in accordance with BS EN 50268/IEC61034.

TEST	REQUIRED LEVEL TO BE SATISFIED
Light Transmission	More than 60 %

Light Transmission Test



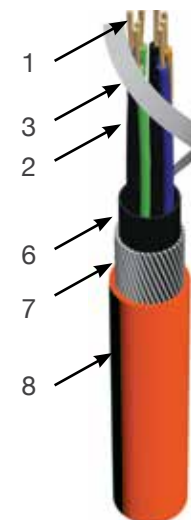
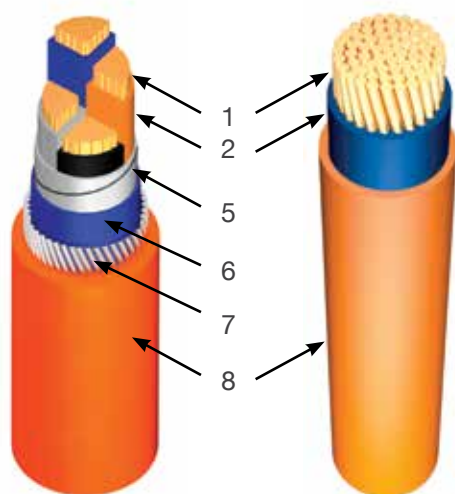
Acid Gas Generation Test



Fire Propagation Test



LSHF CABLE CONSTRUCTIONS AND THEIR STANDARDS



Description of Construction	
1. Conductor	Stranded annealed copper
2. Insulation	XLPE (Specially formulated thermosetting compound complying to standard fire retardant properties) or Low smoke halogen free (LSHF) compound
3. Shield	Aluminum foil with or without tinned copper drain wire
4. Filler	LSHF filler or polypropylene filler
5. Binder Tape	LSHF tape
6. Bedding	Low Smoke Halogen Free (LSHF) compound
7. Armour	Galvanized steel wire (aluminum or copper wire for single core)
8. Sheath	Low Smoke Halogen Free (LSHF) compound

Number of Cores	Colours
Single	Natural or other colour on request
Two	Brown and Blue
Three	Brown, Black and Gray
Four	Blue, Brown, Black and Gray
Five	Green/Yellow, Blue, Brown, Black and Gray
Six and above	Black with white numbering

ANNEALED STRANDED/COPPER EARTH WIRES LSHF INSULATION 450/750 V RATED 70°C

N. C. AREA mm ²	NO/NOM DIA. mm	INSU. O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	2.92	21.2
2.5	7/0.67	3.54	32.8
4	7/0.85	4.12	49.2
6	7/1.04	4.72	71.3
10	7/1.35	6.05	119.0
16	7/1.70	7.10	179.5
25	7/2.14	8.82	281.9
25	19/1.35	9.15	299.6
35	19/1.53	10.05	377.0
50	19/1.78	11.70	510.5
70	19/2.14	13.50	719.1
95	19/2.52	15.80	993.4
95	37/1.78	15.66	962.0
120	37/2.03	17.41	1232.2
150	37/2.25	19.35	1516.2
185	37/2.52	21.64	1900.3
240	61/2.25	24.65	2481.2
300	61/2.52	27.48	3103.9
400	61/2.85	30.85	3953.0
500	61/3.20	34.40	4963.8
630	91/3.00	38.60	6411.5



BS EN 50525-3-31

ANNEALED FLEXIBLE COPPER EARTH WIRES LSHF INSULATION 450/750 V RATED 70°C

N. C. AREA mm ²	NO/NOM DIA. mm	INSU. O.D. mm	TOTAL WEIGHT kg/km
1.5	30/0.25	3.0	21.4
2.5	50/0.25	3.6	33.2
4	56/0.30	4.2	48.3
6	84/0.30	4.9	68.3
10	80/0.40	6.2	117.7
16	126/0.40	7.3	175.2
25	196/0.40	9.0	268.9
35	276/0.40	10.2	365.9
50	396/0.40	12.2	521.5
70	360/0.50	14.0	726.1
95	475/0.50	16.2	956.4
120	608/0.50	17.7	1201.9
150	756/0.50	21.6	1511.8
185	925/0.50	24.0	1849.3
240	1221/0.50	27.4	2424.4



BS EN 50525-3-31

ANNEALED STRANDED / SOLID COPPER CABLES:
SINGLE CORE XLPE INSULATED LSHF SHEATHED 450/750V RATED 90°C.

BS 7211:2012



N.C AREA mm ²	NO/NOM DIA. mm	SHEATH O.D mm	TOTAL WEIGHT kg/km
1*	1/1.13	4.13	25.2
1.5	7/0.53	4.59	33.4
2.5	7/0.67	5.01	44.4
4	7/0.85	5.75	64.2
6	7/1.04	6.32	86.6
10	7/1.35	7.25	130.5
16	7/1.70	8.30	191.8
25	19/1.35	10.55	317.1
35	19/1.53	11.65	400.8

ANNEALED STANDED COPPER CABLES:
CIRCULARTWIN XLPE INSULATD LSHF SHEATHED- 450/750V RATED 90°C.

BS 7211:2012



N.C AREA mm ²	NO/NOM DIA. mm	SHEATH O.D mm	TOTAL WEIGHT kg/km
1.5	7/0.53	8.4	101.9
2.5	7/0.67	9.2	132.4
4	7/0.85	10.3	179
6	7/1.04	11.4	237.1
10	7/1.35	13.7	364.2
16	7/1.70	15.8	524.4
25	19/1.35	19.9	853.4
35	19/1.53	22.1	1076

ANNEALED STANDED COPPER CABLES
FOUR CORE XLPE INSULATED LSHF SHEATHED-450/750V RATED-90°C.

N.C. AREA mm ²	NO/NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	9.6	144.7
2.5	7/0.67	10.6	194.7
4	7/0.85	11.9	272.5
6	7/1.04	13.7	382.9
10	7/1.35	16.0	580.4
16	7/1.70	18.5	855.5
25	19/1.35	23.8	1431.6
35	19/1.53	26.0	1783.5



BS 7211:2012

ANNEALED STANDED COPPER CABLES
THREE CORE XLPE INSULATED LSHF SHEATHED-450/750V RATED-90°C.

N.C. AREA mm ²	NO/NOM DIA. mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	8.8	118.8
2.5	7/0.67	9.8	158.3
4	7/0.85	10.9	218.6
6	7/1.04	12.5	306.4
10	7/1.35	14.5	459.2
16	7/1.70	16.8	672.2
25	19/1.35	21.2	1102.1
35	19/1.53	23.6	1394.0



BS 7211:2012

ANNEALED STANDED COPPER CABLES:
FIVE CORE XLPE INSULATED LSHF SHEATHED-450/750V RATED-90°C.

BS 7211:2012



N.C. AREA mm ²	NO/NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	11.3	194.3
2.5	7/0.67	12.4	258.4
4	7/0.85	14.7	384.2
6	7/1.04	16.2	511.1
10	7/1.35	18.7	763.3
16	7/1.70	22.0	1133.5
25	19/1.35	28.3	1895.3
35	19/1.53	30.7	2345.1

ANNEALED STANDED COPPER CABLES:
2CORE, 3CORE, 4CORE LSHF INSULATED LSHF SHEATHED 0.6/1kV RATED 70°C.

IEC 60502-1



N.C. AREA mm ²	NO OF CORE NO/NOM DIA mm	OVERALL DIMENSIONS mm	TOTAL WEIGHT kg/km
2 CORE			
1.5	7/0.53	9.98	143.70
2.5	7/0.67	10.82	178.90
4	7/0.85	12.70	255.50
6	7/1.04	13.84	322.10
3 CORE			
1.5	7/0.53	10.47	167.80
2.5	7/0.67	11.38	213.10
4	7/0.85	13.40	308.10
6	7/1.04	14.63	395.20
4 CORE			
1.5	7/0.53	11.30	201.50
2.5	7/0.67	12.31	258.70
4	7/0.85	14.58	378.80
6	7/1.04	15.96	490.20

ANNEALED FLEXIBLE COPPER CABLES : TWIN, 3 CORE & 4 CORE LSHF INSULATION LSHF SHEATHED 300/300 V RATED 70°C



BS EN 50525-3-11

N. C. AREA mm ²	NO OF CORE NO/NOM DIA mm	OVERALL DIA. mm	TOTAL WEIGHT kg/km
0.5	2x16/0.20	5.1	38.20
0.5 PT	2x16/0.20	5.1 X3.1	28.4
0.75	2x24/0.20	5.5	46.9
0.75 PT	2x24/0.20	5.5 X3.3	35.2
0.5	3x16/0.20	5.4	45.7
0.75	3x24/0.20	5.8	56.8
0.5	4x16/0.20	5.9	56.2
0.75	4x24/0.20	6.4	70.5

ANNEALED FLEXIBLE COPPER CABLES : TWIN, 3 CORE, 4 CORE & 5 CORE LSHF INSULATION LSHF SHEATHED 300/500 V RATED 70°C



BS EN 50525-3-11

N. C. AREA mm ²	NO OF CORE NO/NOM DIA mm	OVERALL DIA. mm	TOTAL WEIGHT kg/km
0.5	2x16/0.20	5.86	48.30
0.75 PT	2x24/0.20	6.28 X3.94	43.40
0.75	2x24/0.20	6.28	58.00
1	2x32/0.20	6.64	67.00
1 PT	2x32/0.20	6.64 X4.12	50.30
1.5	2x30/0.25	8.00	99.00
2.5	2x50/0.25	9.20	138.30
4	2X56/0.30	11.40	214.60
0.5	3x16/0.20	6.19	56.7
0.75	3x24/0.20	6.64	68.9
1	3x32/0.20	7.03	80.4
1.5	3x30/0.25	8.26	113.2
2.5	3x50/0.25	9.95	171.2
4	3X56/0.30	11.45	237.9
0.75	4x24/0.20	7.25	84.5
1	4x32/0.20	7.88	102.6
1.5	4x30/0.25	9.24	144.2
2.5	4x50/0.25	10.89	212.1
4	4X56/0.30	12.54	296.1
0.75	5x24/0.20	8.12	107.6
1	5x32/0.20	8.60	125.7
1.5	5x30/0.25	10.30	183.7
2.5	5x50/0.25	12.12	268.2
4	5X56/0.30	14.14	380.5

XLPE INSULATED LSHF SHEATHED ENERGY CABLES 0.6/1kV COPPER
CONDUTOR/ UNARMOURED SINGLE CORE RATED 90°C.

