



UNIVERSAL CABLE (M) BERHAD
(Co. No.: 7042-D)



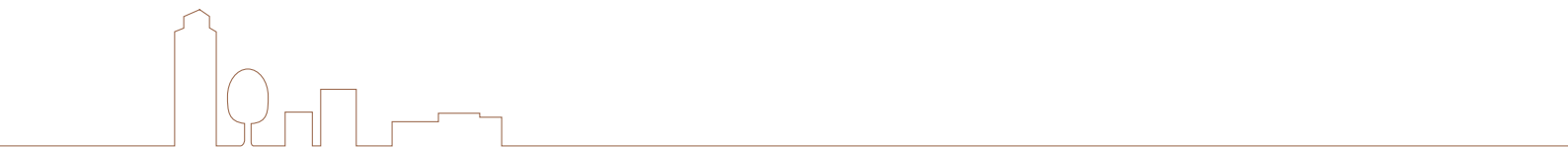
THE UNIVERSAL
CHOICE 

PVC INSULATED CABLE



A Member of **SARAWAK CABLE BERHAD GROUP**







INTRODUCTION

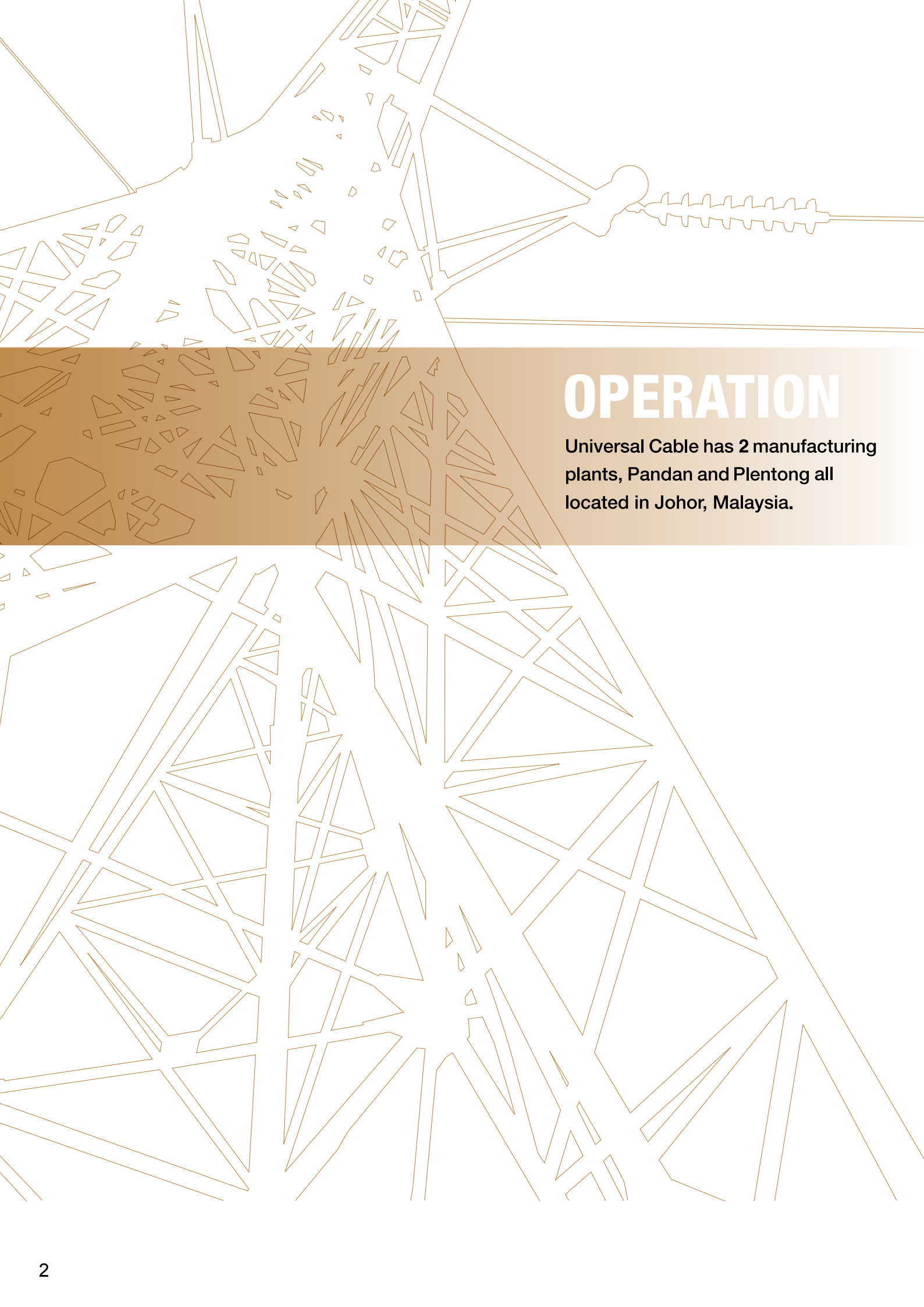
History

Universal Cable (M) Berhad was established in March 1967. Phenomenal growth and success over the years has enabled Universal Cable to achieve the formidable status as the largest cable manufacturer in Malaysia and most trusted cable and wire manufacturer in the region.

Universal Cable Today

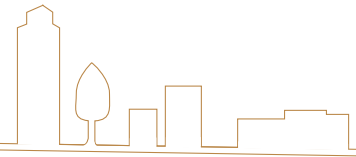
Universal Cable today has a broad manufacturing portfolio of cable and wire products, which includes advanced power and control cables, instrumentation cables, aluminium conductors and cables, cables for the oil & gas industry and various types of specialty cables such as welding cables and automotive cables.





OPERATION

Universal Cable has 2 manufacturing plants, Pandan and Plentong all located in Johor, Malaysia.



