



GC FIRE RESISTANT CABLE

cables that **pulse with life**







FIRE RESISTANT CABLE



CONTENTS

Page

- Introduction to Gulf Cable Co. 4
- Product Range 5
- Quality System & Certificates 5
- Introduction to Fire Resistant Cable 8
- International Standards 9
- Cable Code Legends 10
- DATA Tables
 - 1 Core Un-Armoured Non-Sheathed Cable 12
 - 1 Core Un-Armoured Sheathed Cable 13
 - 1 Core Armoured Cable 14
 - 2 Core Un-Armoured Cable 15
 - 2 Core Armoured Cable 16
 - 3 Core Un-Armoured Cable 17
 - 3 Core Armoured Cable 18
 - 4 Core Un-Armoured Cable 19
 - 4 Core Armoured Cable 20
 - Multicore Armoured – Auxiliary Cable 21
- Rating Factors 23
- Voltage Drop 24
- Minimum Bending Radius 24
- Short Circuit Curve 25
- Special Precaution During Installation & Storage for longer periods 26
- Test Facilities 28
- Drum Handling & Dimensions 32

About us

Gulf Cables and Electrical Industries Co. K.S.C.P was established in 1975 with objective of meeting growing local and export markets requirements, it owns two factories one located in **Kuwait** the other in **Jordan**. Our vision is to be the leader of gulf and middle east region in manufacturing and supplying Cables and Conductors. Through continuous improvements driven by the integrity, teamwork and innovation, we are committed to provide such a quality that:

- Our customers will receive superior value
- Our shareholders will receive ever exceeding returns on their investments
- Our business partners will share our success
- Our employees will prosper

Our products are designed and manufactured to meet the needs of the Local, Regional and International Markets. All our products meet the respective world standards.

We handle all available means for exporting products - land, marine and air.

We are also equipped to meet all export requirements and formalities in the local Arab markets, including Saudi Arabia, United Arab Emirates, Oman, Bahrain, Qatar, Jordan, Iraq and MENA.

We have developed and established communication channels with our customers through which, we constantly get updates and feedbacks on their stated / implied needs and problems. Based on this information, we have devised new modalities to provide better service to our valued customers. Thus, we not only provide Quality products, but also offer a host of related services before and after the sale.

As a philosophy, our commitment to Customers does not end with a sale. We also offer a host of related services before and after the sale. These include,

- Application engineering service for selection of appropriate product best suiting the end use.
- An extensive range of Cables, single core wires, flexible cords bare & Insulated Conductors manufactured to stringent Quality standards going beyond international specifications.
- Design and Development of products tailored to meet specific requirements of the application.
- To help the customers understand the product intricacies and its performance levels.

On a regular basis, we develop new products and enhance our existing ones. We are proud to introduce our new range of Fire Resistant Cables.

As you will turn to the following pages, you will appreciate that we have enhanced our in house test facility to add a whole range of Fire Test apparatus.

Product Range

- Medium Voltage Power Cables up to 19/33(36) KV
- Low Voltage Power Cables up to 1900/3300V
- Control Cables 600/1000V
- Bare conductors for Overhead Lines
- Earthing Conductors
- PVC or XLPE Insulated Conductors
- Domestic applications / internal wiring
- LSZH Cables & Wires
- **Fire Resistant Cables & Wires**
- Lead Sheathed Cables
- Enamelled Wires
- Telephone, Communication & Instrumentation Cables
- Resin Filled Low Voltage Joint Kits

QUALITY

Quality has always been our top priority and to meet customer's expectation has been our prime objective; the very basis on which we earned the confidence of our clientele. It is this concern and commitment, rather than just sell of product, has given us a distinct image and competitive advantage.

Quality Assurance

Quality has always been our top priority and to meet customer's expectation has been our prime objective; the very basis on which we earned the confidence of our clientele. It is this concern and commitment, rather than just sell of product, has given us a distinct image and competitive advantage. Since 1997, we have Quality Assurance System to ISO:9001. The System has been certified by **TUV-Nord**, Germany as well as **BASEC**. The salient features of this system include :

- Well defined and documented system comprising of System manual, Operating procedures, work instructions, Quality Assurance plans, Material specifications, work specifications, design guidelines, traceability system, Design guidelines
- Sound vender development and approval system
- Systematic scrutiny of customer requirements and internal communication to integrate the same into product
- Thorough incoming material inspection
- Round the clock process checks at defined points and frequencies
- 100% testing before any product leaves our premises
- Well established customer interface

Environmental Management System

We at Gulf Cable recognize that Environmental Issues have become critical challenge globally. We are committed to contributing towards “Leaving a beautiful planet as a legacy to future generations”. For achieving this, we believe that we need to work in harmony with the nature; recognize the environmental impact related to our business activities & products and undertake protection of environment through technologically and economically feasible goals within our scope. To pursue this, we have implemented Environmental Management System satisfying requirements of ISO:14001. The System has been certified by TUV-Nord, Germany.

Occupational Health & Safety Management System

We at Gulf Cable recognize that way to greater sustainability is through better Health measures for employees and better Safety measures for protecting men, machines, materials and environment. For achieving this, we believe that we need to provide a healthy and safe working habitat at our facility and take adequate steps to prevent accidents and injury arising from the course of our activities, by minimizing, so far as is reasonably practicable, the causes of hazards inherent in the working environment. To pursue this, we have implemented Occupational Health & Safety Management System satisfying requirements of OHSAS:18001. The System has been certified by TUV-Nord, Germany.

ISO 9001:2008, certified by RWTUV Germany

Quality Management System, ISO 9001:2008, is a system for effectively and efficiently managing the processes that deliver products to customers. To substantiate our Organization approach for quality, we have pursued the certification of our Management System according to the requirements of ISO9001:2008, which recognizes also our ability for design and development.



ISO 14001:2004

We at Gulf Cable recognize that environmental issues have become critical challenge globally. We are committed to recognize the environmental impact related to our business activities & products and undertake protection of environment through technologically and economically feasible goals within our scope. To substantiate this, we have pursued the certification of our Environmental Management System according the requirements of ISO 14001:2004.



OHSAS 18001:2007

We at Gulf Cable recognize that the way to great sustainability is through better Health measures for employee and better safety measures for protecting men, machines, materials and environment. For achieving this, we believe that we need to provide a healthy and safe working habitat at our facility and take adequate steps to prevent accidents and injuries arising from the course of our activities, by minimizing, so far as it is reasonably practicable, the causes of hazards inherent in the working environment.

To substantiate this, we have pursued certification of our occupational Health & Safety Management System according to the requirements of OHSAS 18001:2007.



BASEC range of Certificates

BASEC “BASEC “British Approvals Service for Cables”, BASEC was established in 1971 by end users and cables manufacturers as an independent approval body for cable and related products, with the objective of sustaining and improving standards of safety and quality. BASEC certificates are based on a mutually supportive series of requirements placed on manufacturers:

- Certification of Management System
- Testing of products
- Ongoing surveillance

To sustain and enhance our reputation for product quality, we obtained The following BASEC Certificates:

- Certificate of Conformity with “BASEC Product Certification Requirements”, including Clause 2.6 (Formerly BA 2250:1996 Parts 1& 2)
- BS EN ISO 9001:2008



Introduction : Fire Resistant Cable

Fire safety is one of the top priorities in today's building infrastructure safety. A fire once spread out of control, can quickly cause extensive damage to the property and ultimately to human lives. Ideally, all measures should be in place to ensure that a fire never occurs, but in the event that a fire has been ignited, every precaution should already be in place to ensure that it is contained quickly.

In all disasters, fire smoke, heat and toxic fumes are the main obstacles to safe evacuation of a building or area. This is where Gulf Cables Low Smoke Zero Halogen (LSZH), Flame Retardant and Fire Resistant Cables come into play.-These cables provides the following features:

- Fire resistant
- Long-term circuit integrity in a fire
- Low smoke and toxic gas emissions
- Flame retardant properties
- Zero halogen gases
- Ease and low cost of installation

Fire Resistant cables are used, where required by local fire codes, in the wiring of:

- Fire Resistant safety circuits
- Public address and emergency voice communication system in high –rise building
- Control and instrumentation services in industrial, commercial and residential complexes
- High-temperature installation conditions

Gulf Cable Fire Resistant have been developed to maintain circuit integrity in a fire and to ensure safe evacuation of personnel with no effects like toxic gases or smoke.

Fire Resistant cables are categorized by a letter symbol, or series of symbols, according to the fire resistant characteristics they are required to meet, the test temperature selected and the duration of the test.

BS 7846 - Category F2- Resistance to fire at 950°C for 3 hours, resistance to fire with water, resistance to fire with mechanical shock.

As per latest BS 6387 – specification, categorization of cable as follows:.