N.C. AREA mm ²	NO./NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	5.8	48.6
2.5	7/0.67	6.2	60.9
4	7/0.85	6.8	79.6
6	7/1.04	7.3	103.0
10	7/1.35	8.3	149.1
16	7/1.70	9.3	212.9
25	19/1.35	11.4	338.2
35	19/1.53	12.3	418
50	19/1.78	13.7	548.2
70	19/2.14	15.7	765.0
95	19/2.52	17.8	1036.4
120	37/2.03	19.6	1285.5
150	37/2.25	21.8	1577.6
185	37/2.52	24.0	1959.1
240	61/2.25	27.1	2542.8
300	61/2.52	29.9	3164.8
400	61/2.85	33.5	4022.2
500	61/3.20	37.2	5041.4
630	91/3.00	42.2	6563.9
800	127/2.85	46.9	8205.3
1000	127/3.20	52.0	10279.1



BS 8573

XLPE INSULATED LSHF SHEATHED ENERGY CABLES 0.6/kV COPPER
CONDUTOR/ UNARMOURED TWO CORE RATED 90°C.

N.C. AREA mm ²	NO./NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	9.6	128.0
2.5	7/0.67	10.4	160.9
4	7/0.85	11.5	210.8
6	7/1.04	12.6	272.1
10	7/1.35	14.5	391.8
16	7/1.70	16.6	555.4
25	7/2.14	20.0	837.7
25	19/1.35	20.7	892.5
35	7/2.52	22.3	1096.5
35	19/1.53	22.5	1097.4
50	19/1.78	25.4	1439.2
70	19/2.14	29.4	2003.1
95	19/2.52	33.4	2688.5
120	37/2.03	37.2	3357.6



BS 8573

XLPE INSULATED LSHF SHEATHED ENERGY CABLES 0.6/1kV COPPER CONDUCTOR/ UNARMoured THREE CORE RATED 90°C.

BS 8573



N.C. AREA mm2	NO/NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	10.0	147.6
2.5	7/0.67	11.0	189.9
4	7/0.85	12.1	253.9
6	7/1.04	13.3	334.2
10	7/1.35	15.3	491.5
16	7/1.70	17.6	706.3
25	19/1.35	22.02	1144.6
35	19/1.53	23.96	1418.1
50	19/1.78	23	1571.3
70	19/2.25	26.7	2225
95	19/2.63	29.7	3028.1
120	19/2.94	32.6	3737.1

XLPE INSULATED LSHF SHEATHED ENERGY CABLES 0.6/1kV COPPER CONDUCTOR/ UNARMoured FOUR CORE RATED 90°C.

BS 8573



N.C. AREA mm2	NO/NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	10.8	175.8
2.5	7/0.67	11.8	229.2
4	7/0.85	13.1	311.2
6	7/1.04	14.5	413.4
10	7/1.35	17.4	585.7
16	7/1.70	19.89	847.7
25	7/2.25	21.95	1172.9
35	7/2.63	24.38	1561
50	7/3.12	27.94	2076.8
70	19/2.25	32.27	2962.6
95	19/2.63	36.13	4021.1
120	19/2.94	40.03	4978

XLPE INSULATED LSHF SHEATHED ENERGY CABLES 0.6/1kV COPPER
CONDUCTOR/ UNARMoured FIVE CORE RATED 90°C.

N.C. AREA mm ²	NO:/NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	11.93	216.5
2.5	7/0.67	13.61	295.7
4	7/0.85	15.27	405.6
6	7/1.04	16.80	536.0
10	7/1.35	20.12	827.5
16	7/1.70	23.55	1223.8
25	19/1.35	29.29	1970.6
35	19/1.53	31.92	2444.7
50	19/1.78	36.43	3241.5
70	19/2.14	42.23	4531.5



BS 8573

XLPE INSULATED LSHF SHEATHED ENERGY CABLES
0.6/1 kV COPPER CONDUCTOR | ALUMINUM WIRE ARMoured SINGLE CORE
RATED 90 °C

N. C. AREA mm ²	NO/NOM DIA. mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
50	19/1.78	17.3	699.0
70	19/2.14	20.0	974.8
95	19/2.52	22.1	1270.2
95	37/1.78	22.0	1239.8
120	37/2.03	23.9	1544.3
150	37/2.25	27.2	1943.5
185	37/2.52	29.6	2373.8
240	61/2.25	32.5	2988.9
300	61/2.52	35.3	3649.9
400	61/2.85	40.1	4698.8
500	61/3.20	43.8	5787.3
630	61/3.66	48.5	7371.7
630	91/3.00	48.6	7374.2
630	127/2.52	48.4	7270.5
800	127/2.85	54.9	9337.5
1000	127/3.20	60.0	11533.0



BS 6724

XLPE INSULATED LSHFSHEATHED ENERGY CABLES 0.6/1kV COPPER
CONDUCTOR STEEL WIRE ARMoured TWO CORE RATED 90 °C

N.C. AREA mm ²	NO:/NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	11.6	268.7
2.5	7/0.67	13.0	337.3
4	7/0.85	14.1	403.9
6	7/1.04	15.2	487.2
10	7/1.35	17.3	647.9
16	7/1.70	20.1	950.0
25	7/2.14	23.7	1327.9
25	19/1.35	24.4	1403.8
35	7/2.52	27.3	1836.2
35	19/1.53	27.5	1790.0
50	19/1.78	30.8	2267.0
70	19/2.14	36.2	3205.8
95	19/2.52	40.2	4066.3
120	37/2.03	43.8	4863.9



XLPE INSULATED LSHF SHEATHED ENERGY CABLES
0.6/1 kV COPPER CONDUCTOR STEEL WIRE ARMoured THREE CORE
RATED 90 °C

N. C. AREA mm ²	NO:/NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	12.01	296.3
2.5	7/0.67	13.55	375.7
4	7/0.85	14.71	462.3
6	7/1.04	15.94	565
10	7/1.35	18.84	869.6
16	7/1.70	21.30	1152.1
25	7/2.14	26.31	1793.1
25	19/1.35	27.02	1883.1
35	7/2.52	28.96	2228.5
35	19/1.53	29.16	2244
25	7/2.25	23.7	1542.2
35	7/2.63	25.7	1898.1
50	7/3.12	28.2	2355.5
70	19/2.25	31.9	3124.7
95	19/2.63	36.3	4313.8
120	19/2.94	39.2	5143.0
150	19/3.27	44.2	6530.3
185	37/2.87	48.4	7886.1
240	37/2.95	53.3	9850.4
300	37/3.35	57.8	11921.6
400	61/2.95	63.8	14715.0



XLPE INSULATED LSHF SHEATHED ENERGY CABLES 0.6/1kV COPPER
CONDUCTOR STEEL WIRE ARMoured FOUR CORE RATED 90°C.



BS 6724

N. C. AREA mm ²	NO./NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	12.74	337.0
2.5	7/0.67	14.43	428.8
4	7/0.85	15.74	532.4
6	7/1.04	18.01	764.2
10	7/1.35	20.86	1007.6
16	7/1.70	23.59	1346.7
25	7/2.14	29.04	2082.2
25	19/1.35	29.84	2180.7
35	7/2.52	32.00	2602.6
35	19/1.53	32.21	2596.4
25	7/2.25	27.0	1906.9
35	7/2.63	29.6	2399.9
50	7/3.12	33.3	3044.9
70	19/2.25	38.9	4364.6
95	19/2.63	42.7	5574.4
120	19/2.94	48.0	7131.9
150	19/3.27	52.7	8503.5
185	37/2.87	57.6	10273.1
240	37/2.95	63.8	12923
300	37/3.35	69.5	15637
400	61/2.85	79.9	20425.2

XLPE INSULATED LSHF SHEATHED ENERGY CABLES 0.6/1kV COPPER
CONDUCTOR STEEL WIRE ARMoured FIVE CORE RATED 90°C.