Pandan

Our Pandan plant commenced its manufacturing operation in the 1970s. Since then, Pandan has broadened its range of products to include:

- Low voltage power and control cables
- Offshore, marine and shipboard cables
- Fire resistant and flame retardant cables
- Instrumentation cables and
- Specialty cables
- Aluminium conductors
- Aluminium power cables
- Aerial bundle cables (ABC)



Plentong

The Plentong plant was set up in the early 90s and started producing Medium Voltage and High Voltage cables in 1995. Universal Cable Plentong has the ability and technology to manufacture Medium Voltage and High Voltage cables up to 275kV. Universal Cable is the first and only cable manufacturer in Malaysia with the ability and technology to manufacture up to 275kV power cables.

With this capability, Universal Cable produces products that are highly demanded by the electricity authorities locally and internationally.

QUALITY ASSURANCE & CERTIFICATIONS



Over the years, Universal Cable has been bestowed with many certifications and awards from the most stringent local and international accreditation authorities.

Universal Cable has spared no efforts in maintaining and constantly upgrading its sophisticated product Research & Development capabilities. We have made remarkable headway through our constant investments in new state-of-the-art machinery that incorporate the latest technologies. In addition, our testing equipments represent the most stringent standards applied in the manufacture of our extensive range of cables.

Universal Cable's unrelenting pursuit for impeccable product quality and functional enhancements, and improvements strongly reaffirms our total dedication and devotion to our product Research & Development strengths and achievements.

Our stringent emphasis on total quality control and exhaustive testing at all stages of cable production further enhance the demanding standards that are exacted on our cable products. Universal Cable products are renowned for maximum operating efficiency under the most severe operating environments.

Our extensive and in-depth commitment to Total Customer Satisfaction, gained us both local and international recognitions and certifications. The quality management system MS ISO 9001:2015 certification and the type tests by KEMA from Netherlands, CESI from Italy, ABS from the United States, LR from United Kingdom, PSB from Singapore and SIRIM from Malaysia are testaments to our total commitment in product quality and manufacturing excellence. The ISO 45001:2018 (OHSAS 18001:2007) Management Systems and our pursuance of ISO 14001:2015 in Environmental Management System demonstrates our pledge towards a safe & healthy workplace, practices and legislative compliances.



AWARDS & ACCOLADES



In 2005 & 2006, the Malaysia International Trade and industry (MITI) recognized our efforts by way of Export Excellence Merit status. In 2007, we were honored with the prestigious Export Excellence Award (Merchandise) from the MITI.

We are the first cable manufacturer in Malaysia to receive both the prestigious Business Superbrands Malaysia in 2006 and the coveted BrandLaureate Award for 7 consecutive terms of 2006/2007, 2007/2008, 2008/2009, 2009/2010, 2010/2011, 2011/2012 & 2012/2013 for the Best Brands in Asiz Pacific. Pioneering the industry, our commitment towards manufacturing excellence has also been recognized by receiving the coveted Frost & Sullivan Malaysia Manufacturing Excellence Award (Gold-Engineering Category) in 2008. In 2009, we were awarded the Brand Excellence Award (certificate) by MITI.

Our vision is to be the dominant world-class cable manufacturer in ASEAN. Our mission is to manufacture cables for electricity supply and information & communication technology to meet the needs of the public. We uphold our universal values to ensure total customer satisfaction, strive for continuous growth and create value for our shareholders.





INTERNATIONAL MARKET

Our remarkable achievement in transcending local market boundaries into the international arena is witnessed by the global partners with which Universal Cable have developed strong affiliations.

Our list of international destinations grows from Australia, Fiji Islands, New Zealand, Brunei, China, India, Indonesia, Japan, Maldives, Nepal, Pakistan, South Korea, Sri Lanka, Philippines, Singapore, Vietnam, Cambodia, Oman, Jordan, Sudan, UAE, Djibouti, Yemen, Bahrain, Saudi Arabia, Mauritius, South Africa, Myanmar, Papua New Guinea, Hong Kong, Brazil, Germany, Bangladesh, which demonstrates the wide reach of our cable products.

Today, the brand name Universal Cable has become synonymous with product excellence and gained worldwide recognition for its premium quality.

PVC Insulated Cables

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CU / PVC INSULATED CABLE

CONSTRUCTION

Conductor : Plain annealed copper
 Insulation : RoHS PVC Compound
 Colour of cores : Red, Yellow, Blue, Black, Brown, Grey, White, Green or Green/Yellow or Yellow/ Green

MS 2112-3, IEC 60227-3, BS 6004, BS EN 50525-2-31, SS 358

450/750 V

Conductor		Thickness of insulation	Approx. overall diameter	Approx net weight
Area	Shape			
mm ²			mm	mm
1.5	s.c.	0.7	2.8	20
1.5	r.m.	0.7	3.0	20
2.5	s.c.	0.8	3.4	30
2.5	r.m.	0.8	3.6	30
4	r.m.	0.8	4.1	40
6	r.m.	0.8	4.7	60
10	r.m.	1.0	6.0	110
16	c.c.	1.0	6.7	160
25	c.c.	1.2	8.4	260
35	c.c.	1.2	9.5	350
50	c.c.	1.4	11.0	490
70	c.c.	1.4	12.5	680
95	c.c.	1.6	14.7	940
120	c.c.	1.6	16.1	1180
150	c.c.	1.8	17.9	1480
185	c.c.	2.0	20.1	1810
240	c.c.	2.2	22.8	2370
300	c.c.	2.4	25.4	2980
400	c.c.	2.6	28.5	3780
500	c.c.	2.8	31.8	4750
630	c.c.	2.8	35.4	6070

Note : s.c. - solid circular, r.m. - circular stranded, c.c. - compacted circular stranded
 Code : H07V-U , H07V-R