Requirement	Symbol
Resistant to fire alone (950°C for 3 hours)	C
Resistant Fire with Water	W
Resistant Fire with Mechanical shock	Z

Cable passing all the above three protocols are designated as 'Category CWZ'

International Standards

Cable Design Standards:

- **BS 7846** : Thermosetting insulated, armoured, fire resistant cable of rated voltage 600/1000 V for fixed installations, having low emission of smoke and corrosive gases when affected by fire. Multicore Cable.
- **BS 8592** : Thermosetting insulated, non -armoured, fire-resistant, single core non -sheathed cables of rated voltage 450/750 V, having low emission of smoke and corrosive gases when affected by fire — Specification
- **BS 7629-1** : Multicore Cable: Specification for 300/500 V fire resistant, screened, fixed installation cables having low emission of smoke and corrosive gases when affected by fire.
- **IEC 60502-1** : Power cables with extruded insulation and their accessories. Part 1 : Cables for rated voltage of 1 kV ($U_m=1.2$ kV) and 3 kV ($U_m = 3.6$ kV)

Fire Resistant Tests Standards:

- **Category F2 as per BS 7846** – Resistant fire, Resistant fire with water, Resistant fire with Mechanical shock assessed separately as per BS 6387
- **Category F30 as per BS 7846** – Resistant to fire with direct mechanical impact and water jet assessed in combination when tested in accordance with BS 8491 for 30 minute.
- **Category F60 as per BS 7846** – Resistant to fire with direct mechanical impact and water jet assessed in combination when tested in accordance with BS 8491 for 60 minute.
- **Category F120 as per BS 7846** – Resistant to fire with direct mechanical impact and water jet assessed in combination when tested in accordance with BS 8491 for 120 minute.
- **IEC 60331-1** : Resistant fire with Mechanical shock at 830°C for 0.6/1.0 KV cables with an overall diameter > 20 mm.
- **IEC 60331-2** : Resistant fire with Mechanical shock at 830°C for 0.6/1.0 KV cables with an overall diameter ≤ 20 mm.
- **IEC 60331-3** : Resistant fire with Mechanical shock at 830°C for 0.6/1.0 KV cables tested in metal enclosure.
- **IEC 60331-11 & IEC 60331-21**: Resistant fire alone at 750°C.

Flame Retardant Tests Standards:

- **IEC 60332-1-2** : Vertical Flame propagation for a single insulated wire or cable
- **IEC 60332-3-22** : Vertical flame spread of bunched wires or cables – Category A
- **IEC 60332-3-23** : Vertical flame spread of bunched wires or cables – Category B
- **IEC 60332-3-24** : Vertical flame spread of bunched wires or cables – Category C

Smoke Emission Test Standards:

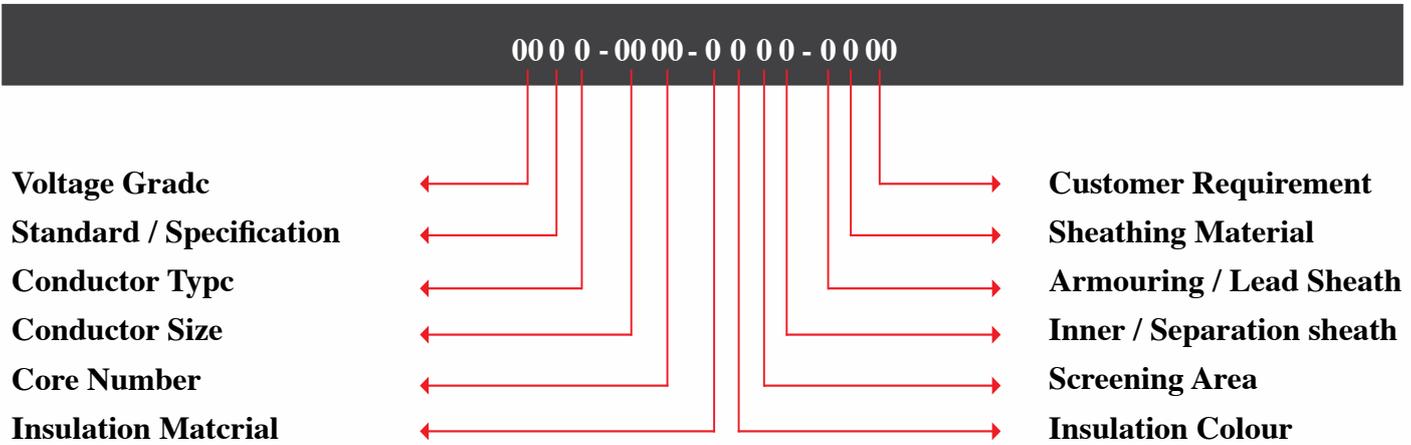
- BS EN / IEC 61034 -1 & 2 : Measurement of Smoke density of cables

Acid gas Emission test Standards:

- BS EN / IEC 60754 – 1 & 2 : Tests on gases evolved during combustion of material from cables.

Note : Gulf cable have complete in house test facility for Fire Resistant tests and Flame Retardant tests as listed above.

Cable Codes Legend



Classification	Code - Identification				
Voltage Grade	<u>01</u> – 300/500 V	<u>02</u> – 450/750 V	<u>03</u> – 600/1000 V		
International Specification	<u>A</u> -- IEC	<u>B</u> -- BS			
Conductor Type	<u>M</u> – Copper with Glass Mica Tape				
Conductor Size	<u>01</u> – 1.0 mm ²	<u>02</u> – 1.5 mm ²	<u>03</u> – 2.5 mm ²	<u>04</u> – 4 mm ²	and so on
Core Number	<u>01</u> – 1	<u>02</u> – 2	<u>03</u> – 3	<u>04</u> – 4	and so on
Insulation Material	<u>A</u> – XLPE	<u>H</u> -- LSZH			
Insulation Colour	Core Colour depending on number of cores				
Screening Area	<u>0</u> – No Screen	<u>A</u> – Copper Wire			
Inner sheath / Separation sheath	<u>0</u> – No Inner Sheath		<u>C</u> - PVC	<u>F</u> -LSZH	
Armouring / Lead Sheath	<u>0</u> -Unarmored & Non Lead	<u>A</u> - Galvanized Steel Wire	<u>B</u> -Aluminum Wire	<u>F</u> – Lead Sheath	
Sheathing Material	<u>0</u> - Non Sheath	<u>A</u> -- PVC	<u>J</u> - LSZH		
Customer / specification, requirement (o/s colour, o/s thickness)	<u>00</u> – GC Standard				



WTM1

0.6/1.0 (1.2) KV, Single Core Cable, Non-Sheathed CU / MGT / LSZH

Description :

Stranded Copper conductor, *Mica Glass tape* & LSZH Insulated Un sheathed cable.
Core Colour : Red, Yellow, Blue, Black, Green etc.

Standards :

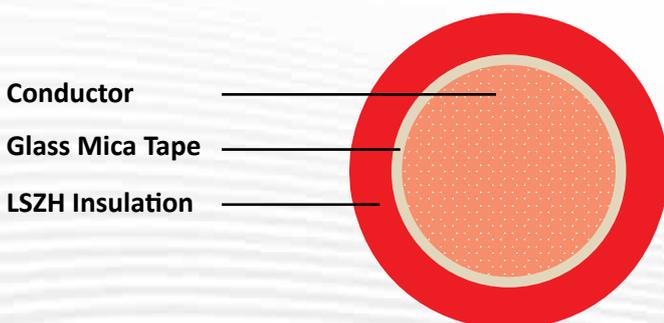
Construction : BS EN 50525-3/41, BS 8592, BS 7211/1998
Testing : BS EN / IEC 60754, BS EN / IEC 61034, IEC 60331

Installation Condition:

- * Enclosed in Conduit on a wall or trunking
- * Ambient Air Temperature : 30°C
- * Conductor operating Temperature : 90°C

- All conductors circular stranded or circular stranded compacted (class 2)
- Cable construction to other standard and other core/sheath colour available upon request.