BS 6724

N.C AREA mm ²	NO./NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	13.7	385.0
2.5	7/0.67	15.4	492.9
4	7/0.85	17.1	627.1
6	7/1.04	19.3	880.1
10	7/1.35	22.0	1201.9
16	7/1.70	26.2	1801.5
25	7/2.14	31.0	2548.0
25	19/1.35	31.9	2688.9
35	7/2.52	34.3	3217.4
35	19/1.53	34.5	3221.3
50	19/1.78	39.8	4395.3
70	19/2.14	45.6	5873.8

XLPE INSULATED LSHF SHEATHED ENERGY CABLES 0.6/1kV COPPER
CONDUCTOR STEEL WIRE ARMoured AUXILIARY CABLES RATED 90°C.

NO./NOM CORES mm	NO.OF DIA mm	SHEATH O.D. kg/km	TOTAL WEIGHT
------------------------	--------------------	-------------------------	-----------------

1.5mm²

7	7/0.53	15.2	446.9
12	7/0.53	19.3	729.1
19	7/0.53	21.9	955.6
27	7/0.53	27.1	1435.7
37	7/0.53	28.7	1675.8

2.5mm²

7	7/0.67	17.0	565.2
12	7/0.67	22.1	952.4
19	7/0.67	26.3	1441.2
27	7/0.67	31.3	1897.4
37	7/0.67	33.3	2264.2

4mm²

7	7/0.85	19.6	829.1
12	7/0.85	25.4	1385.2
19	7/0.85	29.0	1849.8
27	7/0.85	34.9	2473.5
37	7/0.85	38.7	3328.0

BS 6724



LSHF INSULATED LSHF SHEATHED ENERGY CABLES 0.6/1kV COPPER
CONDUCTOR UNARMoured SINGLE CORE RATED 70°C.

N.C. AREA mm ²	NO OF CORE NO/NOM DIA mm	OVERALL DIMENSIONS mm	TOTAL WEIGHT kg/km
---------------------------------	--------------------------------	-----------------------------	--------------------------

1.5	7/0.53	5.99	52.90
2.5	7/0.67	6.41	65.80
4	7/0.85	7.35	92.00
6	7/1.04	7.92	116.80
10	7/1.35	8.85	170.60
16	7/1.70	9.90	237.60
25	19/1.35	11.95	365.70
35	19/1.53	12.85	448.60

IEC 60502-1



ACL FIRE SURVIVOR

ACL Fire Survivor cables maintains circuit integrity during a fire

ACL Fire Survivor range of cables is required to continue supply of electricity to equipment/lights that are necessary for fire fighting and escape of people in the midst of a fire.

Electrically there is a significant difference between Fire Retardant cables and Fire Survival (resistant) cables. Fire Retardant cables resist the spread of fire into a new area and the function of those is to prevent spread of fire. But, if a fire occurs due to any reason, Fire Retardant cables cannot continue to supply electricity to the building or any equipment since those cables lose circuit integrity in the midst of a fire. When a building is on fire, to provide electricity uninterrupted for Fire Alarms, Water Sprinklers, Exhaust Fans, Escape Lights etc., one need to use Fire Resistant or Fire Survival cables. ACL has developed ACL Fire Survivor cables for this purpose.

ACL Fire Survivor Cables have been proven to survive & maintain circuit integrity in the midst of a fire raging at 950°C for a minimum of 3 hours as per BS Standard 6387. This gives adequate time for fire fighters to douse the fire and allow those trapped in the fire to escape. Therefore, ACL Fire survivor cables are absolutely essential in modern day buildings for fire safety.

What do the Authorities demand?

The following Electrical Systems are not supposed to shutdown in the midst of a Fire

1. Alarm systems
2. Water sprinklers
3. Escape lights
4. Water pumps
5. Elevators (To open up and cease operation in the midst of a fire)
6. Emergency circuits

Residents and owners of large buildings, Regulatory authorities for building safety now demand for stringent fire safety measures more than ever. In the event of a Fire, above mentioned Electrical equipment/installations and Evacuation systems merge to protect those trapped and help them to escape while making it lot easier for fire fighters and rescue personnel to do their functions.

The Institute for Construction Training and Development (ICTAD) in Sri Lanka specifies the fire resistant circuit integrity of cables in accordance with the rating CWZ of BS 6387: 2013 standard. ACL Fire Survivor cables conform 100% to these Sri Lankan and International Standards.

ACL Fire Survivor cables are manufactured and tested in accordance with most stringent circuit integrity tests of BS 6387:2013, and complies with the following Test Specifications

RESISTANCE TO FIRE ALONE (BS6387:2013) PROTOCOL C:

Cables are subjected to Fire at 950°C (+/-40°C) for 3 hours

RESISTANCE TO FIRE WITH WATER (BS 6387:2013) PROTOCOL W:

Cables are subjected to Fire at 650°C (+/-40°C) for 15 minutes, then at 650 °C with water spray for a further 15 minutes.

RESISTANCE TO FIRE WITH MECHANICAL SHOCK (BS6387:2013) PROTOCOL Z:

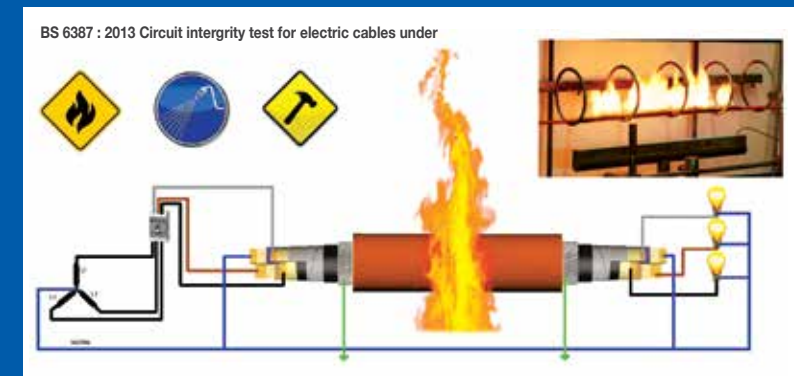
Cables are subjected to fire at 950°C (+/-40°C) with mechanical shock for 15 minutes.

Other Tests Standards met by ACL Fire Survivor cables

ACL Fire Survivor cables are also subject to following tests -

- Oxygen index (ASTM D 2863) - More than 29%
- Temperature index (ASTM D 2863) - More than 250°C
- Flame retardant (Fire Propagation) test for bunched cables (IEC-60332-3)
 - Not exceeding 2.5 m above the edge of the burner
- Acid Gas Generation BS EN 50267 / IEC 60754 - Less than 0.5%
- Light Transmission BSEN 50268/IEC61034 - More than 60 %

CIRCUIT DIAGRAM OF CIRCUIT INTEGRITY TEST FOR ALL 3 PROTOCOLS.



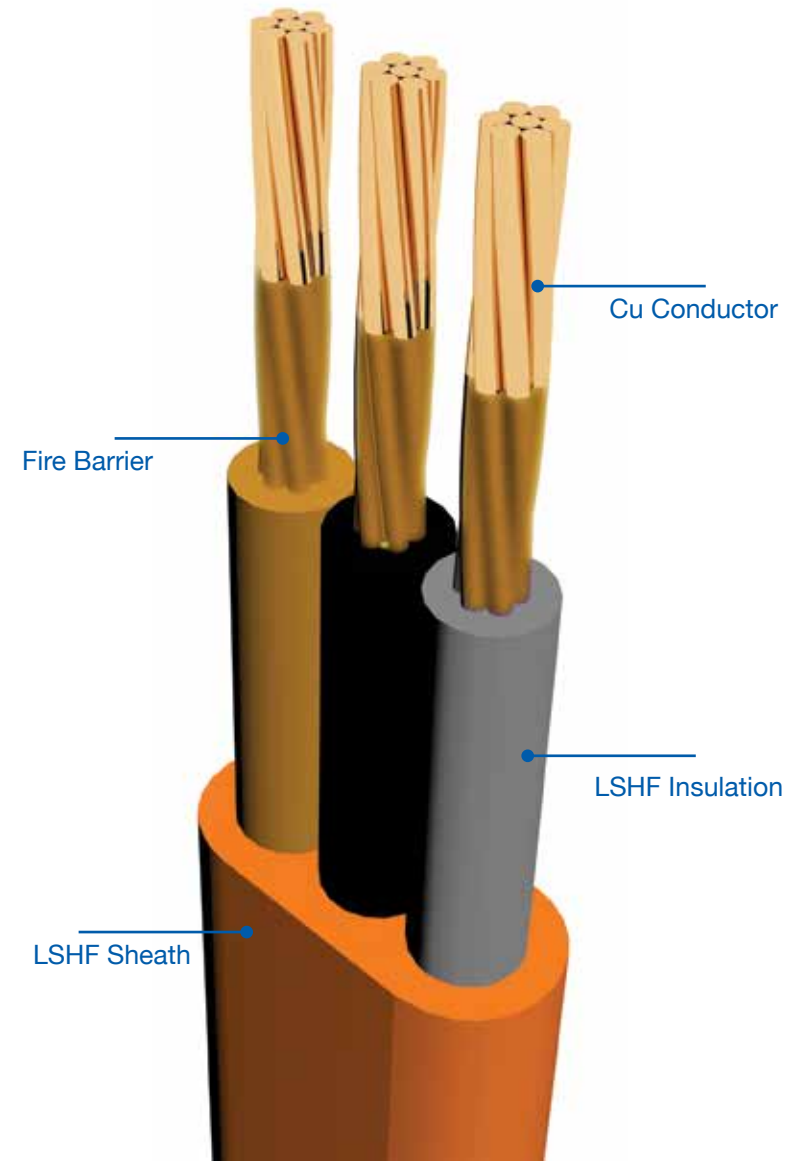
ACL being a Company with pioneering spirit, is always committed not only to develop new products but also to develop products which meet most stringent international Standards. ACL Fire Survivor range of cables were developed in 2011 and introduced to the market in 2014. ACL Fire Zero cables were introduced in the year 2007.