CU / PVC INSULATED, PVC SHEATHED UNARMoured CABLE

CONSTRUCTION

Conductor	:	Plain annealed copper	
Insulation	:	RoHS PVC Compound	
Colour of cores	:	Single core - black	<u>Optional colours</u>
	:	2 cores - red and black	Single core - brown or blue
	:	3 cores - red, yellow and blue	2 cores - brown, blue
	:	4 cores - red, yellow, blue and black	3 cores - brown, black, grey
	:		4 cores - brown, black, grey, blue
Formation	(i)	Single core	
	(ii)	2, 3 or 4 cores	
		stranded together and the interstices may be filled with non-hygroscopic material or the sheathing compound. A non-hygroscopic binder tape may be applied over the laid - up cores.	
Sheath	:	RoHS PVC Compound (Black)	

CU/PVC/PVC - SINGLE CORE BS 6004

300 / 500 V

Conductor		Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx net weight
Area	Shape				
mm ²		mm	mm	mm	Kg / Km
1.5	s.c.	0.7	0.8	4.4	35
1.5	r.m.	0.7	0.8	4.6	35
2.5	s.c.	0.8	0.8	5.0	50
2.5	r.m.	0.8	0.8	5.2	50
4	r.m.	0.8	0.9	6.0	70
6	r.m.	0.8	0.9	6.5	90
10	r.m.	1.0	0.9	7.9	140
16	c.c.	1.0	1.0	8.8	200
25	c.c.	1.2	1.1	10.6	310
35	c.c.	1.2	1.1	11.8	410

CU/PVC/PVC - SINGLE CORE BS 6346

0.6/1 (1.2) kV

Conductor		Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx net weight
Area	Shape				
mm ²		mm	mm	mm	Kg / Km
50	c.c.	1.4	1.4	13.7	570
70	c.c.	1.4	1.4	15.3	780
95	c.c.	1.6	1.5	17.7	1060
120	c.c.	1.6	1.5	19.1	1310
150	c.c.	1.8	1.6	21.1	1640
185	c.c.	2.0	1.7	23.5	2010
240	c.c.	2.2	1.8	26.4	2610
300	c.c.	2.4	1.9	29.2	3250
400	c.c.	2.6	2.0	32.5	4100
500	c.c.	2.8	2.1	36.0	5130
630	c.c.	2.8	2.2	39.8	6480
800	c.c.	2.8	2.3	43.9	8210
1000	r.m.	3.0	2.5	52.6	10210

Note : s.c. - solid circular, r.m. - circular stranded, c.c. - compacted circular stranded

**CU/PVC/PVC - TWO CORES
BS 6004**
300 / 500 V

Conductor		Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx net weight
Area	Shape				
mm ²			mm	mm	mm
1.5	r.m.	0.7	1.2	8.9	100
2.5	r.m.	0.8	1.2	9.7	130
4	r.m.	0.8	1.2	11.2	180
6	r.m.	0.8	1.2	12.3	240

**CU/PVC/PVC - TWO CORES
BS 6346**
0.6/1 (1.2) kV

Conductor		Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx net weight
Area	Shape				
mm ²			mm	mm	mm
10	r.m.	1.0	1.8	15.8	390
16	c.c.	1.0	1.8	17.4	530
25	c.c.	1.2	1.8	20.7	780
35	c.c.	1.2	1.8	23.0	1010
50	c.c.	1.4	1.8	26.4	1330
70	c.c.	1.4	1.9	30.0	1810
95	c.c.	1.6	2.0	34.6	2460
120	c.c.	1.6	2.1	37.8	3020
150	c.c.	1.8	2.2	41.7	3740
185	c.c.	2.0	2.4	46.5	4600
240	c.c.	2.2	2.5	52.3	5950
300	c.c.	2.4	2.7	58.1	7410
400	c.c.	2.6	2.9	64.9	9340

Note : r.m. - circular stranded, c.c. - compacted circular stranded, s.m. - shaped stranded

**CU/PVC/PVC - THREE CORES
BS 6004**

300 / 500 V

Conductor		Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx net weight
Area	Shape				
mm ²			mm	mm	mm
1.5	r.m.	0.7	1.2	9.4	120
2.5	r.m.	0.8	1.2	10.7	170
4	r.m.	0.8	1.2	11.9	220
6	r.m.	0.8	1.4	13.5	310

**CU/PVC/PVC - THREE CORES
BS 6346**

0.6/1 (1.2) kV

Conductor		Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx net weight
Area	Shape				
mm ²			mm	mm	mm
10	r.m.	1.0	1.8	16.7	510
16	c.c.	1.0	1.8	18.4	700
25	c.c.	1.2	1.8	22.0	1050
35	c.c.	1.2	1.8	24.5	1370
50	s.m.	1.4	1.8	25.8	1740
70	s.m.	1.4	1.9	29.2	2390
95	s.m.	1.6	2.1	33.8	3270
120	s.m.	1.6	2.2	36.8	4030
150	s.m.	1.8	2.3	40.5	4990
185	s.m.	2.0	2.5	45.1	6150
240	s.m.	2.2	2.6	50.7	8000
300	s.m.	2.4	2.8	56.2	9950
400	s.m.	2.6	3.1	62.9	12590

Note : r.m. - circular stranded, c.c. - compacted circular stranded, s.m. - shaped stranded

**CU/PVC/PVC - FOUR CORES
BS 6004**
300 / 500 V

Area	Shape	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx net weight
mm ²		mm	mm	mm	Kg / Km
1.5	r.m.	0.7	1.2	10.2	150
2.5	r.m.	0.8	1.2	11.7	210
4	r.m.	0.8	1.4	13.4	290
6	r.m.	0.8	1.4	14.7	390

**CU/PVC/PVC - FOUR CORES
BS 6346**
0.6/1 (1.2) kV

Nominal sectional area	Type of Conductor	Thickness of insulation	Thickness of sheath	Approx. overall diameter	Approx net weight
mm ²		mm	mm	mm	Kg / Km
10	r.m.	1.0	1.8	18.3	650
16	c.c.	1.0	1.8	20.2	900
25	c.c.	1.2	1.8	24.2	1360
35	c.c.	1.2	1.8	27.0	1780
50	s.m.	1.4	1.9	29.2	2360
70	s.m.	1.4	2.0	33.1	3230
95	s.m.	1.6	2.2	38.3	4420
120	s.m.	1.6	2.3	41.7	5430
150	s.m.	1.8	2.5	46.2	6760
185	s.m.	2.0	2.6	51.2	8310
240	s.m.	2.2	2.8	57.9	10800
300	s.m.	2.4	3.1	64.4	13490
400	s.m.	2.6	3.3	71.8	17060