Cable Code	Cable Size	Approx. conductor Diameter	Approx. overall Diameter	Approx. Cable weight	Standard Packing Length (± 5%)	Maximum Conductor Resistance at 20°C	Current rating (1Ph AC) *	Current rating (3Ph AC) *
	Sq.mm.	mm	mm	Kg/Km	Meter	Ohm/km	A	A
03BM-0201-HA00-0000	1.5	1.55	3.8	24	100Y/M	12.1	23	20
03BM-0301-HA00-0000	2.5	1.98	4.5	35	100Y/M	7.41	31	28
03BM-0401-HA00-0000	4	2.52	5.0	50	100Y/M	4.61	42	37
03BM-0501-HA00-0000	6	3.08	5.6	70	100Y/M	3.08	54	48
03BM-0601-HA00-0000	10	3.8	6.7	110	100Y/M	1.83	75	66
03BM-0701-HA00-0000	16	4.9	7.8	170	100Y/M	1.15	100	88
03BM-0801-HA00-0000	25	6.0	9.3	260	1000	0.727	133	117
03BM-0901-HA00-0000	35	7.1	10.4	350	1000	0.524	164	144
03BM-1001-HA00-0000	50	8.2	11.8	475	1000	0.387	198	175
03BM-1101-HA00-0000	70	9.8	13.5	670	1000	0.268	253	222
03BM-1201-HA00-0000	95	11.4	15.4	920	500	0.193	306	269
03BM-1301-HA00-0000	120	12.8	16.9	1150	500	0.153	354	312
03BM-1401-HA00-0000	150	14.2	18.8	1430	500	0.124	393	342
03BM-1501-HA00-0000	185	15.9	20.9	1770	500	0.0991	449	384
03BM-1601-HA00-0000	240	18.5	23.8	2300	500	0.0754	528	450
03BM-1701-HA00-0000	300	20.6	26.4	2880	500	0.0601	603	514
03BM-1801-HA00-0000	400	23.3	29.5	3715	500	0.0470	683	584
03BM-1901-HA00-0000	500	26.5	33.1	4700	500	0.0366	783	666
03BM-2001-HA00-0000	630	30.0	36.6	5960	250	0.0283	900	764



0.6/1.0 (1.2) KV, Single Core Cable, Sheathed CU / MGT / XLPE / LSZH

Description :

Stranded Copper conductor, *Mica Glass tape* & XLPE Insulated and LSZH outer sheathed cable.
Core Colour : Natural - Sheath Colour : Black

Standards :

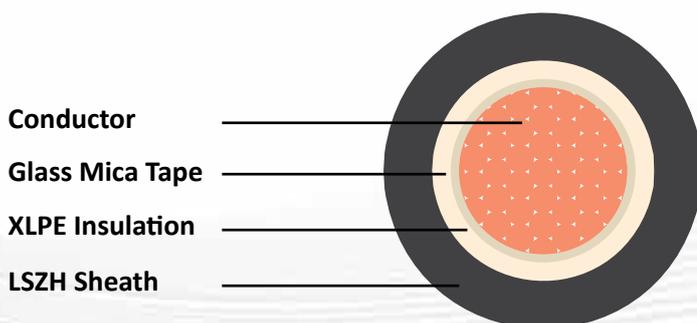
Construction : IEC 60502-1
Testing : BS EN / IEC 60754, BS EN / IEC 61034, IEC 60331

Installation Condition:

- * 1 Ph -- Clipped Direct, 3 Ph -- In free air or on perforated cable tray
- * Ambient Air Temperature : 30°C
- * Conductor operating Temperature : 90°C

- All conductors circular stranded or circular stranded compacted (class 2).
- Cable construction to other standard and other core/sheath colour available upon request.

Cable Code	Cable Size	Approx. conductor Diameter	Approx. overall Diameter	Approx. Cable weight	Standard Packing Length (± 5%)	Maximum Conductor Resistance at 20°C	Current rating (1Ph AC)*	Current rating (3Ph AC) Trefoil *
	Sq.mm.	mm	mm	Kg/Km	Meter	Ohm/km	A	A
03AM-0201-A000-0J00	1.5	1.55	6.6	60	100Y/M	12.1	25	--
03AM-0301-A000-0J00	2.5	1.98	7.1	70	100Y/M	7.41	34	--
03AM-0401-A000-0J00	4	2.52	7.6	90	100Y/M	4.61	46	--
03AM-0501-A000-0J00	6	3.08	8.2	115	100Y/M	3.08	59	--
03AM-0601-A000-0J00	10	3.8	8.9	155	100Y/M	1.83	81	--
03AM-0701-A000-0J00	16	4.9	10.0	220	1000	1.15	109	--
03AM-0801-A000-0J00	25	6.0	11.5	320	1000	0.727	143	135
03AM-0901-A000-0J00	35	7.1	12.6	415	1000	0.524	176	169
03AM-1001-A000-0J00	50	8.2	13.8	545	1000	0.387	228	207
03AM-1101-A000-0J00	70	9.8	15.7	750	1000	0.268	293	268
03AM-1201-A000-0J00	95	11.4	17.4	1010	500	0.193	355	328
03AM-1301-A000-0J00	120	12.8	19.1	1255	500	0.153	413	383
03AM-1401-A000-0J00	150	14.2	21.2	1555	500	0.124	476	444
03AM-1501-A000-0J00	185	15.9	23.3	1910	500	0.0991	545	510
03AM-1601-A000-0J00	240	18.5	26.2	2465	500	0.0754	644	607
03AM-1701-A000-0J00	300	20.6	28.8	3065	500	0.0601	743	703
03AM-1801-A000-0J00	400	23.3	32.1	3935	500	0.0470	868	823
03AM-1901-A000-0J00	500	26.5	35.9	4965	250	0.0366	990	946
03AM-2001-A000-0J00	630	30.0	40.2	6315	250	0.0283	1130	1088



0.6/1.0 (1.2) KV, Single Core Cable, Armoured, Sheathed CU / MGT / XLPE / LSZH / AWA / LSZH

Description :

Stranded copper conductor, *Mica Glass tape* & XLPE Insulated, Extruded LSZH bedding, Round Aluminium wire armoured and LSZH outer sheathed cable.

Core Colour : Natural - Sheath Colour : Black

Standards :

Construction : IEC 60502-1

Testing : BS 6387, BS EN / IEC 60754, BS EN / IEC 61034,
IEC 60331,60332-3.

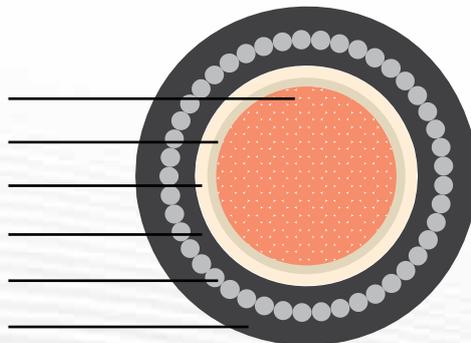
Installation Condition:

- * In free air or on a perforated cable tray
- * Ambient Air Temperature : 30°C
- * Conductor operating Temperature : 90°C

- All conductors circular stranded or circular stranded compacted (class 2).
- Cable construction to other standard and other core/sheath colour available upon request.

Cable Code	Cable Size	Approximate Diameter				Approx. Cable weight	Standard Packing Length (± 5%)	Maximum Conductor Resistance at 20°C	Current rating (3Ph AC Trefoil *)
		Over Conductor	Under Armour	Over Armour	Overall				
	Sq.mm.	mm	mm	mm	mm	Kg/Km	Meter	Ohm/km	A
03AM-1201-A00F-BJ00	95	11.4	16.4	19.6	22.8	1310	500	0.193	346
03AM-1301-A00F-BJ00	120	12.8	18.1	21.3	24.7	1585	500	0.153	402
03AM-1401-A00F-BJ00	150	14.2	20.0	23.2	26.6	1910	500	0.124	463
03AM-1501-A00F-BJ00	185	15.9	22.1	25.3	28.9	2305	500	0.0991	529
03AM-1601-A00F-BJ00	240	18.5	24.8	28.0	31.8	2905	500	0.0754	625
03AM-1701-A00F-BJ00	300	20.6	27.2	30.4	34.2	3530	500	0.0601	720
03AM-1801-A00F-BJ00	400	23.3	30.7	34.7	38.9	4600	500	0.0470	815
03AM-1901-A00F-BJ00	500	26.5	34.3	38.3	42.7	5700	500	0.0366	918
03AM-2001-A00F-BJ00	630	30.0	38.2	42.2	46.8	7100	250	0.0283	1027

Conductor
Glass Mica Tape
XLPE Insulation
LSZH Bedding
Armour
LSZH Sheath



0.6/1.0 (1.2) KV, Two-Core Cable, Non-Armoured, Sheathed CU / MGT / XLPE / LSZH

Description :

Stranded copper conductor, *Mica Glass tape* & XLPE Insulated and LSZH outer sheathed cable.
Core Colour : Red, Black - Sheath Colour : Black

Standards :

Construction : IEC 60502-1, BS 8573.
Testing : BS 6387, BS EN / IEC 60754, BS EN / IEC 61034, IEC 60331

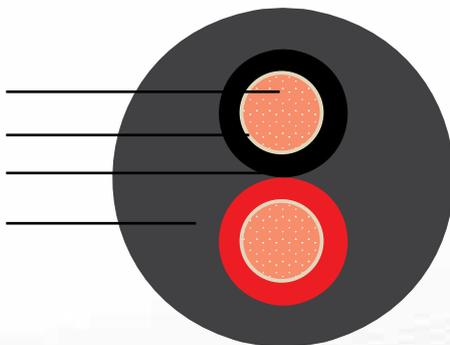
Installation Condition:

- * In free air or on a perforated cable tray
- * Ambient Air Temperature : 30°C
- * Conductor operating Temperature : 90°C

- All conductors circular stranded or circular stranded compacted (class 2).
- Cable construction to other standard and other core/sheath colour available upon request.