Today, ACL is proud it has mastered Product Design, Raw Material Selections, Technology, Process Technology and Comprehensive Testing Technology to beat any competitor in the region. Valued customers of ACL can test all fire rated cables comprehensively at ACL laboratory at Piliyandala, Sri Lanka. Comprehensive testing of Fire Rated cables is important since no Engineer can distinguish between normal cable and a Fire Rated cable by appearance.

Benefits of ACL Fire Survivor cables

- Ability to maintain circuit integrity more than three hours at 950°C of fire
- Ability to maintain circuit integrity in the presence of water
- Ability to maintain circuit integrity despite mechanical shocks.
- NO Spread of fire
- NO Halogen- therefore, no acidic gases
- NO Toxic gases
- NO Black smoke

“Human life cannot be revived by any other means but by Survival.”



Fire Survivor Cables

CU/MGT/LSHF - GREEN EARTH WIRE
RATED - 70°C

N. C. AREA mm ²	NO/NOM DIAMETER mm	INSULATION O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	3.95	28.4
2.5	7/0.67	4.57	41.2
4	7/0.85	5.11	58.0
6	7/1.04	5.68	79.4
10	7/1.35	7.01	128.4
16	7/1.70	8.06	188.9
25	7/2.14	9.78	291.4
25	19/1.35	10.11	312.1
35	19/1.53	11.01	389.4
50	19/1.78	12.66	523.0
70	19/2.14	14.46	729.8
95	19/2.52	16.76	1002.0
120	37/2.03	18.37	1243.2
150	37/2.25	20.31	1525.2
185	37/2.52	22.60	1905.8
240	61/2.25	25.61	2486.7
300	61/2.52	28.44	3103.5
400	61/2.85	31.81	3943.3
500	61/3.20	35.36	4942.0
630	91/3.00	39.56	6391.7

BSEN 50525-3-31/BS6387/BS 8491 - 450/750 V



CU/MGT/LSHF/LSHF - FLEXIBLE ORDINARY CORD
RATED - 70°C

N.C. AREA mm ²	NO OF CORE NO/NOM DIA mm	OVERALL DIMENSIONS mm	TOTAL WEIGHT kg/km
2 CORE			
1	2x32/0.20	8.56	93.60
1.5	2x30/0.25	9.92	129.40
2.5	2x50/0.25	11.12	174.20
4	2X56/0.30	13.32	257.50
3 CORE			
1	3x32/0.20	9.10	108.30
1.5	3x30/0.25	10.33	145.50
2.5	3x50/0.25	12.02	209.90
4	3X56/0.30	13.51	283.10
4 CORE			
1	4x32/0.20	10.20	136.80
1.5	4x30/0.25	11.56	183.80
2.5	4x50/0.25	13.21	258.40
4	4X56/0.30	14.86	350.70
5 CORE			
1	5x32/0.20	11.20	167.40
1.5	5x30/0.25	12.89	232.90
2.5	5x50/0.25	14.71	325.50
4	5X56/0.30	16.73	449.30

BSEN 50525-3-11/BS6387-300/500V



Cu/MGT/XLPE/LSHF - UNARMoured SINGLE CORE RATED - 90°C



BS 8573 /BS 6387/ BS8491 - 0.6/1kV

N.C. AREA mm ²	NO:/NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	6.8	59.9
2.5	7/0.67	7.2	72.8
4	7/0.85	7.7	92.3
6	7/1.04	8.3	116.4
10	7/1.35	9.2	163.5
16	7/1.70	10.3	228.1
25	19/1.35	12.3	356.6
35	19/1.53	13.2	437
50	19/1.78	14.7	568.1
70	19/2.14	16.7	785.6
95	19/2.52	18.8	1057.0
120	37/2.03	20.6	1309.2
150	37/2.25	22.7	1601.7
185	37/2.52	25.0	1982.7
240	61/2.25	28.0	2568.8
300	61/2.52	30.8	3189.2
400	61/2.85	34.4	4043.8
500	61/3.20	38.2	5058.7
630	91/3.00	43.2	6586.7
800	127/2.85	47.8	8231.9
1000	127/3.20	53.0	10298.7

Cu/MGT/XLPE/LSHF - UNARMoured TWO CORE RATED - 90°C



BS 8573 /BS 6387/ BS8491 - 0.6/1kV

N.C. AREA mm ²	NO:/NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	11.5	171.1
2.5	7/0.67	12.3	207.5
4	7/0.85	13.4	261.3
6	7/1.04	14.6	326.8
10	7/1.35	16.4	453.0
16	7/1.70	18.5	623.8
25	7/2.14	22.0	916.4
25	19/1.35	22.6	977
35	7/2.52	24.2	1181
35	19/1.53	24.4	1187.7
50	19/1.78	27.3	1538.2
70	19/2.14	31.3	2113.1

Cu/MGT/XLPE/LSHF - UNARMoured THREE CORE RATED - 90°C



BS 8573 /BS 6387/ BS8491- 0.6/1kV

N.C. AREA mm ²	NO/NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	12.1	194.4
2.5	7/0.67	13.0	240.0
4	7/0.85	14.2	308.9
6	7/1.04	15.4	393.2
10	7/1.35	17.4	557.7
16	7/1.70	20.27	848.2
25	19/1.35	24.68	1312.7
35	19/1.53	26.62	1595.6
50	19/1.78	24.92	1652
70	19/2.25	28.62	2319
95	19/2.63	31.62	3132.7
120	19/2.94	34.52	3859.4

Cu/MGT/XLPE/LSHF - UNARMoured FOUR CORE RATED - 90°C



BS 8573 /BS 6387/ BS8491- 0.6/1kV

N.C. AREA mm ²	NO/NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	13.1	232.3
2.5	7/0.67	14.2	290.2
4	7/0.85	15.5	377.4
6	7/1.04	16.8	485.5
10	7/1.35	19.7	625.3
16	7/1.70	22.21	907.7
25	7/2.25	24.35	1243.1
35	7/2.63	26.78	1641.4
50	7/3.12	30.34	2170.6
70	19/2.25	34.67	3070.2
95	19/2.63	38.53	4144.4
120	19/2.94	42.43	5114.3

Cu/MGT/XLPE/LSHF - UNARMoured FIVE CORE
RATED - 90°C

N.C. AREA mm ²	NO./NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	14.53	287.7
2.5	7/0.67	16.20	374.8
4	7/0.85	17.86	493.2
6	7/1.04	19.40	630.9
10	7/1.35	22.71	810.0
16	7/1.70	26.14	1174.2
25	19/1.35	31.88	1849.5
35	19/1.53	34.51	2278.6
50	19/1.78	39.02	3017.3
70	19/2.14	44.82	4193.7

BS 8573 /BS 6387/ BS8491 - 0.6/1kV



Cu/MGT/XLPE/AWA/LSHF - ARMoured SINGLE CORE
RATED - 90°C

N.C. AREA mm ²	NO./NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
50	19/1.78	18.3	730.0
70	19/2.14	21.0	1008.0
95	19/2.52	23.1	1307.0
120	37/2.03	24.9	1581.0
150	37/2.25	28.1	1981.0
185	37/2.52	30.6	2411.0
240	61/2.25	33.4	3028.0
300	61/2.52	36.2	3694.0
400	61/2.85	41.0	4739.0
500	61/3.20	44.8	5824.0
630	91/3.00	49.6	7426.0
800	127/2.85	55.8	9391.0
1000	127/3.20	61.0	11581.0

BS 6724 /BS 6387/ BS8491 - 0.6/1kV



Cu/MGT/XLPE/SWA/LSHF - ARMoured TWO CORE
RATED - 90°C



BS 7846 /BS 6387/ BS 8491 - 0.6/1kV

N.C. AREA mm ²	NO:/NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	13.5	342.9
2.5	7/0.67	14.9	417.1
4	7/0.85	16.0	486.9
6	7/1.04	17.2	573.7
10	7/1.35	19.2	741.0
16	7/1.70	22.0	1067.0
25	7/2.14	25.7	1446.0
25	19/1.35	26.3	1657.0
35	7/2.52	29.2	1971.8
35	19/1.53	29.4	1947.2
50	19/1.78	32.7	2403.7
70	19/2.14	38.1	3124.2

Cu/MGT/XLPE/SWA/LSHF - ARMoured 3 CORE
RATED - 90°C



BS 7846 /BS 6387/ BS 8491 - 0.6/1kV

N.C. AREA mm ²	NO:/NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	14.1	378.5
2.5	7/0.67	15.6	463.5
4	7/0.85	16.8	554.6
6	7/1.04	18.0	656.0
10	7/1.35	20.9	976.8
16	7/1.70	23.4	1266.1
25	7/2.25	23.7	1589.8
35	7/2.63	25.7	1952.6
50	7/3.12	28.2	2415.2
70	19/2.25	31.9	3196.4
95	19/2.63	36.3	4394.2
120	19/2.94	39.2	5239.9
150	19/3.27	44.2	6636.5
185	37/2.87	48.4	7992.4
240	37/2.95	53.3	9971.6
300	37/3.35	57.8	12055.3
400	61/2.95	63.8	14865.7