66
Note : r.m. - circular stranded, c.c. - compacted circular stranded, s.m. - shaped stranded

CU / PVC INSULATED, PVC SHEATHED UNARMoured WITH REDUCED NEUTRAL CABLE (3C + E)

CONSTRUCTION

Conductor	:	Plain annealed copper
Insulation	:	RoHS PVC Compound
Colour of cores	:	Red, yellow, blue and green / yellow OR <u>Optional colours</u> brown, black, grey, green/yellow
Formation	:	Stranded together and the interstices may be filled with non-hygroscopic material or the sheathing compound. A non-hygroscopic binder tape may be applied over the laid - up cores.
Sheath	:	RoHS PVC Compound (Black)

CU/PVC/PVC - THREE CORE + E BS 6346

0.6/1 (1.2) kV

Phase Conductor			Neutral Conductor			Thickness of sheath	Approx. overall diameter	Approx. net weight
Nominal sectional area	Type of conductor	Thickness of insulation	Nominal sectional area	Construction, Number / Wire diameter	Thickness of insulation			
mm ²		mm	mm ²	No. / mm	mm	mm	mm	Kg / Km
25	c.c.	1.2	16	c.c.	1.0	1.8	23.4	1260
35	c.c.	1.2	16	c.c.	1.0	1.8	25.5	1590
50	s.m.	1.4	25	c.c.	1.2	1.9	29.2	2150
70	s.m.	1.4	35	c.c.	1.2	2.0	33.1	2920
95	s.m.	1.6	50	c.c.	1.4	2.1	38.1	3960
120	s.m.	1.6	70	c.c.	1.4	2.2	41.5	4950
150	s.m.	1.8	70	c.c.	1.4	2.4	46.0	6000
185	s.m.	2.0	95	c.c.	1.6	2.5	51.0	7460
240	s.m.	2.2	120	c.c.	1.6	2.7	57.7	9650
300	s.m.	2.4	150	c.c.	1.8	2.9	64.0	12020
300	s.m.	2.4	185	c.c.	2.0	2.9	64.0	12200
400	s.m.	2.6	185	c.c.	2.0	3.2	71.6	15150

Note : c.c. - compacted circular stranded, s.m. - shaped stranded

CU / PVC INSULATED, PVC SHEATHED ARMOURED CABLE

CONSTRUCTION

Conductor	:	Plain annealed copper	
Insulation	:	RoHS PVC Compound	
Colour of cores	:	Single core - black	<u>Optional colours</u>
	:	2 cores - red and black	Single core - brown or blue
	:	3 cores - red, yellow and blue	2 cores - brown, blue
	:	4 cores - red, yellow, blue and black	3 cores - brown, black, grey
	:	5 cores - red, yellow, blue, black and green / yellow	4 cores - brown, black, grey, blue
	:		5 cores - brown, black, grey, blue and green/yellow
Formation	(i)	Single core	
	(ii)	2, 3, 4 or 5 cores stranded together and the interstices may be filled with non-hygroscopic material or the bedding compound. A non-hygroscopic binder tape may be applied over the laid-up cores.	
Bedding	:	RoHS PVC Compound (Black)	
Armour	(i)	Single core - Aluminium wire	
	(ii)	2, 3, 4 or 5 cores - Galvanized steel wire	
Sheath	:	RoHS PVC Compound (Black)	

CU/PVC/PVC/AWA/PVC - SINGLE CORE BS 6346

0.6/1 (1.2) kV

Conductor		Thickness of insulation mm	Thickness of bedding mm	Diameter of armour wire mm	Thickness of sheath mm	Approx. overall diameter mm	Approx. net weight Kg / Km
Area mm ²	Shape						
50	c.c.	1.4	0.8	1.25	1.5	18.3	780
70	c.c.	1.4	0.8	1.25	1.6	20.2	1030
95	c.c.	1.6	0.8	1.25	1.6	22.3	1340
120	c.c.	1.6	1.0	1.6	1.7	25.2	1700
150	c.c.	1.8	1.0	1.6	1.7	27.0	2040
185	c.c.	2.0	1.0	1.6	1.8	29.4	2450
240	c.c.	2.2	1.0	1.6	1.9	32.4	3110
300	c.c.	2.4	1.0	1.6	1.9	35.1	3780
400	c.c.	2.6	1.2	2.0	2.1	40.4	4830
500	c.c.	2.8	1.2	2.0	2.1	43.8	5910
630	c.c.	2.8	1.2	2.0	2.2	47.7	7340
800	c.c.	2.8	1.4	2.5	2.4	52.4	9250
1000	r.m.	3.0	1.4	2.5	2.5	60.9	11510

Note : r.m. - circular stranded, c.c. - compacted circular stranded

**CU/PVC/PVC/SWA/PVC - TWO CORES
BS 6346**
0.6/1 (1.2) kV

Conductor		Thickness of insulation	Thickness of bedding	Diameter of armour wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
Area	Shape						
mm ²			mm	mm	mm	mm	mm
1.5	r.m.	0.6	0.8	0.9	1.4	11.9	290
2.5	r.m.	0.7	0.8	0.9	1.4	13.1	350
4	r.m.	0.8	0.8	0.9	1.4	14.6	430
6	r.m.	0.8	0.8	0.9	1.5	15.9	510
10	r.m.	1.0	0.8	1.25	1.6	19.5	820
16	c.c.	1.0	0.8	1.25	1.6	21.1	1000
25	c.c.	1.2	1.0	1.6	1.7	25.7	1530
35	c.c.	1.2	1.0	1.6	1.8	28.2	1860
50	c.c.	1.4	1.0	1.6	1.9	31.8	2310
70	c.c.	1.4	1.0	1.6	1.9	35.2	2900
95	c.c.	1.6	1.2	2.0	2.1	41.2	4060
120	c.c.	1.6	1.2	2.0	2.2	44.4	4760
150	c.c.	1.8	1.2	2.0	2.3	48.3	5630
185	c.c.	2.0	1.4	2.5	2.4	55.1	7190
240	c.c.	2.2	1.4	2.5	2.5	60.9	8820
300	c.c.	2.4	1.6	2.5	2.7	67.1	10670
400	c.c.	2.6	1.6	2.5	2.9	73.9	12940