Cable Code	Cable Size	Approximate Diameter		Approx. Cable weight	Standard Packing Length (± 5%)	Maximum Conductor Resistance at 20°C	Current rating in Free Air *
		Over Conductor	Overall				
	Sq.mm.	mm	mm	Kg/Km	Meter	Ohm/km	A
03AM-0202-A000-0J00	1.5	1.55	11.2	160	1000	12.1	26
03AM-0302-A000-0J00	2.5	1.98	12.2	200	1000	7.41	36
03AM-0402-A000-0J00	4	2.52	13.2	250	1000	4.61	49
03AM-0502-A000-0J00	6	3.08	14.4	310	1000	3.08	63
03AM-0602-A000-0J00	10	3.8	15.8	420	1000	1.83	86
03AM-0702-A000-0J00	16	4.9	18.0	580	1000	1.15	115
03AM-0802-A000-0J00	25	6.0	21.0	840	1000	0.727	149
03AM-0902-A000-0J00	35	7.1	23.2	1090	1000	0.524	185

Conductor
Glass Mica Tape
XLPE Insulation
LSZH Sheath



0.6/1.0 (1.2) KV, Two-Core Cable, Armoured, Sheathed CU / MGT / XLPE / LSZH / SWA / LSZH

Description :

Stranded copper conductor, *Mica Glass tape* & XLPE Insulated, Extruded LSZH bedding, Round galvanized steel wire armoured and LSZH outer sheathed cable.

Core Colour : Red, Black - Sheath Colour : Black

Standards :

Construction : BS 7846.

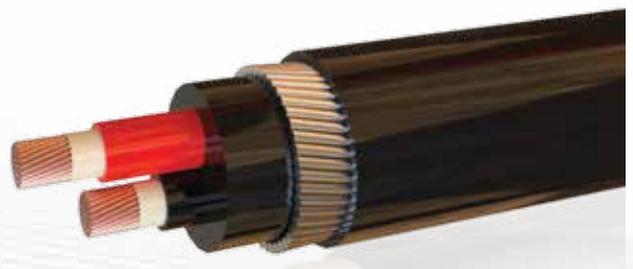
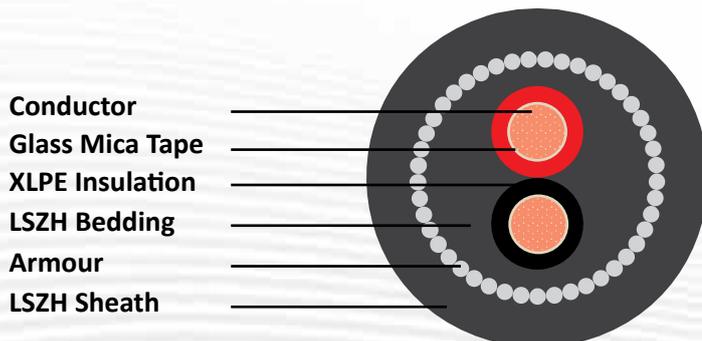
Testing : BS 6387, BS EN / IEC 60754, BS EN / IEC 61034, IEC 60331, 60332-3.

Installation Condition:

- * In free air or on a perforated cable tray
- * Ambient Air Temperature : 30°C
- * Conductor operating Temperature : 90°C

- All conductors circular stranded or circular stranded compacted (class 2).
- Cable construction to other standard and other core/sheath colour available upon request.

Cable Code	Cable Size	Approx. Conductor Dia./Sect. Height	Approximate Diameter			Approx. Cable weight	Standard Packing Length (± 5%)	Maximum Conductor Resistance at 20°C	Current rating in Free Air *
			Under Armour	Over Armour	Overall				
	Sq.mm.	mm	mm	mm	mm	Kg/Km	Meter	Ohm/km	A
03BM-0202-A00F-AJ00	1.5	1.55	8.8	10.6	13.2	330	1000	12.1	29
03BM-0302-A00F-AJ00	2.5	1.98	10.2	12.0	14.8	415	1000	7.41	39
03BM-0402-A00F-AJ00	4	2.52	11.2	13.0	15.8	480	1000	4.61	52
03BM-0502-A00F-AJ00	6	3.08	12.4	14.2	17.0	560	1000	3.08	66
03BM-0602-A00F-AJ00	10	3.8	13.8	15.6	18.6	705	1000	1.83	90
03BM-0702-A00F-AJ00	16	4.9	16.0	18.5	21.5	1030	1000	1.15	115
03BM-0802-A00F-AJ00	25	6.0	19.0	21.5	24.7	1365	1000	0.727	152
03BM-0902-A00F-AJ00	35	7.1	21.6	24.8	28.2	1880	1000	0.524	188
03BM-1002-A00F-AJ00	50	8.2	24.3	27.5	31.1	2105	500	0.387	228
03BM-1102-A00F-AJ00	70	9.8	28.1	31.3	35.1	2715	500	0.268	291
03BM-1202-A00F-AJ00	95	11.4	31.5	35.5	39.5	3680	500	0.193	354
03BM-1302-A00F-AJ00	120	12.8	34.9	38.9	43.1	4375	500	0.153	410
03BM-1402-A00F-AJ00	150	14.2	38.7	42.7	47.1	5190	500	0.124	472
03BM-1502-A00F-AJ00	185	15.9	43.3	48.3	53.1	6670	250	0.0991	539
03BM-1602-A00F-AJ00	240	18.5	48.7	53.7	58.7	8175	250	0.0754	636
03BM-1702-A00F-AJ00	300	20.6	53.9	58.9	64.1	9810	250	0.0601	732
03BM-1802-A00F-AJ00	400	23.3	60.1	65.1	70.7	12065	200	0.0470	847



0.6/1.0 (1.2) KV, Three-Core Cable, Non-Armoured, Sheathed CU / MGT / XLPE / LSZH

Description :

Stranded copper conductor, *Mica Glass tape* & XLPE Insulated and LSZH outer sheathed cable.
Core Colour : Red, Yellow, Blue - Sheath Colour : Black

Standards :

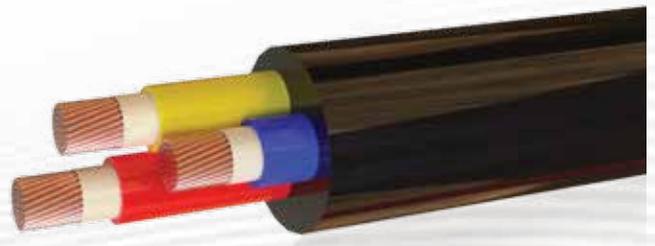
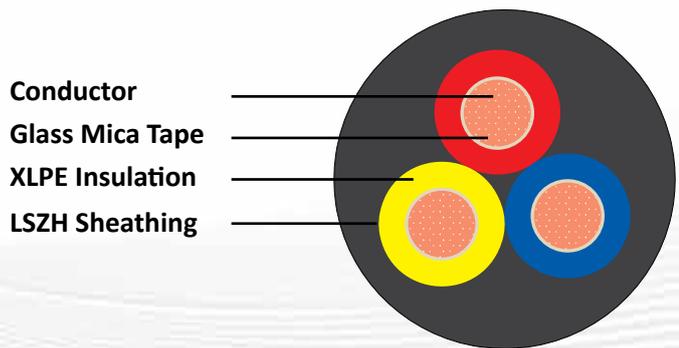
Construction : IEC 60502-1(FOR ALL SIZE), BS 8573
(UPTO 120 SQ.MM.)
Testing : BS 6387, BS EN / IEC 60754, BS EN / IEC 61034,
IEC 60331

Installation Condition:

- * In free air or on a perforated cable tray
- * Ambient Air Temperature : 30°C
- * Conductor operating Temperature : 90°C

- Conductors including 16 sq.mm circular shaped, 25 sq.mm and above sector shaped (class 2)
- Cable construction to other standard and other core/sheath colour available upon request.

Cable Code	Cable Size	Approx. Conductor Dia./Sect. Height	Approx. Overall diameter	Approx. Cable weight	Standard Packing Length (± 5%)	Maximum Conductor Resistance at 20°C	Current rating in Free Air *
	Sq.mm.	mm	mm	Kg/Km	Meter	Ohm/km	A
03AM-0203-A000-0J00	1.5	1.55	11.8	185	1000	12.1	23
03AM-0303-A000-0J00	2.5	1.98	12.9	230	1000	7.41	32
03AM-0403-A000-0J00	4	2.52	14.0	295	1000	4.61	42
03AM-0503-A000-0J00	6	3.08	15.3	375	1000	3.08	54
03AM-0603-A000-0J00	10	3.8	16.8	520	1000	1.83	75
03AM-0703-A000-0J00	16	4.9	19.2	730	1000	1.15	100
03AM-0803-A000-0J00	25	4.8	19.8	940	500	0.727	127
03AM-0903-A000-0J00	35	5.9	22.1	1235	500	0.524	158
03AM-1003-A000-0J00	50	7.2	25.3	1630	500	0.387	192
03AM-1103-A000-0J00	70	8.2	28.1	2260	500	0.268	246
03AM-1203-A000-0J00	95	10.0	32.1	3050	500	0.193	298
03AM-1303-A000-0J00	120	11.4	35.7	3835	500	0.153	346
03AM-1403-A000-0J00	150	12.2	38.8	4725	500	0.124	399
03AM-1503-A000-0J00	185	13.8	43.3	5830	250	0.0991	456
03AM-1603-A000-0J00	240	16.3	49.4	7540	250	0.0754	538
03AM-1703-A000-0J00	300	17.9	53.6	9365	250	0.0601	621
03AM-1803-A000-0J00	400	20.8	61.2	12040	200	0.0470	741



0.6/1.0 (1.2) KV, Three-Core Cable, Armoured, Sheathed CU / MGT / XLPE / LSZH / SWA / LSZH

Description :

Stranded copper conductor, *Mica Glass tape* & XLPE Insulated, Extruded LSZH bedding, Round galvanized steel wire armoured and LSZH outer sheathed cable.