Cu/MGT/XLPE/SWA/LSHF - ARMoured FOUR CORE
RATED - 90°C

BS 7846 /BS 6387/ BS 8491 - 0.6/1kV



N.C. AREA mm ²	NO./NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	15.1	428.3
2.5	7/0.67	16.8	527.5
4	7/0.85	18.1	641.3
6	7/1.04	20.3	888.2
10	7/1.35	23.2	1118.3
16	7/1.70	25.9	1462.4
25	7/2.25	28.2	2016.9
35	7/2.63	30.8	2520.8
50	7/3.12	34.5	3180.4
70	19/2.25	40.1	4508.9
95	19/2.63	43.9	5760.0
120	19/2.94	49.2	7321.5
150	19/3.27	53.9	8711.0
185	37/2.87	58.8	10507.6
240	37/2.95	65.0	13181.6
300	37/3.35	70.7	15920.0
400	61/2.95	81.1	20763.7

Cu/MGT/XLPE/SWA/LSHF - ARMoured FIVE CORE
RATED - 90°C

BS 7846 /BS 6387/ BS 8491 - 0.6/1kV



N.C. AREA mm ²	NO./NOM DIA mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	16.3	494.4
2.5	7/0.67	18.0	609.2
4	7/0.85	19.7	751.5
6	7/1.04	21.9	1027.5
10	7/1.35	24.6	1360.0
16	7/1.70	28.7	1988.0
25	7/2.14	33.6	2751.7
25	19/1.35	34.5	2902.8
35	7/2.52	36.9	3428.3
35	19/1.53	37.1	3444.4
50	19/1.78	42.4	4654.0
70	19/2.14	48.2	6146.1

Cu/MGT/XLPE/SWA/LSHF - ARMoured AUXILIARY CABLES RATED - 90°C

BS 7846 /BS 6387/ BS 8491 - 0.6/1kV



NO./NOM CORES mm	NO.OF DIA mm	SHEATH O.D. kg/km	TOTAL WEIGHT
1.5mm ²			
7	7/0.53	18.1	560.0
12	7/0.53	23.3	924.0
19	7/0.53	26.7	1217.4
27	7/0.53	33.2	1816.2
37	7/0.53	35.5	2146.7
2.5mm ²			
7	7/0.67	19.9	684.9
12	7/0.67	26.0	1160.8
19	7/0.67	31.1	1764.7
27	7/0.67	37.4	2306.7
37	7/0.67	40.0	2774.1
4mm ²			
7	7/0.85	22.4	978.8
12	7/0.85	29.4	1631.6
19	7/0.85	33.8	2173.4
27	7/0.85	41.1	2924.3
37	7/0.85	45.4	3914.7

CU/MGT/LSHF/LSHF - UNARMoured TWO, THREE, FOUR CORE RATED - 70°C

IEC 60502-1 /BS6387 - 0.6/1kV



N.C. AREA mm ²	NO OF CORE NO/NOM DIA mm	OVERALL DIMENSIONS mm	TOTAL WEIGHT kg/km
2 CORE			
1.5	7/0.53	11.90	191.00
2.5	7/0.67	12.74	229.50
4	7/0.85	14.62	313.40
6	7/1.04	15.76	383.70
3 CORE			
1	7/0.53	12.54	220.30
1.5	7/0.67	13.44	268.70
2.5	7/0.85	15.47	372.40
4	7/1.04	16.70	463.00
4 CORE			
1	7/0.53	13.62	264.80
1.5	7/0.67	14.63	326.00
2.5	7/0.85	16.90	456.10
4	7/1.04	18.28	572.00

CU/MGT/LSHF/LSHF - UNARMoured SINGLE CORE RATED - 70°C



IEC 60502-1/BS 6387 - 0.6/1 kV

N.C. AREA mm ²	NO OF CORE NO/NOM DIA mm	OVERALL DIMENSIONS mm	TOTAL WEIGHT kg/km
1.5	7/0.53	6.95	66.20
2.5	7/0.67	7.37	80.00
4	7/0.85	8.31	108.20
6	7/1.04	8.88	134.30
10	7/1.35	9.81	190.10
16	7/1.70	10.86	259.40
25	19/1.35	12.91	391.90
35	19/1.53	13.81	476.70

The Design & Development of Fire Performance & Fire Resistant Cables:

In order to meet the challenge of today's and future market developments successfully, our innovative attempts are of greatest importance. We are continuously engaged in new and further development of our products in order to complete the standard cable range, solving of world common drawbacks of these category, enhancing of fire retardant and circuit integrity performance levels for the mostly requested 600/1000V armoured & non armoured applications and to extend and strengthen our market position. We are manufacturing products of best quality for the market supported by intensive development, research, and quality testing. New products are a result of a close communication between customers, sales and development departments, laboratories, and raw material suppliers.

The product validation is taken through all testing methods required by the relevant international standards as well as of numerous international or local third party approvals. Furthermore, we use many standard quality testing systems for the testing of fire performance levels such as properties of fire retardant, level of halogen free gases, level of low smoke density, percentage of oxygen index, temperature index and duration of circuit integrity (capability of electrical functionality during a fire). We guarantee fire performance qualities and circuit integrity qualities for all of these cables categories and thus, gain the trust of our customers and the final users.

CU/LSHF/LSHF - UNARMoured TWIN FLAT - 300/500 V RATED - 70°C

N.C. AREA mm ²	NO/NOM DIA. mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	4.8 x 7.7	70.7
2.5	7/0.67	5.6 x 9.2	103.4
4	7/0.85	6.1 x 10.2	141.1
6	7/1.04	6.9 x 11.6	196.5
10	7/1.35	8.5 x 14.5	314.0
16	7/1.70	9.7 x 16.8	456.2

BS 6004
ASTM D2863, IEC 60332-1, IEC 60332-3, IEC 60754-1,
IEC 61034-2, IEC 60754-2



CU/LSHF/LSHF - SINGLE CORE ORDINARY CODE - 300/500 V RATED - 70°C

N.C. AREA mm ²	NO OF CORE NO/NOM DIA mm	OVERALL DIMENSIONS mm	TOTAL WEIGHT kg/km
1*	1/1.13	3.91	25.20
1.5*	1/1.38	4.37	33.40
1.5	7/0.53	4.56	35.70
2.5*	1/1.78	4.97	47.30
2.5	7/0.67	5.18	49.60
4	7/0.85	5.92	70.40
6	7/1.04	6.52	95.20
10	7/1.35	7.85	148.50
16	7/1.70	9.10	217.70
25	19/1.35	11.35	352.80
25	7/2.14	11.02	333.30
35	19/1.53	12.25	432.40

BS 6004
ASTM D2863, IEC 60332-1, IEC 60332-3, IEC 60754-1,
IEC 61034-2, IEC 60754-2



CU/MGT/LSHF/LSHF
ORDINARY CORD - 300/500V
RATED - 70°C

BS 6004 /BS 6387ASTM D2863 ,IEC 60332-1 ,IEC 60332-3,
IEC 60754-1, IEC 61034-2, IEC 60754-2



N.C. AREA mm ²	NO OF CORE NO/NOM DIA mm	OVERALL DIMENSIONS mm	TOTAL WEIGHT kg/km
1*	1/1.13	4.79	33.20
1.5*	1/1.38	5.25	42.40
1.5	7/0.53	5.44	44.50
2.5*	1/1.78	5.85	57.40
2.5	7/0.67	6.06	59.30
4	7/0.85	6.88	82.40
6	7/1.04	7.48	107.30
10	7/1.35	8.81	161.90
16	7/1.70	10.06	231.60
25	19/1.35	12.31	370.20
25	7/2.14	11.98	347.80
35	19/1.53	13.21	452.10

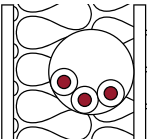
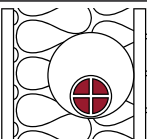
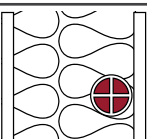
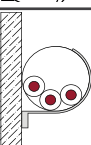

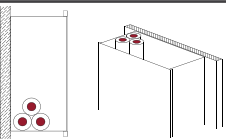
CU/MGT/LSHF/LSHF
TWIN FLAT - 300/500 V
RATED - 70°C

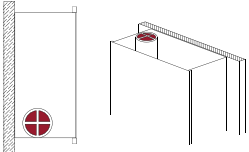
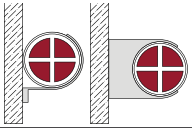
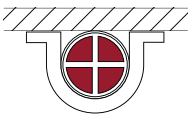
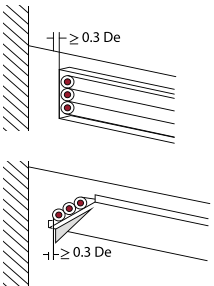
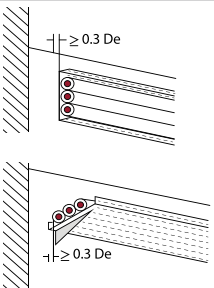
BS 6004 /BS 6387
ASTM D2863 ,IEC 60332-1 ,IEC 60332-3,IEC 60754-1, IEC 61034-2,
IEC 60754-2.