**CU/PVC/PVC/SWA/PVC - THREE CORES
BS 6346**
0.6/1 (1.2) kV

Conductor		Thickness of insulation	Thickness of bedding	Diameter of armour wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
Area	Shape						
mm ²			mm	mm	mm	mm	mm
1.5	r.m.	0.6	0.8	0.9	1.4	12.3	320
2.5	r.m.	0.7	0.8	0.9	1.4	13.6	390
4	r.m.	0.8	0.8	0.9	1.4	15.2	500
6	r.m.	0.8	0.8	1.25	1.5	17.4	700
10	r.m.	1.0	0.8	1.25	1.6	20.4	970
16	c.c.	1.0	0.8	1.25	1.6	22.1	1200
25	c.c.	1.2	1.0	1.6	1.7	27.0	1840
35	c.c.	1.2	1.0	1.6	1.8	29.7	2280
50	s.m.	1.4	1.0	1.6	1.9	31.2	2700
70	s.m.	1.4	1.2	2.0	2.0	35.8	3770
95	s.m.	1.6	1.2	2.0	2.1	40.2	4820
120	s.m.	1.6	1.2	2.0	2.2	43.2	5700
150	s.m.	1.8	1.4	2.5	2.4	49.3	7270
185	s.m.	2.0	1.4	2.5	2.5	53.7	8650
240	s.m.	2.2	1.6	2.5	2.6	59.7	10810
300	s.m.	2.4	1.6	2.5	2.8	65.2	13070
400	s.m.	2.6	1.6	2.5	3.0	71.7	16030

Note : r.m. - circular stranded, c.c. - compacted circular stranded, s.m. - shaped stranded

CU/PVC/PVC/SWA/PVC - FOUR CORES
BS 6346

0.6/1 (1.2) kV

Conductor		Thickness of insulation	Thickness of bedding	Diameter of armour wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
Area	Shape						
mm ²			mm	mm	mm	mm	mm
1.5	r.m.	0.6	0.8	0.9	1.4	13.0	360
2.5	r.m.	0.7	0.8	0.9	1.4	14.5	450
4	r.m.	0.8	0.8	1.25	1.5	17.2	680
6	r.m.	0.8	0.8	1.25	1.5	18.6	820
10	r.m.	1.0	0.8	1.25	1.6	22.0	1140
16	c.c.	1.0	1.0	1.6	1.7	25.2	1640
25	c.c.	1.2	1.0	1.6	1.8	29.4	2240
35	c.c.	1.2	1.0	1.6	1.9	32.4	2780
50	s.m.	1.4	1.2	2.0	2.0	35.8	3740
70	s.m.	1.4	1.2	2.0	2.1	39.7	4770
95	s.m.	1.6	1.2	2.0	2.2	44.7	6160
120	s.m.	1.6	1.4	2.5	2.4	50.5	7770
150	s.m.	1.8	1.4	2.5	2.5	54.8	9310
185	s.m.	2.0	1.6	2.5	2.6	60.2	11180
240	s.m.	2.2	1.6	2.5	2.8	66.9	14020
300	s.m.	2.4	1.6	2.5	3.0	73.2	17020
400	s.m.	2.6	1.8	3.15	3.3	82.8	21990

CU/PVC/PVC/SWA/PVC - FIVE CORES
BS 6346

0.6/1 (1.2) kV

Conductor		Thickness of insulation	Thickness of bedding	Diameter of armour wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
Area	Shape						
mm ²			mm	mm	mm	mm	mm
1.5	r.m.	0.6	0.8	0.9	1.4	13.8	400
2.5	r.m.	0.7	0.8	0.9	1.5	15.7	520
4	r.m.	0.8	0.8	1.25	1.5	18.4	780
6	r.m.	0.8	0.8	1.25	1.6	20.1	940
10	r.m.	1.0	1.0	1.6	1.7	25.0	1500
16	c.c.	1.0	1.0	1.6	1.7	27.1	1920
25	c.c.	1.2	1.0	1.6	1.9	32.0	2670
35	c.c.	1.2	1.0	1.6	1.9	35.1	3310
50	c.c.	1.4	1.2	2.0	2.1	41.3	4570
70	c.c.	1.4	1.2	2.0	2.2	46.0	5880

Note : r.m. - circular stranded, c.c. - compacted circular stranded, s.m. - shaped stranded

CU / PVC INSULATED, PVC SHEATHED ARMoured WITH REDUCED NEUTRAL CABLE (3C + E)

CONSTRUCTION

Conductor	:	Plain annealed copper
Insulation	:	RoHS PVC Compound
Colour of cores	:	Red, yellow, blue and green / yellow OR <u>Optional colours</u> brown, black, grey, green/yellow
Formation	:	Stranded together and the interstices may be filled with non-hygroscopic material or the bedding compound. A non-hygroscopic binder tape may be applied over the laid - up cores.
Bedding	:	RoHS PVC Compound (Black)
Armour	:	Galvanized steel wire
Sheath	:	RoHS PVC Compound (Black)