Core Colour : Red, Yellow, Blue - Sheath Colour : Black

Standards :

Construction : BS 7846.

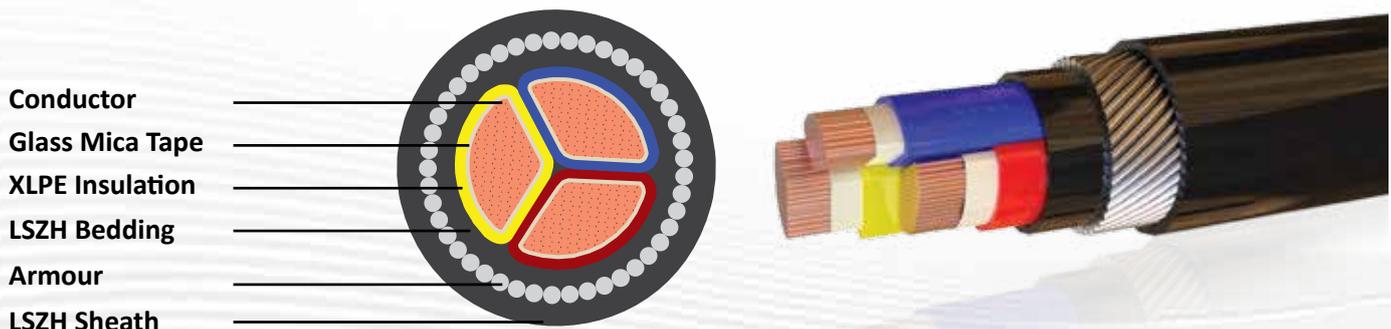
Testing : BS 6387, BS EN / IEC 60754, BS EN / IEC 61034, IEC 60331, 60332-3.

Installation Condition:

- * In free air or on a perforated cable tray
- * Ambient Air Temperature : 30°C
- * Conductor operating Temperature : 90°C

- Conductors including 16 sq.mm circular shaped, 25 sq.mm and above sector shaped (class 2)
- Cable construction to other standard and other core/sheath colour available upon request.

Cable Code	Cable Size	Approx. Conductor Dia./Sect. Height	Approximate Diameter			Approx. Cable weight	Standard Packing Length (± 5%)	Maximum Conductor Resistance at 20°C	Current rating in Free Air *
			Under Armour	Over Armour	Overall				
	Sq.mm.	mm	mm	mm	mm	Kg/Km	Meter	Ohm/km	A
03BM-0203-A00F-AJ00	1.5	1.55	9.4	11.2	13.8	366	1000	12.1	25
03BM-0303-A00F-AJ00	2.5	1.98	10.9	12.7	15.5	455	1000	7.41	33
03BM-0403-A00F-AJ00	4	2.52	12.0	13.8	16.6	537	1000	4.61	44
03BM-0503-A00F-AJ00	6	3.08	13.3	15.1	17.9	640	1000	3.08	56
03BM-0603-A00F-AJ00	10	3.8	14.8	17.3	20.3	932	1000	1.83	78
03BM-0703-A00F-AJ00	16	4.9	17.2	19.7	22.9	1209	1000	1.15	99
03BM-0803-A00F-AJ00	25	4.8	18.2	21.4	24.8	1600	500	0.727	131
03BM-0903-A00F-AJ00	35	5.9	20.5	23.7	27.3	1980	500	0.524	162
03BM-1003-A00F-AJ00	50	7.2	23.7	26.9	30.5	2475	500	0.387	197
03BM-1103-A00F-AJ00	70	8.2	26.3	29.5	33.3	3200	500	0.268	251
03BM-1203-A00F-AJ00	95	10.0	30.5	34.5	38.7	4410	500	0.193	304
03BM-1303-A00F-AJ00	120	11.4	33.9	37.9	42.3	5345	500	0.153	353
03BM-1403-A00F-AJ00	150	12.2	37.0	42.0	46.6	6760	500	0.124	406
03BM-1503-A00F-AJ00	185	13.8	41.3	46.3	51.1	8080	250	0.0991	463
03BM-1603-A00F-AJ00	240	16.3	47.0	52.0	57.2	10070	250	0.0754	546
03BM-1703-A00F-AJ00	300	17.9	51.2	56.2	61.6	12150	250	0.0601	628
03BM-1803-A00F-AJ00	400	20.8	58.2	63.2	69.0	15170	200	0.0470	728



Conductor
Glass Mica Tape
XLPE Insulation
LSZH Bedding
Armour
LSZH Sheath

0.6/1.0 (1.2) KV, Four-Core Cable, Non-Armoured, Sheathed CU / MGT / XLPE / LSZH

Description :

Stranded copper conductor, *Mica Glass tape* & XLPE Insulated and LSZH outer sheathed cable.
Core Colour : Red, Yellow, Blue & Black - Sheath Colour : Black

Standards :

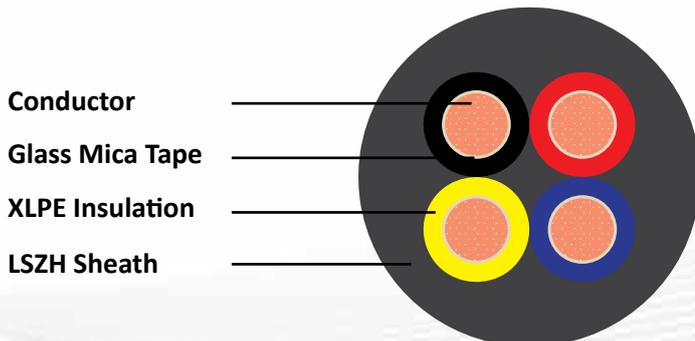
Construction : IEC 60502-1(FOR ALL SIZE), BS 8573 (UPTO 120 SQ.MM.)
Testing : BS 6387, BS EN / IEC 60754, BS EN / IEC 61034, IEC 60331

Installation Condition:

- * In free air or on a perforated cable tray
- * Ambient Air Temperature : 30°C
- * Conductor operating Temperature : 90°C

- Conductors including 16 sq.mm circular shaped, 25 sq.mm and above sector shaped (class 2)
- Cable construction to other standard and other core/sheath colour available upon request.

Cable Code	Cable Size	Approx. Conductor Dia./ Sect. Height	Approx. Overall diameter	Approx. Cable weight	Standard Packing Length (± 5%)	Maximum Conductor Resistance at 20°C	Current rating in Free Air *
	Sq.mm.	mm	mm	Kg/Km	Meter	Ohm/km	A
03AM-0204-A000-0J00	1.5	1.55	12.8	215	1000	12.1	23
03AM-0304-A000-0J00	2.5	1.98	14.0	270	1000	7.41	32
03AM-0404-A000-0J00	4	2.52	15.2	355	1000	4.61	42
03AM-0504-A000-0J00	6	3.08	16.7	455	1000	3.08	54
03AM-0604-A000-0J00	10	3.8	18.4	640	1000	1.83	75
03AM-0704-A000-0J00	16	4.9	21.0	905	1000	1.15	100
03AM-0804-A000-0J00	25	5.4	22.1	1220	500	0.727	127
03AM-0904-A000-0J00	35	6.8	25.3	1615	500	0.524	158
03AM-1004-A000-0J00	50	7.9	28.4	2150	500	0.387	192
03AM-1104-A000-0J00	70	9.2	32.0	2975	500	0.268	246
03AM-1204-A000-0J00	95	11.0	36.2	4010	500	0.193	298
03AM-1304-A000-0J00	120	12.2	39.8	5040	500	0.153	346
03AM-1404-A000-0J00	150	13.7	44.5	6215	500	0.124	399
03AM-1504-A000-0J00	185	15.3	49.4	7730	250	0.0991	456
03AM-1604-A000-0J00	240	17.2	54.5	9945	250	0.0754	538
03AM-1704-A000-0J00	300	19.2	59.9	12370	250	0.0601	621
03AM-1804-A000-0J00	400	21.8	67.2	15930	200	0.0470	741



0.6/1.0 (1.2) KV, Four-Core Cable, Armoured, Sheathed CU / MGT / XLPE / LSZH / SWA / LSZH

Description :

Stranded copper conductor, *Mica Glass tape* & XLPE Insulated, Extruded LSZH bedding, Round galvanized steel wire armoured and LSZH outer sheathed cable.