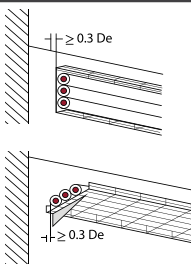
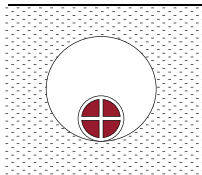
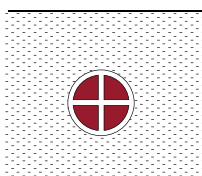
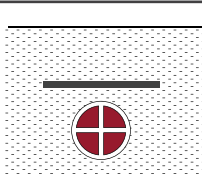


N.C. AREA mm ²	NO/NOM DIA. mm	SHEATH O.D. mm	TOTAL WEIGHT kg/km
1.5	7/0.53	5.6 x 9.5	91.0
2.5	7/0.67	6.5 x 11.0	127.1
4	7/0.85	7.1 x 12.2	169.6
6	7/1.04	7.9 x 13.6	228.8
10	7/1.35	9.4 x 16.4	353.3
16	7/1.70	10.7 x 18.7	501.3

SCHEDULE OF INSTALLATION METHODS OF CABLES FOR DETERMINING CURRENT CARRYING CAPACITY.

Installation Method		Reference method to be used to determine current carrying capacity
Examples	Description	
1. 	Non-sheathed cables in conduit In a thermally insulated wall with an inner skin having a thermal conductance of not less than 10 W/m ² Kc	A
2. 	Multi core cables in conduit In a thermally insulated wall with an inner skin having a thermal conductance of not less than 10 W/m ² Kc	A
3. 	Multi core cables direct in a thermally insulated wall with an inner skin having a thermal conductance of not less than 10 W/m ² Kc	A
4. 	Non-sheathed cables in conduit on a wooden or masonry wall c	B
5. 	Multi core cable in conduit on a wooden or masonry wall c	B
6. 	Non-sheathed cables in cable trunking on a wooden or masonry wall. run horizontally (left) b run vertically (Right) b,c	B

Installation Method		Reference method to be used to determine current carrying capacity
Examples	Description	
7. 	Multi core cable in cable trunking on a wooden or masonry wall run horizontally (left) b run vertically (Right) b,c	B*
8. 	Single core or multi core cables: Fixed on (clipped direct), or spaced less than 0.3 x cable diameter from a wooden or masonry wall.c	C
9. 	Single-core or multi core cables: Fixed directly under a wooden or masonry ceiling.	C
10. 	Single-core or multi core cables: on unperforated tray run horizontally or vertically c De = the external diameter of a cable. The space between wall and cable tray will be, 2.2x De ; When 3 single core cables are bound in trefoil, 3.0 x De ; When 3 single core cables are laid in flat .	C
11. 	Single-core or multi core cables: On perforated tray Run horizontally or vertically c The space between wall and cable tray will be, 2.2x De ; When 3 single core cables are bound in trefoil, 3.0 x De ; When 3 single core cables are laid in flat formation.	D

Installation Method		Reference method to be used to determine current carrying capacity
Examples	Description	
1. 	<p>Single core or multi core cables: on ladder bracket type tray or on a wire mesh tray run horizontally or vertically c</p> <p>The space between wall and cable tray will be , $2.2 \times De$; When 3 single core cables are bound in trefoil, $3.0 \times De$; When 3 single core cables are laid in flat formation.</p>	D
2. 	Multi core armoured cable in conduit or in cable ducting in the ground	E
3. 	Sheathed, armoured or multi core cables direct in the ground: without added mechanical protection.	E
4. 	Sheathed, armoured or multi core cables direct in the ground: with added mechanical protection (e.g. Concrete cover)	E

- b –Values given for Installation Methods are for a single circuit. Where there is more than one circuit in the trunking the group rating factor given in Adjustment Table -7 is applicable, irrespective of the presence of an internal barrier or partition.
- c- Care is needed where the cable runs vertically and ventilation is restricted The ambient temperature at the top of the vertical section can be much higher.
- The inclusion of directly buried cables is satisfactory where the soil thermal resistivity is of the order of 2.5 K.m/W . For lower soil resistivities, the current-carrying capacity for directly buried cables is appreciably higher than for cables in ducts.
- *Still under consideration in IEC.



CABLES

Single core unarmoured Cu/LSHF insulated Cables with or without LSHF sheath

Ambient temperature: 30°C
Conductor operating temperature: 70°C

CURRENT-CARRYING CAPACITY (AMPERES) & VOLTAGE DROP (mV/A/m)

Conductor Cross sectional Area	Reference method											Voltage Drop
	A		B		C		D			E		
	Enclosed in conduit in thermally insulating wall		enclosed in conduit on a wall or in trunking		clipped direct		in free air or on a perforated cable tray etc horizontal or vertical etc) Touching			in free air -Spaced by one cable diameter		
	2 cables. single-phase ac. or d.c.	3 or 4 cables. three-phase ac.	2 cables. single-phase ac. or dc.	3 or 4 cables. three-phase ac.	2 cables. single-phase ac. or dc. flat and touching	3 or 4 cables. three-phase a.c. flat and touching or trefoil	2 cables. single- phaseac. or dc. flat	3 cables. three-phase ac. flat	3 cables. three-pa- seac trefoil	2 cables, single-phasea.c. or d.c.or 3 cables three- phase ac flat		
Horizontal										Vertical	3 or 4 cables,three phase a,c, touching Flat	
mm2	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(mV/A/m)
50	119	108	151	134	182	167	196	174	167	219	197	0.84
70	151	136	192	171	234	214	251	225	216	281	254	0.6
95	182	164	232	207	284	261	304	275	264	341	311	0.47
120	210	188	269	239	330	303	352	321	308	396	362	0.4
150	240	216	300	262	381	349	406	372	356	456	419	0.34
185	273	245	341	296	436	400	463	427	409	521	480	0.31
240	321	286	400	346	515	472	546	507	485	615	569	0.27
300	367	328	458	394	594	545	629	587	561	709	659	0.25
400	-	-	546	467	694	634	754	689	656	852	795	0.24
500	-	-	626	533	792	723	868	789	749	982	920	0.23
630	-	-	720	611	904	826	1005	905	855	1138	1070	0.22
800	-	-	-	-	1030	943	1086	1020	971	1265	1188	0.22
1000	-	-	-	-	1154	1058	1216	1149	1079	1420	1337	0.21

Multi core unarmoured Cu/ LSHF insulated LSHF Sheathed Cables

Ambient temperature: 30°C
Conductor operating temperature: 70°C

CURRENT-CARRYING CAPACITY (AMPERES) & VOLTAGE DROP (mV/A/m)

Conductor Cross sectional Area	Reference method								Voltage Drop
	A		B		C		D		
	Enclosed in conduit in thermally insulating wall		enclosed in conduit on a wall or in trunking		clipped direct		free air or on a perforated cable tray etc, horizontal or vertical		
	1 two-core cable, single-phase a.c. or d.c.	1 three or four-core cable three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three or four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	1 three or four-core cable, three-phase a.c.	1 two-core cable, single-phase a.c. or d.c.	I three or four-core cable, three-phase a.c.	
mm2	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	three or four-core cable three-phase a.c. (mV/A/m)
1	11	10	13	11.5	15	13.5	17	14.5	38
1.5	14	13	16.5	15	19.5	17.5	22	18.5	25
2.5	18.5	17.5	23	20	27	24	30	25	15
4	25	23	30	27	36	32	40	34	9.5
6	32	29	38	34	46	41	51	43	6.4
10	43	39	52	46	63	57	70	60	3.8
16	57	52	69	62	85	76	94	80	2.4
25	75	68	90	80	112	96	119	101	1.5
35	92	83	111	99	138	119	148	126	1.1
50	110	99	133	118	168	144	180	153	0.81
70	139	125	168	149	213	184	232	196	0.57
95	167	150	201	179	258	223	282	238	0.43
120	192	172	232	206	299	259	328	276	0.35
150	219	196	258	225	344	299	379	319	0.29
185	248	223	294	255	392	341	434	364	0.25
240	291	261	344	297	461	403	514	430	0.21
300	334	298	394	339	530	464	593	497	0.185
400	-	-	470	402	634	557	715	597	0.16



CABLES

Single core armoured Cu/LSHF insulated Cables (non magnetic armour)

Ambient temperature: 30°C
Conductor operating temperature: 70°C

CURRENT-CARRYING CAPACITY (AMPERES) & VOLTAGE DROP (mV/A/m)