CU/PVC/PVC/SWA/PVC - THREE CORE + E BS 6346

0.6/1 (1.2) kV

Phase Conductor			Neutral Conductor			Thickness of bedding	Diameter of armour wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
Nominal sectional area	Type of conductor	Thickness of insulation	Nominal sectional area	Construction, Number / Wire diameter	Thickness of insulation					
mm ²		mm	mm ²	No. / mm	mm	mm	mm	mm	mm	Kg / Km
25	c.c.	1.2	16	c.c.	1.0	1.0	1.6	1.8	28.8	2120
35	c.c.	1.2	16	c.c.	1.0	1.0	1.6	1.8	31.0	2520
50	s.m.	1.4	25	c.c.	1.2	1.0	1.6	1.9	34.4	3210
70	s.m.	1.4	35	c.c.	1.2	1.2	2.0	2.0	39.5	4440
95	s.m.	1.6	50	c.c.	1.4	1.2	2.0	2.2	44.7	5720
120	s.m.	1.6	70	c.c.	1.4	1.4	2.5	2.3	50.3	7270
150	s.m.	1.8	70	c.c.	1.4	1.4	2.5	2.4	54.6	8540
185	s.m.	2.0	95	c.c.	1.6	1.4	2.5	2.5	59.6	10290
240	s.m.	2.2	120	c.c.	1.6	1.6	2.5	2.7	66.7	12860
300	s.m.	2.4	150	c.c.	1.8	1.6	2.5	2.9	73.0	15580
400	s.m.	2.6	185	c.c.	2.0	1.8	3.15	3.1	82.4	20070

Note : c.c. - compacted circular stranded, s.m. - shaped stranded

CU / PVC INSULATED, PVC SHEATHED ARMoured AUXILIARY CABLE

CONSTRUCTION

Conductor	:	Plain annealed copper
Insulation	:	RoHS PVC Compound
Colour of cores	:	White insulation core with numbering
Formation	:	Stranded together and the interstices may be filled with non-hygroscopic material or the bedding compound. A non-hygroscopic binder tape may be applied over the laid - up cores.
Bedding	:	RoHS PVC Compound (Black)
Armour	:	Galvanized steel wire
Sheath	:	RoHS PVC Compound (Black)

CU/PVC/PVC/SWA/PVC - AUXILIARY CABLE (1.5 mm²)

BS 6346

0.6/1 (1.2) kV

Number of Cores	Nominal sectional area	Conductor shape	Thickness of insulation	Thickness of bedding	Diameter of armour wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
	mm ²		mm	mm	mm	mm	mm	Kg / Km
5	1.5	r.m.	0.6	0.8	0.9	1.4	13.8	400
6	1.5	r.m.	0.6	0.8	0.9	1.4	14.7	450
7	1.5	r.m.	0.6	0.8	0.9	1.4	14.7	460
9	1.5	r.m.	0.6	0.8	1.25	1.5	17.3	680
10	1.5	r.m.	0.6	0.8	1.25	1.5	18.4	740
12	1.5	r.m.	0.6	0.8	1.25	1.5	18.8	770
19	1.5	r.m.	0.6	0.8	1.25	1.6	21.4	1020
27	1.5	r.m.	0.6	1.0	1.6	1.7	25.8	1500
37	1.5	r.m.	0.6	1.0	1.6	1.8	28.4	1820
48	1.5	r.m.	0.6	1.0	1.6	1.9	31.9	2220

Note : r.m. - circular stranded

CU/PVC/PVC/SWA/PVC - AUXILIARY CABLE (2.5 mm²)
BS 6346
0.6/1 (1.2) kV

Number of Cores	Nominal sectional area	Conductor shape	Thickness of insulation	Thickness of bedding	Diameter of armour wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
	mm ²		mm	mm	mm	mm	mm	Kg / Km
5	2.5	r.m.	0.7	0.8	0.9	1.5	15.7	520
6	2.5	r.m.	0.7	0.8	1.25	1.5	17.4	680
7	2.5	r.m.	0.7	0.8	1.25	1.5	17.4	700
9	2.5	r.m.	0.7	0.8	1.25	1.6	19.7	880
10	2.5	r.m.	0.7	0.8	1.25	1.6	21.0	950
12	2.5	r.m.	0.7	0.8	1.25	1.6	21.6	1020
19	2.5	r.m.	0.7	1.0	1.6	1.7	25.8	1540
27	2.5	r.m.	0.7	1.0	1.6	1.8	29.9	1990
37	2.5	r.m.	0.7	1.0	1.6	1.9	33.0	2460
48	2.5	r.m.	0.7	1.2	2.0	2.1	38.6	3350

CU/PVC/PVC/SWA/PVC - AUXILIARY CABLE (4 mm²)
BS 6346
0.6/1 (1.2) kV

Number of Cores	Nominal sectional area	Conductor shape	Thickness of insulation	Thickness of bedding	Diameter of armour wire	Thickness of sheath	Approx. overall diameter	Approx. net weight
	mm ²		mm	mm	mm	mm	mm	Kg / Km
5	4	r.m.	0.8	0.8	1.25	1.5	18.4	760
6	4	r.m.	0.8	0.8	1.25	1.5	19.7	860
7	4	r.m.	0.8	0.8	1.25	1.6	19.9	900
9	4	r.m.	0.8	1.0	1.6	1.7	23.7	1320
10	4	r.m.	0.8	1.0	1.6	1.7	25.3	1410
12	4	r.m.	0.8	1.0	1.6	1.7	25.9	1510
19	4	r.m.	0.8	1.0	1.6	1.8	29.7	2030
27	4	r.m.	0.8	1.2	2.0	2.0	36.1	2970
37	4	r.m.	0.8	1.2	2.0	2.1	39.9	3670
48	4	r.m.	0.8	1.2	2.0	2.2	44.8	4530