Core Colour : Red, Yellow, Blue , Black - Sheath Colour : Black

Standards :

Construction : BS 7846.

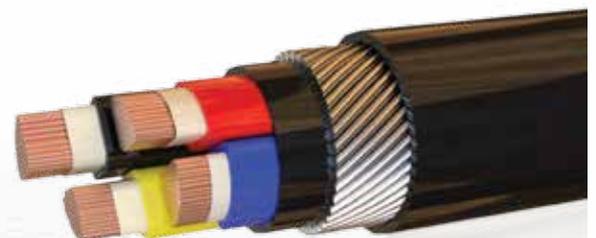
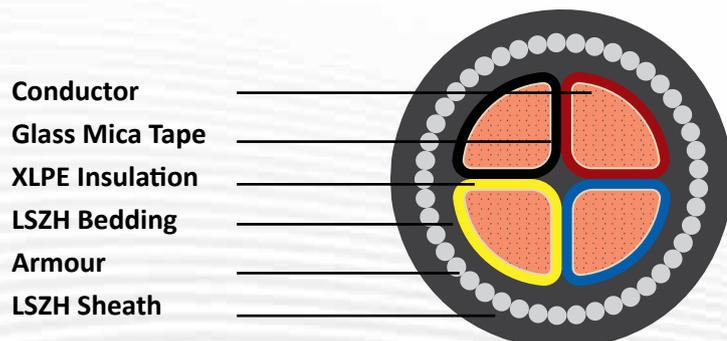
Testing : BS 6387, BS EN / IEC 60754, BS EN / IEC 61034, IEC 60331, 60332-3.

Installation Condition:

- * In free air or on a perforated cable tray
- * Ambient Air Temperature : 30°C
- * Conductor operating Temperature : 90°C

- Conductors including 16 sq.mm circular shaped, 25 sq.mm and above sector shaped (class 2)
- Cable construction to other standard and other core/sheath colour available upon request.

Cable Code	Cable Size	Approx. Conductor Dia./Sect. Height	Approximate Diameter			Approx. Cable weight	Standard Packing Length (± 5%)	Maximum Conductor Resistance at 20°C	Current rating in Free Air *
			Under Armour	Over Armour	Overall				
	Sq.mm.	mm	mm	mm	mm	Kg/Km	Meter	Ohm/km	A
03BM-0204-A00F-AJ00	1.5	1.55	9.7	11.5	14.1	395	1000	12.1	25
03BM-0304-A00F-AJ00	2.5	1.98	11.3	13.1	15.9	495	1000	7.41	33
03BM-0404-A00F-AJ00	4	2.52	12.4	14.2	17.0	595	1000	4.61	44
03BM-0504-A00F-AJ00	6	3.08	13.8	16.3	19.3	835	1000	3.08	56
03BM-0604-A00F-AJ00	10	3.8	15.3	17.8	20.8	1050	1000	1.83	78
03BM-0704-A00F-AJ00	16	4.9	17.8	20.3	23.5	1395	1000	1.15	99
03BM-0804-A00F-AJ00	25	5.4	20.5	23.7	27.1	1945	500	0.727	131
03BM-0904-A00F-AJ00	35	6.8	23.7	26.9	30.5	2445	500	0.524	162
03BM-1004-A00F-AJ00	50	7.9	26.6	29.8	33.6	3080	500	0.387	197
03BM-1104-A00F-AJ00	70	9.2	30.4	34.4	38.6	4325	500	0.268	251
03BM-1204-A00F-AJ00	95	11.0	34.4	38.4	42.8	5535	500	0.193	304
03BM-1304-A00F-AJ00	120	12.2	38.0	43.0	47.6	7110	500	0.153	353
03BM-1404-A00F-AJ00	150	13.7	42.5	47.5	52.3	8515	500	0.124	406
03BM-1504-A00F-AJ00	185	15.3	47.0	52.0	57.2	10230	250	0.0991	463
03BM-1604-A00F-AJ00	240	17.2	52.1	57.1	62.5	12750	250	0.0754	546
03BM-1704-A00F-AJ00	300	19.2	57.1	62.1	67.9	15455	250	0.0601	628
03BM-1804-A00F-AJ00	400	21.8	64.2	70.5	76.9	20270	200	0.0470	728



0.6/1.0 (1.2) KV, Multicore Auxiliary Cable, Armoured, Sheathed CU / MGT / XLPE / LSZH / SWA / LSZH

Description :

Stranded copper conductor, *Mica Glass tape* & XLPE Insulated, Extruded LSZH bedding, Round Galvanized Steel wire armoured and LSZH outer sheathed cable.

Core Colour : 5 Core – Red, Yellow, Blue, Black & Green. All other cares, by number printing on white cores.
Sheath Colour : Black

Standards :

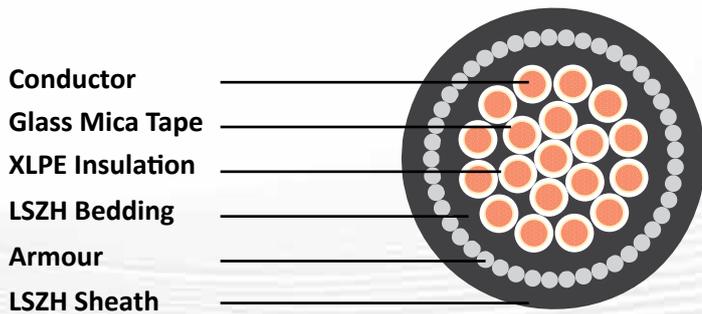
Construction : BS 7846. (BS 6724 FOR 48 CORES)
Testin : BS 6387, BS EN / IEC 60754, BS EN / IEC 61034, IEC 60331, 60332-3.

Installation Condition:

- * In free air or on a perforated cable tray
- * Ambient Air Temperature : 30°C
- * Conductor operating Temperature : 90°C

- All conductors circular stranded or circular stranded compacted (class 2).
- Cable construction to other standard and other core/sheath colour available upon request.

Cable Code	Cable Size	No. of Cores	Approximate Diameter				Approx. Cable weight	Standard Packing Length (± 5%)	Maximum Conductor Resistance at 20°C	Current rating in Free Air
			Over Conductor	Under Armour	Over Armour	Overall				
	Sq. mm.		mm	mm	mm	mm	Kg/Km	Meter	Ohm/km	Amps
03BM-0205-A00F-AJ00	1.5	5	1.55	11.3	13.1	15.9	480	1000	12.1	19
03BM-0207-A00F-AJ00		7	1.55	12.4	14.2	17.0	550	1000	12.1	17
03BM-0212-A00F-AJ00		12	1.55	16.6	19.1	22.1	920	500	12.1	14
03BM-0219-A00F-AJ00		19	1.55	19.6	22.1	25.3	1200	500	12.1	12
03BM-0227-A00F-AJ00		27	1.55	24.2	27.4	30.8	1760	500	12.1	11
03BM-0237-A00F-AJ00		37	1.55	27.2	30.4	33.8	2115	500	12.1	10
03BM-0248-A00F-AJ00		48	1.55	31.4	34.6	38.2	2590	500	12.1	9
03BM-0305-A00F-AJ00	2.5	5	1.98	13.2	15.0	17.8	595	1000	7.41	26
03BM-0307-A00F-AJ00		7	1.98	14.5	16.3	19.1	695	1000	7.41	23
03BM-0312-A00F-AJ00		12	1.98	19.5	22.0	25.2	1175	500	7.41	19
03BM-0319-A00F-AJ00		19	1.98	23.5	26.7	30.1	1760	500	7.41	16
03BM-0327-A00F-AJ00		27	1.98	28.5	31.7	35.3	2280	500	7.41	14
03BM-0337-A00F-AJ00		37	1.98	32.1	35.3	38.9	2775	500	7.41	13
03BM-0348-A00F-AJ00		48	1.98	37.5	41.5	45.5	3760	500	7.41	12
03BM-0405-A00F-AJ00	4	5	2.52	14.6	17.1	20.1	835	500	4.61	35
03BM-0407-A00F-AJ00		7	2.52	16.0	18.5	21.5	970	500	4.61	31
03BM-0412-A00F-AJ00		12	2.52	22.0	25.2	28.4	1620	500	4.61	26
03BM-0419-A00F-AJ00		19	2.52	26.0	29.2	32.6	2145	500	4.61	22
03BM-0427-A00F-AJ00		27	2.52	31.6	34.8	38.6	2830	500	4.61	20
03BM-0437-A00F-AJ00		37	2.52	36.0	40.0	44.0	3840	500	4.61	18
03BM-0448-A00F-AJ00		48	2.52	41.6	45.6	49.8	4710	500	4.61	16





Rating Factors

The current rating mentioned in above tables based on ambient temperature 30°C in accordance with IET Wiring regulations for Electrical Installations, BS 7671.

Rating Factor for variation in Ambient Air Temperature.