Conductor Cross sectional Area	Reference method											Voltage Drop	
	C		D										
	clipped direct		in free air or, on a perforated cable tray, horizontal or vertical										
	Touching		Touching			Spaced by one cable diameter						clipped direct, on tray or in free air	
	2 cables, single phase a.c. or d.c. flat	3 or 4 ca- bles, three phase a.c. flat	2 cables, single phase a.c. or d.c. flat	3 cables. three phase a.c. flat	3 cables. three phase a.c. trefoil	2 cables, d.c.		2 cables, single-phase a.c.		3 or 4 cables, three-phase a.c.		3 or 4 cables, three-phase a.c.	
Horizontal						Vertical	Horizontal	Vertical	Horizontal	Vertical	Flat and touching		
mm2	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(mV/A/m)	
50	193	179	205	189	181	229	216	229	217	230	212	0.84	
70	245	225	259	238	231	294	279	287	272	286	263	0.62	
95	296	269	313	285	280	357	340	349	332	338	313	0.5	
120	342	309	360	327	324	415	396	401	383	385	357	0.43	
150	393	352	413	373	373	479	458	449	429	436	405	0.38	
185	447	399	469	422	425	548	525	511	489	490	456	0.34	
240	525	465	550	492	501	648	622	593	568	566	528	0.3	
300	594	515	624	547	567	748	719	668	640	616	578	0.28	
400	687	575	723	618	657	885	851	737	707	674	632	0.26	
500	763	622	805	673	731	1035	997	810	777	721	676	0.25	
630	843	669	891	728	809	1218	1174	893	856	771	723	0.23	
800	919	710	976	777	886	1441	1390	943	905	824	772	0.22	
1000	975	737	1041	808	945	1685	1627	1008	967	872	816	0.21	

Multi core armoured Cu/ LSHF insulated LSHF Sheathed Cables

Ambient temperature: 30°C

Ground Ambient temperature: 20°C

Conductor operating temperature: 70°C

CURRENT-CARRYING CAPACITY (AMPERES) & VOLTAGE DROP (mV/A/m)

Conductor Cross sectional Area	Reference method						Voltage Drop
	C		D		E		
	clipped direct		In free air or on a perforated cable tray etc, horizontal or vertical		direct in ground or in ducting in ground in or around building		
	1 two-core cable. single-phase a.c. or d.c.	1 three or 1 four-core cable. three-phase a.c.	1 two-core cable. single-phase a.c. or d.c.	1 three or 1 four-core cable. three-phase a.c.	1 two-core cable. single-phase a.c. or d.c.	1 three or 1 four-core cable. three-phase a.c.	Three or four-core cable
							three-phase a.c.
mm2	(A)	(A)	(A)	(A)	(A)	(A)	(mV/A/m)
1.5	21	18	22	19	22	18	25
2.5	28	25	31	26	29	24	15
4	38	33	41	35	37	30	9.5
6	49	42	53	45	46	38	6.4
10	67	58	72	62	60	50	3.8
16	89	77	97	83	78	64	2.4
25	118	102	128	110	99	82	1.5
35	145	125	157	135	119	98	1.1
50	175	151	190	163	140	116	0.81
70	222	192	241	207	173	143	0.57
95	269	231	291	251	204	169	0.43
120	310	267	336	290	231	192	0.35
150	356	306	386	332	261	217	0.29
185	405	348	439	378	292	243	0.25
240	476	409	516	445	336	280	0.21
300	547	469	592	510	379	316	0.185
400	621	540	683	590	-	-	0.16



CABLES

Single core unarmoured Cu/XLPE insulated Cables with or without LSHF sheath

Ambient temperature: 30°C
Conductor operating temperature: 90°C

CURRENT-CARRYING CAPACITY (AMPERES) & VOLTAGE DROP (mV/A/m)

Conductor Cross sectional Area	Reference method											Voltage Drop
	A		B		C		D					
	Enclosed in conduit in thermally insulating wall		enclosed in conduit on a wall or in trunking		clipped direct		in free air or on a perforated cable tray etc horizontal or vertical etc) Touching			in free air -Spaced by one cable diameter		
	2 cables. single-phase ac. or d.c.	3 or 4cables. three-phase ac.	2 cables. single-phase ac. or dc.	3 or 4cables. three-phase ac.	2 cables. single-phase ac. or dc. flat and touching	3 or 4cables. three-phase a.c. flat and touching or trefoil	2 cables. single phase ac. or dc. flat	3 cables. three-phase ac. flat	3 cables. three-phase ac trefoil	2 cables, single-phase a.c. or d.c.or 3 cables three-phase ac flat		clipped direct, on tray or in free air
Horizontal										Vertical	3or 4 cables,three phase a,c, touching flat	
mm2	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	mV/A/m
50	158	141	198	175	228	209	242	216	207	275	246	0.87
70	200	179	253	222	293	268	310	279	268	353	318	0.62
95	241	216	306	269	355	326	377	342	328	430	389	0.46
120	278	249	354	312	413	379	437	400	383	500	454	0.38
150	318	285	393	342	476	436	504	464	444	577	527	0.32
185	362	324	449	384	545	500	575	533	510	661	605	0.28
240	424	380	528	450	644	590	679	634	607	781	719	0.24
300	486	435	603	514	743	681	783	736	703	902	833	0.21
400	-	-	683	584	868	793	940	868	823	1085	1008	0.195
500	-	-	783	666	990	904	1083	998	946	1253	1169	0.18
630	-	-	900	764	1130	1033	1254	1151	1088	1454	1362	0.17
800	-	-	-	-	1288	1179	1358	1275	1214	1581	1485	0.165
1000	-	-	-	-	1443	1323	1520	1436	1349	1775	1671	0.165

Multi core unarmoured Cu/XLPE insulated LSHF Sheathed Cables

Ambient temperature: 30°C
Conductor operating temperature: 90°C

CURRENT-CARRYING CAPACITY (A) & VOLTAGE DROP (mV/A/m)

Conductor Cross sectional Area	Reference method								Voltage Drop (per ampere per meter)
	A		B		C		D		
	Enclosed in conduit in thermally insulating wall		enclosed in conduit on a wall or in trunking		clipped direct		free air or on a perforated cable tray etc, horizontal or vertical		
	1 two-core cable, single- phase a.c. or d.c.	1 three or four-core cable three-phase a.c.	1 two-core cable, single- phase a.c. or d.c.	1 three or four- core cable, three-phase a.c.	1 two-core cable, single- phase a.c. or d.c.	1 three or four- core cable. three-phase a.c.	1 two-core cable, single- phase a.c. or d.c.	1 three or four- core cable, three-phase a.c.	three or four-core cable
mm2	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	three-phase a.c.
1	14.5	13	17	15	19	17	21	18	mV/A/m
1.5	18.5	16.5	22	19.5	24	22	26	23	40
2.5	25	22	30	26	33	30	36	32	27
4	33	30	40	35	45	40	49	42	16
6	42	38	51	44	58	52	63	54	10
10	57	51	69	60	80	71	86	75	6.8
16	76	68	91	80	107	96	115	100	4
25	99	89	119	105	138	119	149	127	2.5
35	121	109	146	128	171	147	185	158	1.65
50	145	130	175	154	209	179	225	192	1.15
70	183	164	221	194	269	229	289	246	0.87
95	220	197	265	233	328	278	352	298	0.6
120	253	227	305	268	382	322	410	346	0.45
150	290	259	334	300	441	371	473	399	0.37
185	329	295	384	340	506	424	542	456	0.3
240	386	346	459	398	599	500	641	538	0.26
300	442	396	532	455	693	576	741	621	0.21
400	-	-	625	536	803	667	865	741	0.185
									0.165



CABLES

Single core armoured Cu/XLPE insulated Cables (non magnetic armour)

Ambient temperature: 30°C
Conductor operating temperature: 90°C

CURRENT-CARRYING CAPACITY (A) & VOLTAGE DROP (mV/A/m)

Conductor Cross sectional Area	Reference method											Voltage Drop (per ampere per meter)	
	C		D										
	clipped direct		in free air or, on a perforated cable tray, horizontal or vertical										
	Touching		Touching			Spaced by one cable diameter							
	2 cables, single phase a.c. or d.c. flat	3 or 4 ca- bles, three phase a.c. flat	2 cables, single phase a.c. or d.c. flat	3 cables. three phase a.c. trefoil	2 cables. single phase ac. or dc. flat and touching	2 cables, d.c.		2 cables, single-phase a.c.		3 or 4 cables, three-phase a.c.		3 or 4 cables, three-phase a.c.	
Horizontal						Vertical	Horizontal	Vertical	Horizontal	Vertical	3or 4 cables,three phase a,c, touching Flat		
mm2	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	mV/A/m	
50	237	220	253	232	222	284	270	282	266	288	266	0.88	
70	303	277	322	293	285	356	349	357	337	358	331	0.65	
95	367	333	389	352	346	446	426	436	412	425	393	0.52	
120	425	383	449	405	402	519	497	504	477	485	449	0.44	
150	488	437	516	462	463	600	575	566	539	549	510	0.39	
185	557	496	587	524	529	688	660	643	614	618	574	0.34	
240	656	579	689	612	625	815	782	749	714	715	666	0.3	
300	755	662	792	700	720	943	906	842	805	810	755	0.28	
400	853	717	899	767	815	1137	1094	929	889	848	797	0.27	
500	962	791	1016	851	918	1314	1266	1032	989	923	871	0.25	
630	1082	861	1146	935	1027	1528	1474	1139	1092	992	940	0.24	
800	1170	904	1246	987	1119	1809	1744	1204	1155	1042	978	0.23	
1000	1261	961	1345	1055	1214	2100	2026	1289	1238	1110	1041	0.21	

Multicore armoured Cu/XLPE insulated & LSHF Sheathed Cables

Ambient temperature: 30°C
Ground Ambient temperature: 20°C
Conductor operating temperature: 90°C

CURRENT-CARRYING CAPACITY (A) & VOLTAGE DROP (mV/A/m)