Note : r.m. - circular stranded

APPENDIX : TECHNICAL DATA

CURRENT-CARRYING CAPACITY FOR SINGLE-CORE, NON-ARMOURED WITH OR WITHOUT SHEATH

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

Conductor cross sectional area	Current-carrying capacity										
	Method of installation										
	Enclosed in conduit in thermally insulated wall etc.		Enclosed in conduit on a wall or in trunking etc.		Clipped direct		On a perforated cable tray horizontal or vertical		In free air		
	2 cables, single-phase a.c. or d.c.	3 or 4 cables three-phase a.c.	2 cables, single-phase a.c. or d.c.	3 or 4 cables three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables three-phase a.c. flat and touching or trefoil	Horizontal flat spaced	Vertical flat spaced	Trefoil
mm ²	A	A	A	A	A	A	A	A	A	A	A
1.5	14.5	13.5	17.5	15.5	20	18	-	-	-	-	-
2.5	19.5	18	24	21	27	25	-	-	-	-	-
4	26	24	32	28	37	33	-	-	-	-	-
6	34	31	41	36	47	43	-	-	-	-	-
10	46	42	57	50	65	59	-	-	-	-	-
16	61	56	76	68	87	79	-	-	-	-	-
25	80	73	101	89	114	104	126	112	146	130	110
35	99	89	125	110	141	129	156	141	181	162	137
50	119	108	151	134	182	167	191	172	219	197	167
70	151	136	192	171	234	214	246	223	281	254	216
95	182	164	232	207	284	261	300	273	341	311	264
120	210	188	269	239	330	303	349	318	396	362	308
150	240	216	300	262	381	349	404	369	456	419	356
185	273	245	341	296	436	400	463	424	521	480	409
240	320	286	400	346	515	472	549	504	615	569	485
300	367	328	458	394	594	545	635	584	709	659	561
400	-	-	546	467	694	634	732	679	852	795	656
500	-	-	626	533	792	723	835	778	982	920	749
630	-	-	720	611	904	826	953	892	1138	1070	855
800	-	-	-	-	1030	943	1086	1020	1265	1188	971
1000	-	-	-	-	1154	1058	1216	1149	1420	1337	1079

VOLTAGE DROP FOR SINGLE-CORE, NON-ARMOURED WITH OR WITHOUT SHEATH

Conductor operating temperature : 70°C

Conductor cross sectional area	2 cables d.c.	2 cables, single-phase a.c.			3 or 4 cables, three-phase a.c.			
		Enclosed in conduit etc. in or on a wall	Clipped direct or on trays touching	In free air (spaced*)	Enclosed in conduit etc. in or on a wall	Clipped direct, on trays or in free air (in trefoil)	Clipped direct or on trays (flat and touching)	In free air (flat spaced*)
mm ²	mV / A/m	mV / A/m	mV / A/m	mV / A/m	mV / A/m	mV / A/m	mV / A/m	mV / A/m
1.5	29	29	29	29	25	25	25	25
2.5	18	18	18	18	15	15	15	15
4	11	11	11	11	9.5	9.5	9.5	9.5
6	7.3	7.3	7.3	7.3	6.4	6.4	6.4	6.4
10	4.4	4.4	4.4	4.4	3.8	3.8	3.8	3.8
16	2.8	2.8	2.8	2.8	2.4	2.4	2.4	2.4
25	1.75	1.80	1.75	1.80	1.55	1.50	1.55	1.55
35	1.25	1.30	1.25	1.30	1.10	1.10	1.10	1.15
50	0.93	1.00	0.95	0.97	0.85	0.82	0.84	0.86
70	0.63	0.72	0.66	0.69	0.61	0.57	0.60	0.63
95	0.46	0.56	0.50	0.54	0.48	0.43	0.47	0.51
120	0.36	0.47	0.41	0.45	0.41	0.36	0.40	0.44
150	0.29	0.41	0.34	0.39	0.36	0.30	0.34	0.40
185	0.23	0.37	0.29	0.35	0.32	0.26	0.31	0.36
240	0.180	0.33	0.25	0.31	0.29	0.22	0.27	0.34
300	0.145	0.31	0.22	0.29	0.27	0.190	0.25	0.32
400	0.105	0.29	0.20	0.27	0.25	0.175	0.24	0.31
500	0.086	0.28	0.185	0.26	0.25	0.160	0.23	0.30
630	0.068	0.27	0.175	0.25	0.24	0.150	0.22	0.29
800	0.053	-	0.165	0.25	-	0.145	0.22	0.29
1000	0.042	-	0.160	0.24	-	0.140	0.21	0.28

Note : * Spacings larger than those specified in free air will result in larger voltage drop.

CURRENT-CARRYING CAPACITY FOR MULTICORE, NON-ARMOURED

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

Conductor cross sectional area	Current-carrying capacity							
	Method of installation							
	Enclosed in conduit in an insulated wall etc.		Enclosed in conduit on a wall or in trunking etc.		Clipped direct		On a perforated cable tray horizontal or in free air	
	1 two-core cable single-phase a.c. or d.c.	1 three-core cable or 1 four-core cable, three-phase a.c.	1 two-core cable single-phase a.c. or d.c.	1 three-core cable or 1 four-core cable, three-phase a.c.	1 two-core cable single-phase a.c. or d.c.	1 three-core cable or 1 four-core cable, three-phase a.c.	1 two-core cable single-phase a.c. or d.c.	1 three-core cable or 1 four-core cable, three-phase a.c.
mm ²	A	A	A	A	A	A	A	A
1.5	14	13	16.5	15	19.5	17.5	22	18.5
2.5	18.5	17.5	23	20	27	24	30	25
4	25	23	30	27	36	32	40	34
6	32	29	38	34	46	41	51	43
10	43	39	52	46	63	57	70	60
16	57	52	69	62	85	76	94	80
25	75	68	90	80	112	96	119	101
35	92	83	111	99	138	119	148	126
50	110	99	133	118	168	144	180	153
70	139	125	168	149	213	184	232	196
95	167	150	201	179	258	223	282	238
120	192	172	232	206	299	259	328	276
150	219	196	258	225	344	299	378	319
185	248	223	294	255	392	341	434	364
240	291	261	344	297	461	403	514	430
300	334	298	394	339	530	464	593	497
400	-	-	470	402	634	557	715	597