Air Temperature (°C)	25	30	35	40	45	50	55	60
Rating Factor	1.02	1.00	0.96	0.91	0.87	0.82	0.76	0.71

Rating Factor for one circuit or one multicore cable or for group of circuits or a group of multicore cables.

Arrangement (cable 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	1.00	0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50	0.45	0.41	0.38
Single layer on wall or floor	1.00	0.85	0.79	0.75	0.73	0.72	0.72	0.71	0.70	0.70	0.70	0.70
Single layer multicore on a perforated horizontal or vertical cable tray system	1.00	0.88	0.82	0.77	0.75	0.73	0.73	0.72	0.72	0.72	0.72	0.72
Single layer multicore on cable ladder system or cleats etc.	1.00	0.87	0.82	0.80	0.80	0.79	0.79	0.78	0.78	0.78	0.78	0.78

Voltage Drop

Voltage Drop at maximum conductor operating temperature in V/A/KM

Conductor Size	1 Core unarmoured cables				1 Core Armoured (Trefoil)	2 Core Un-armoured & Armoured	3 & 4 Un-armoured & Armoured
	Sq.mm.	1 Ph (A)	3 Ph (B)	1 Ph (C)	3 Ph (D)	3 Ph	1 Ph
1.5	31	27	31	27	27	31	27
2.5	19	16	19	16	16	19	16
4	12	10	12	10	10	12	10
6	7.9	6.8	7.9	6.8	6.8	7.9	6.8
10	4.7	4.0	4.7	4.0	4	4.7	4.0
16	2.9	2.5	2.9	2.5	2.5	2.9	2.5
25	1.90	1.65	1.85	1.60	1.60	1.90	1.65
35	1.35	1.15	1.35	1.15	1.15	1.35	1.15
50	1.05	0.90	1.00	0.87	0.87	1.00	0.87
70	0.75	0.65	0.71	0.61	0.62	0.69	0.6
95	0.58	0.50	0.52	0.45	0.47	0.52	0.45
120	0.48	0.42	0.43	0.37	0.39	0.42	0.37
150	0.43	0.37	0.36	0.31	0.33	0.35	0.30
185	0.37	0.32	0.307	0.26	0.28	0.29	0.26
240	0.33	0.29	0.25	0.22	0.24	0.24	0.21
300	0.31	0.27	0.22	0.195	0.21	0.21	0.185
400	0.29	0.25	0.20	0.175	0.20	0.190	0.165
500	0.28	0.24	0.185	0.160	0.18	--	--
630	0.27	0.23	0.175	0.150	0.17	--	--

- A -----> 2 cables, enclosed in Conduit or trunking
- B -----> 3 or 4 cables , enclosed in Conduit or trunking.
- C -----> 2 cables, clipped direct, on tray or in free air (Cable Touching)
- D -----> 3 or 4 cables, clipped direct, on tray or in free air (Cable Touching, trefoil)

Minimum Bending Radius:

Single core

Armoured - 8 x OD
Un Armoured – 6 x OD

Multi Core Cable

Armoured - 8 x OD
Un Armoured – 8 x OD

Where 'OD' is overall diameter of cable

Short Circuit Curve

$$I_{sc} = 0.143 \frac{A}{\sqrt{t}}$$

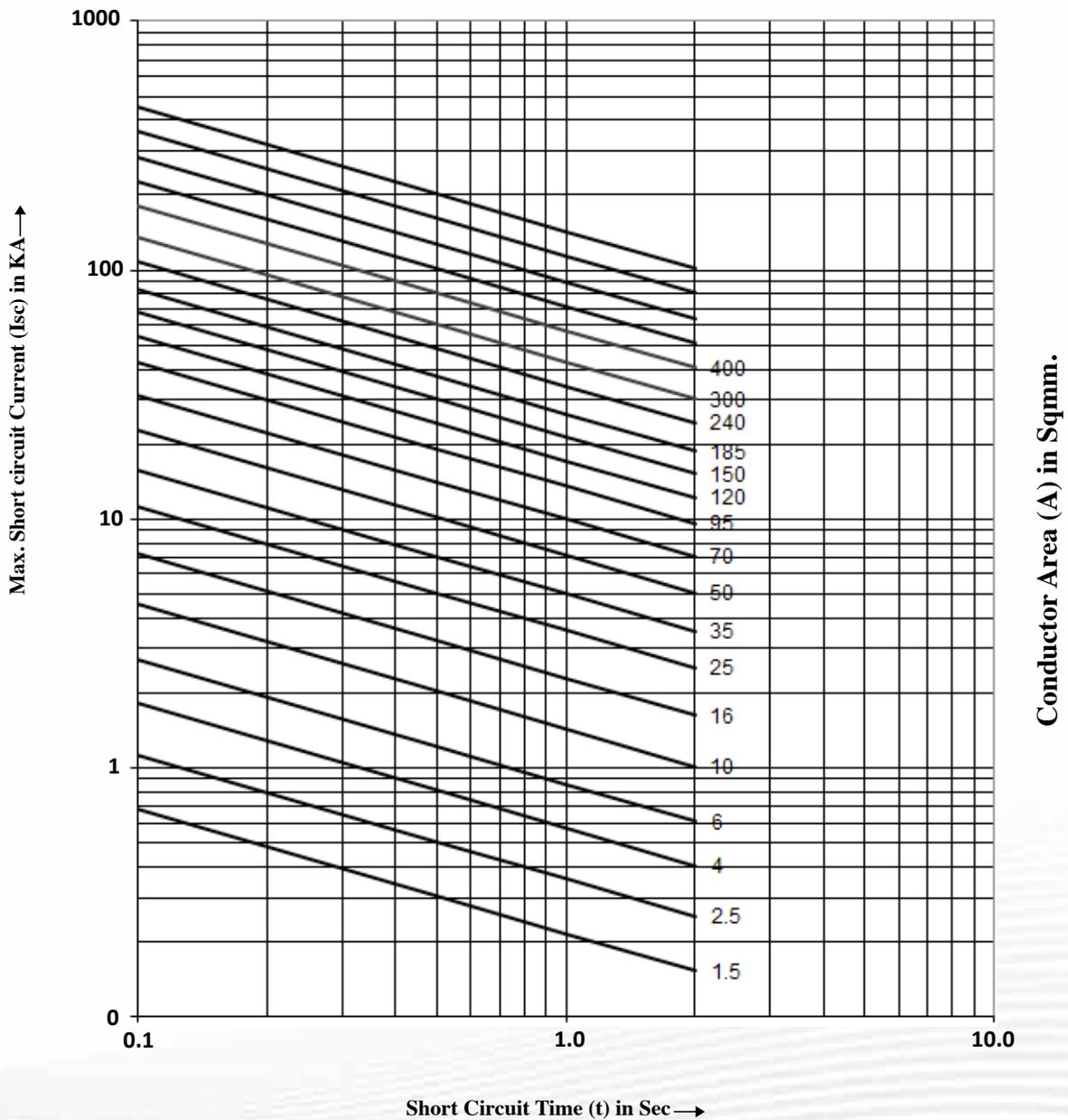
Where,

I_{sc} = Short Circuit current of copper conductor in KA

A = Conductor Area in Sq.mm

t = Short circuit duration in Sec.

Note : Max. permissible conductor temperature during short circuit = 250 °C



Special Precaution During Installation & Storage for longer periods.

Cables with LSZH sheath need to be handled with care during Installation. Since Special additives are used in the formulation of LSF compound to give the typical flame retardant characteristics of Halogen free polymers (Ex. High Oxygen Index, very Low smoke density, no acid gas liberation and retardance to flame propagation) some mechanical properties deteriorates. The following points shall be noted:

- Cable shall not be exposed to sunlight for considerable for considerable period before installation i.e., the temperature of sheath should be below 40°C
- Preferably the installation is done when the ambient temperature is low.
- Wire/Rope should not be used directly on cable sheath for pulling.
- The cable should not be bend more than the specified Minimum Bending radius.
- When pulled on cable trays/or any uneven surface, special attention is needed to weldings/ or unusually rough terrains.
- Rollers and bends should not have any sharpness which may damage sheath.
- Special LSZH compatible accessories and fixings are recommended for installations requiring enhanced fire performance.

The site chosen for storage of cable drums must be level and dry. It should have a firm, preferably concreted surface. This will avoid sinking of the drums and difficulty in subsequent shifting. All drums should be stored in such a manner as to leave sufficient space between them for air circulation.

During storage, the drum should be rolled to an angle of 90 once every three months. Also, tie bolts shall be checked and tightened at regular intervals.

Always turn a cable drum using turn table. Never use crow bar if turn table is not available. Two well greased plates can be used instead.

Storage of cable drums under shed is not essential unless the storage is for very long period. However, the cable drums shall be protected from direct sun light by covering them by tarpaulin or thick black polyethylene sheet.