Conductor Cross sectional Area	Reference method						Voltage Drop
	C		D		E		
	clipped direct		in free air or on a perforated cable tray etc, horizontal or vertical		direct in ground or in ducting in ground in or around buildings		
	1 two-core cable. single-phase a.c. or d.c.	1 three or 1 four-core cable. three-phase a.c.	1 two-core cable. single-phase a.c. or d.c.	1 three or 1 four-core cable. three-phase a.c.	1 two-core cable. single-phase a.c. or d.c.	1 three or 1 four-core cable. three-phase a.c.	Three or four-core cable three-phase a.c.
mm2	(A)	(A)	(A)	(A)	(A)	(A)	mV/A/m
1.5	27	23	29	25	25	21	27
2.5	36	31	39	33	33	28	16
4	49	42	52	44	43	36	10
6	62	53	66	56	53	44	6.8
10	85	73	90	78	71	58	4
16	110	94	115	99	91	75	2.5
25	146	124	152	131	116	96	1.65
35	180	154	188	162	139	115	1.15
50	219	187	228	197	164	135	0.87
70	279	238	291	251	203	167	0.6
95	338	289	354	304	239	197	0.45
120	392	335	410	353	271	223	0.37
150	451	386	472	406	306	251	0.3
185	515	441	539	463	343	281	0.26
240	607	520	636	546	395	324	0.21
300	698	599	732	628	446	365	0.185
400	787	673	847	728	-	-	0.165

ADJUSTMENT TABLE - 1

VARIATION IN AMBIENT TEMPERATURE

Correction factors for ambient temperature where protection is against short - circuit

Type of Insulation	Operating Temperature	AMBIENT TEMPERATURE (°C)											
		25	30	35	40	45	50	55	60	65	70	75	80
Thermosetting (XLPE)	90°C	1.02	1	0.96	0.91	0.87	0.82	0.76	0.71	0.65	0.58	0.5	0.41

ADJUSTMENT TABLE - 2

VARIATION IN GROUND TEMPERATURE

Insulation & Conductor Temperature (°C)	GROUND TEMPERATURE (°C)														
	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
XLPE - 90	1.07	1.04	1	0.96	0.93	0.89	0.85	0.8	0.76	0.71	0.65	0.6	0.53	0.46	0.38

ADJUSTMENT TABLE - 3

VARIATION IN AMBIENT TEMPERATURE

Type of Insulation	Operating Temperature	AMBIENT TEMPERATURE (°C)							
		25	30	35	40	45	50	55	60
Thermoplastic (LSHF)	70°C	1.03	1	0.94	0.87	0.79	0.71	0.61	0.5

ADJUSTMENT TABLE - 4

VARIATION IN GROUND TEMPERATURE

Insulation & Conductor Temperature (°C)	GROUND TEMPERATURE (°C)										
	10	15	20	25	30	35	40	45	50	55	60
LSHF - 70	1.1	1.05	1	0.95	0.89	0.84	0.77	0.71	0.63	0.55	0.45

ADJUSTMENT TABLE - 5

VARIATION IN SOIL THERMAL RESISTIVITY

Rating factors for cables buried direct in the ground or in an underground conduit system to BS EN 50086-2-4 for soil thermal resistivities other than 2.5K.m/W to be applied to the current carrying capacities for reference method E

Thermal resistivity, K.m/W	0.5	0.8	1	1.2	1.5	2	2.5	3
Rating factor for cables in buried ducts	1.28	1.2	1.18	1.13	1.1	1.05	1	0.96
Rating factor for direct buried cables	1.88	1.62	1.5	1.4	1.28	1.12	1	0.9

NOTE 1: The rating factors given have been averaged over the range of conductor sizes and types of installation included in the relevant tables in this appendix. The overall accuracy of rating factors is within $\pm 5\%$.

NOTE 2: Where more precise values are required they may be calculated by methods given in BS7769 (BS IEC 60287)

NOTE 3: The rating factors are applicable to ducts buried at depths of up to 0.8m.

ADJUSTMENT TABLE - 6

Rating factors of depth of burial for depths of laying other than 0.7 m for direct buried cables and cables in buried ducts

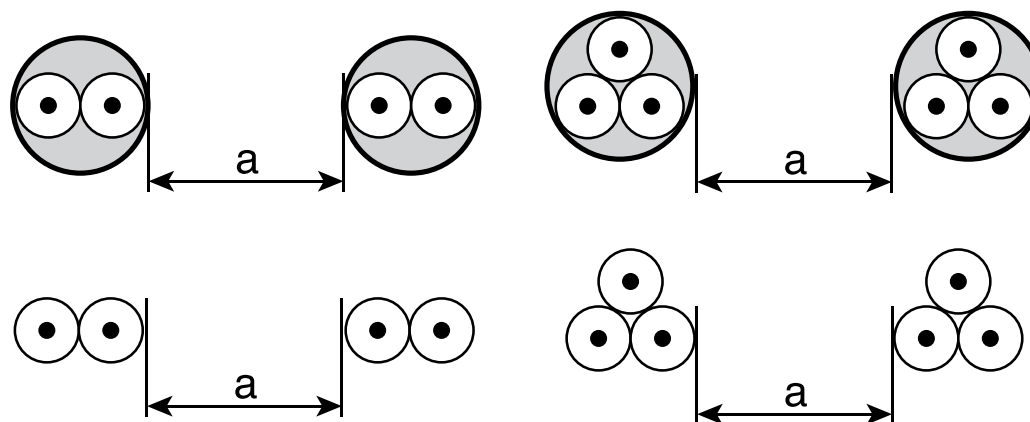
Depth of laying, m	Buried direct	In buried ducts
0.50	1.03	1.02
0.70	1.00	1
1	0.97	0.98
1.25	0.95	0.96
1.50	0.94	0.95
1.75	0.93	0.94
2	0.92	0.93
2.5	0.90	0.92
3	0.89	0.91

ADJUSTMENT TABLE - 7

Rating factors for more than one circuit, cables buried directly in the ground

Number of circuits	Cable-to-cable clearance (a)				
	Nil (cables touching)	One cable diameter	0.125 m	0.25 m	0.5 m
2	0.75	0.8	0.85	0.9	0.9
3	0.65	0.7	0.75	0.8	0.85
4	0.6	0.6	0.7	0.75	0.8
5	0.55	0.55	0.65	0.7	0.8
6	0.5	0.55	0.6	0.7	0.8

Multicore Cables



NOTE 1: Values given apply to an installation depth of 0.7 m and a soil thermal resistivity of 2.5 K.m/W.

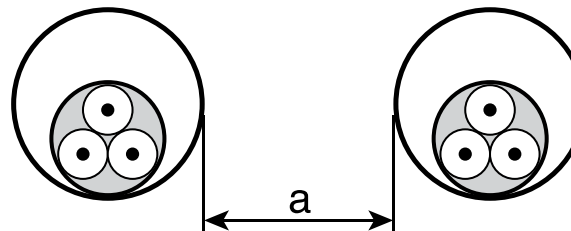
NOTE 2: In case of a thermal resistivity lower than 2.5 K.m/W the rating factors can, in general be increased and can be calculated by the methods given in BS 7769 (BS IEC 60287).

ADJUSTMENT TABLE - 8

Rating factors for more than one circuit, cables in ducts buried in the ground

Number of cables	Duct-to-duct clearance (a)			
	Nil (ducts touching)	0.25 m	0.5 m	1.0 m
2	0.85	0.9	0.95	0.95
3	0.75	0.85	0.9	0.95
4	0.7	0.8	0.85	0.9
5	0.65	0.8	0.85	0.9
6	0.6	0.8	0.8	0.9

Multicore Cables



NOTE 1: Values given apply to an installation depth of 0.7 m and a soil thermal resistivity of 2.5 K..m/W.

NOTE 2: In case of a thermal resistivity lower than 2.5 K.m/W the rating factors can, in general, be increased and can be calculated by the methods given in BS 7769 (BS I EC 60287).

ADJUSTMENT TABLE - 9

Rating factors for one circuit or one multicore cable or for a group of circuits, or a group of multicore cables

Arrangement (cables touching)	Number of circuits or multicore cables											
	1	2	3	4	5	6	7	8	9	12	16	20
Bunched in air, on a surface, embedded or enclosed	1	0.8	0.7	0.65	0.6	0.57	0.54	0.52	0.5	0.45	0.41	0.38
Single layer on wall or floor	1	0.85	0.79	0.75	0.73	0.72	0.72	0.71	0.7	0.7	0.7	0.7
Single layer multicore on a perforated horizontal or vertical cable tray system	1	0.88	0.82	0.77	0.75	0.73	0.73	0.72	0.72	0.72	0.72	0.72
Single layer multi core on cable ladder system or cleats etc..	1	0.87	0.82	0.8	0.8	0.79	0.79	0.78	0.78	0.78	0.78	0.78



ACL CABLES PLC,

#60, Rodney Street, Colombo 08, Sri Lanka.

Telephone : 94-11-7608300

Fax : 94-11-2699503

e-mail (Marketing) : marketing@acl.lk

(Export) : daya@acl.lk

Web site : www.acl.lk

ACL CABLES FACTORY

Technical Services Department, Batakettara,
Piliyandala, Sri Lanka.

Telephone : 94-11-7750540

Fax : 94-11-7750540

Mobile : 94-77-3954589

e-mail : tsd1@acl.lk