Test Facilities at Gulf Cable

Fire Resistant – Resistant to Fire alone

Test apparatus comprising of Cable support system, a Circuit Continuity checking and voltage withstand arrangement and a source of heat

Conforms to BS 6387 protocol C, IEC 60331-11, IEC 60331-21



Fire Resistant – Fire with Water

Test apparatus comprising of Cable support system, a Circuit Continuity checking and voltage withstand arrangement, a source of heat and a water spray

Conforms to BS 6387 protocol W



Fire Resistant – Fire with Mechanical Shock, Fire with Mechanical Shock and Water

Test apparatus comprising of Cable support system, a Circuit Continuity checking and voltage withstand arrangement, a shock producing device, a water jet device and a source of heat

Conforms to BS 6387 protocol Z, BS 8491, BS EN 50200, BS 8434-2, IEC 60331-1, IEC 60331-2, IEC 60331-3



3 Meter Cube Smoke Test Apparatus

The 3 Metre Cube is used for measuring smoke emission when electric cables are burned under defined conditions, for example, a few cables burned horizontally. The equipment comprises a cubic enclosure and a photometric system.

Conforms to BS EN/ IEC 61034-1&2



Acid Gas Test Apparatus

To determine the degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring the pH & conductivity.

Conforms to BS EN / IEC 60754-1&2



Flammability Test Apparatus

To determine the resistance to vertical flame propagation for a single vertical insulated conductor or cable.

Conforms to IEC: 60332 Part 1

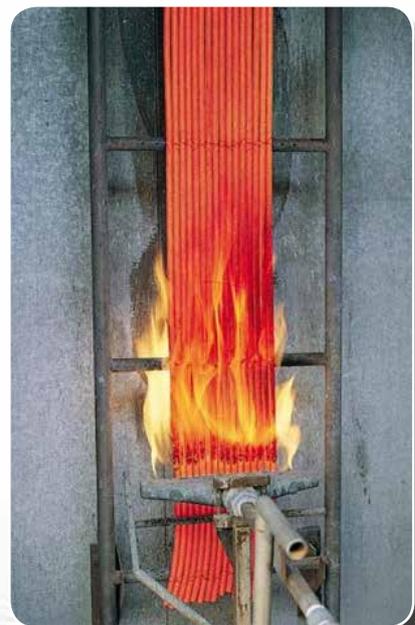


Flammability Test Apparatus

Test for assessment of vertical flame spread of vertically mounted bunched cables or wires

The Test Apparatus comprises of a 4m x 2m x 1m Chamber duly insulated. The Equipment is provided with a Ribbon Type Burner with Stand & Ladder. The quantum of gas is controlled & measured by means of a Flowmeter provided for air & fuel gas respectively.

Conforms to IEC-60332 Part 3

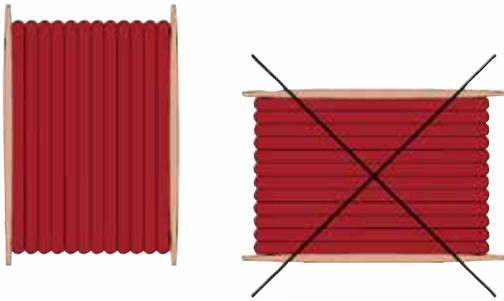




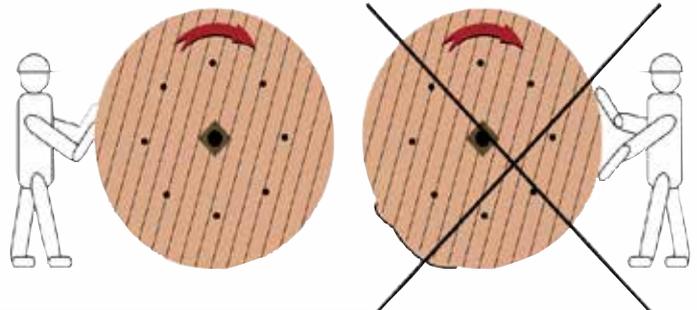
Drum Handling

A Cable is a valuable product. If handling is not done correctly, the drum and in turn the Cable wound over it can be damaged. At times, damage might not be discovered until after installation, when repairs can be extremely difficult / expensive.

The purpose of this guide is to illustrate, how damages can be avoided by correct handling.



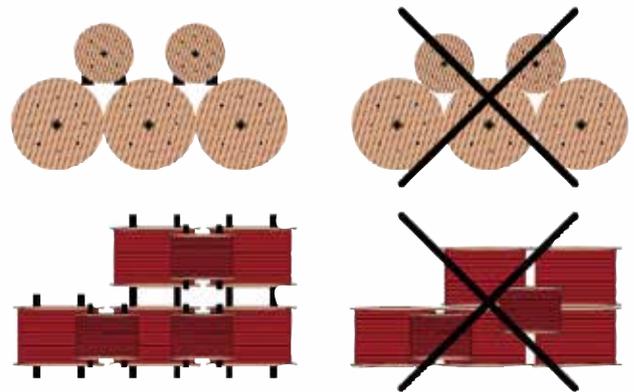
Keep the drum upright



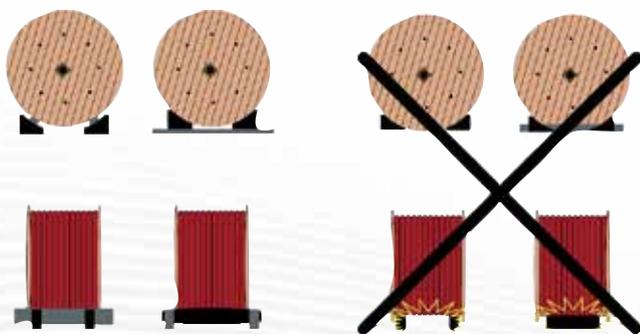
Roll in direction of arrows only



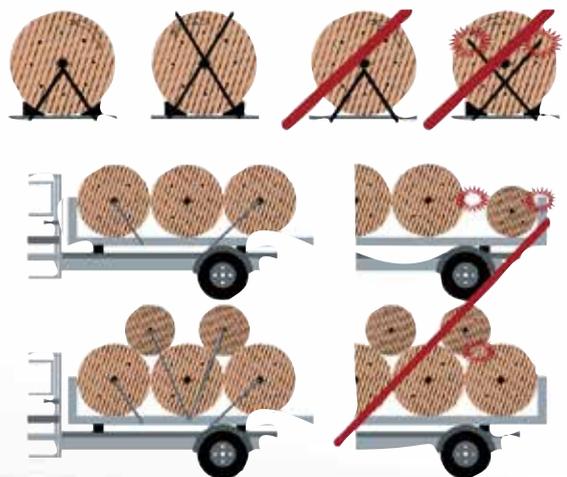
Lift the drum without damage



Avoid stacking



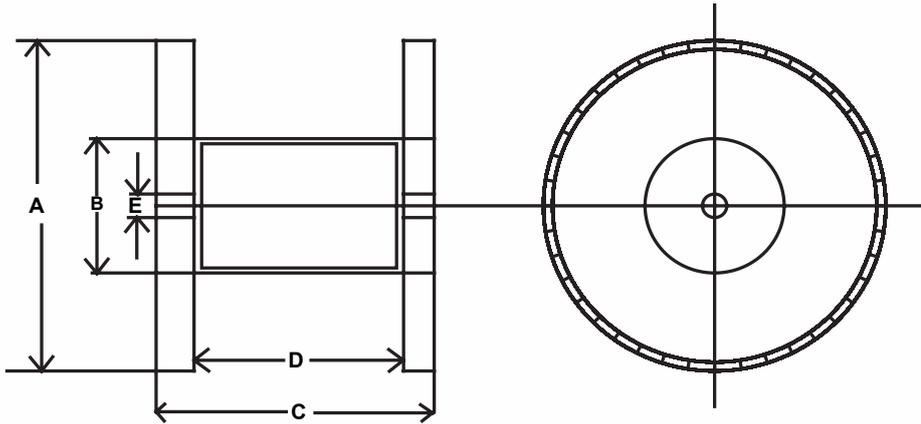
Secure the drums firmly



Fasten the drums firmly

Drum sizes and dimensions

- A** – Flange Diameter (Excluding lagging), mm
- B** – Barrel diameter, mm
- C** – Overall width, mm
- D** – Traverse width, mm
- E** – Minimum spindle hole diameter, mm



Dimensions (mm):

Drum size D-No.	A	B	C	D	E
D-6	600	250	470	400	110
D-7	700	325	570	500	110
D-8	800	375	570	500	110
D-9	900	425	620	550	110
D-10	1000	500	690	600	110
D-11	1100	575	740	650	110
D-12	1200	675	950	850	110
D-14	1400	800	950	850	110
D-16	1600	950	970	850	110
D-18	1800	1100	1220	1100	110
D-19	1900	1100	1230	1100	110
D-20	2000	1300	1235	1100	110
D-21	2100	1150	1290	1100	110
D-22	2200	1400	1390	1250	110
D-23	2340	1200	1795	1625	110
D-24	2400	1200	1795	1625	110
D-25-S	2540	1200	1825	1625	110
D-25	2540	1400	1800	1625	110
D-26	2600	1400	1970	1800	110

NOTE

Area with horizontal dashed lines for notes.



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