VOLTAGE DROP FOR MULTICORE, NON-ARMOURED

Conductor operating temperature : 70°C

Conductor cross-section area	Two-core cable, d.c.	Two-core cable, single-phase a.c.	Three- or four-core cable, three-phase a.c.
mm ²	mV / A/m	mV / A/m	mV / A/m
1.5	29	29	25
2.5	18	18	15
4	11	11	9.5
6	7.3	7.3	6.4
10	4.4	4.4	3.8
16	2.8	2.8	2.4
25	1.75	1.75	1.50
35	1.25	1.25	1.10
50	0.93	0.94	0.81
70	0.63	0.65	0.57
95	0.46	0.50	0.43
120	0.36	0.41	0.35
150	0.29	0.34	0.29
185	0.23	0.29	0.25
240	0.180	0.24	0.21
300	0.145	0.21	0.185
400	0.105	0.185	0.160

CURRENT-CARRYING CAPACITY FOR SINGLE-CORE ARMoured

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

Conductor cross sectional area	Current-carrying capacity										
	Method of installation										
	Clipped direct		On a perforated cable tray		In free air						
					2 cables, single-phase a.c.		2 cables, d.c.		3 or 4 cables, three-phase a.c.		
2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables three-phase a.c. flat and touching	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables three-phase a.c. flat and touching	Horizontal flat spaced	Vertical flat spaced	Horizontal spaced	Vertical spaced	Horizontal flat spaced	Vertical flat spaced	3 cables trefoil	
mm ²	A	A	A	A	A	A	A	A	A	A	A
50	193	179	205	189	229	217	229	216	230	212	181
70	245	225	259	238	287	272	294	279	286	263	231
95	296	269	313	285	349	332	357	340	338	313	280
120	342	309	360	327	401	383	415	396	385	357	324
150	395	354	415	375	456	436	482	460	436	407	373
185	447	399	469	422	511	489	548	525	490	456	425
240	525	465	550	492	593	568	648	622	566	528	501
300	594	515	624	547	668	640	748	719	616	578	567
400	687	575	723	618	737	707	885	851	674	632	657
500	763	622	805	673	810	777	1035	997	721	676	731
630	843	669	891	728	893	856	1218	1174	771	723	809
800	919	710	976	777	943	905	1441	1390	824	772	886
1000	975	737	1041	808	1008	967	1685	1627	872	816	945

VOLTAGE DROP FOR SINGLE-CORE ARMoured

Conductor operating temperature : 70°C

Conductor cross sectional area	2 cables d.c.	2 cables, single-phase a.c.		3 or 4 cables, three-phase a.c.		
		Clipped direct or on trays (touching)	In free air (spaced*)	Clipped direct, on trays or in free air (in trefoil touching)	Clipped direct or on trays (flat and touching)	In free air (flat spaced*)
mm ²	mV / A/m	mV / A/m	mV / A/m	mV / A/m	mV / A/m	mV / A/m
50	0.93	0.95	0.97	0.82	0.84	0.86
70	0.63	0.68	0.72	0.58	0.62	0.68
95	0.46	0.52	0.58	0.45	0.50	0.57
120	0.36	0.43	0.50	0.37	0.43	0.50
150	0.29	0.37	0.44	0.32	0.38	0.45
185	0.23	0.32	0.39	0.27	0.34	0.41
240	0.180	0.27	0.35	0.23	0.30	0.37
300	0.145	0.24	0.32	0.21	0.28	0.34
400	0.105	0.22	0.30	0.195	0.26	0.32
500	0.086	0.21	0.29	0.180	0.25	0.30
630	0.068	0.195	0.27	0.170	0.23	0.28
800	0.053	0.185	0.25	0.160	0.22	0.26
1000	0.042	0.180	0.24	0.155	0.21	0.24

Note : * Spacings larger than those specified in free air will result in larger voltage drop.

CURRENT-CARRYING CAPACITY FOR MULTICORE, ARMoured

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

Conductor cross sectional area	Current-carrying capacity			
	Method of installation			
	Clipped direct		On a perforated cable tray horizontal or vertical or in free air	
	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.
mm ²	A	A	A	A
1.5	21	18	22	19
2.5	28	25	31	26
4	38	33	41	35
6	49	42	53	45
10	67	58	72	62
16	89	77	97	83
25	118	102	128	110
35	145	125	157	135
50	175	151	190	163
70	222	192	241	207
95	269	231	291	251
120	310	267	336	290
150	356	306	386	332
185	405	348	439	378
240	476	409	516	445
300	547	469	592	410
400	621	540	683	590

VOLTAGE DROP FOR MULTICORE, ARMoured

Conductor operating temperature : 70°C

Conductor cross-sectional area	Two-core cable, d.c.	Two-core cable, single-phase a.c.	Three- or four-core cable three-phase a.c.
(mm ²)	(mV / A/m)	(mV / A/m)	(mV / A/m)
1.5	29	29	25
2.5	18	18	15
4	11	11	9.5
6	7.3	7.3	6.4
10	4.4	4.4	3.8
16	2.8	2.8	2.4
25	1.75	1.75	1.50
35	1.25	1.25	1.10
50	0.93	0.94	0.81
70	0.63	0.65	0.57
95	0.46	0.50	0.43
120	0.36	0.41	0.35
150	0.29	0.34	0.29
185	0.23	0.29	0.25
240	0.180	0.24	0.21
300	0.145	0.21	0.185
400	0.105	0.185	0.160

RATING FACTORS FOR GROUPS OF MORE THAN ONE CIRCUIT OF SINGLE-CORE CABLES, OR MORE THAN ONE MULTICORE CABLES

Method of installation		Rating factor													
		Number of circuits or multicore cables													
		2	3	4	5	6	7	8	9	10	12	14	16	18	20
Enclosed, or bunched and clipped direct to a non-metallic surface		0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50	0.48	0.45	0.43	0.41	0.39	0.38
Single layer clipped to a non-metallic surface	Touching	0.85	0.79	0.75	0.73	0.72	0.72	0.71	0.70	-	-	-	-	-	-
	Spaced *	0.94	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Single layer multicore on a perforated metal cable tray, vertical or horizontal	Touching	0.86	0.81	0.77	0.75	0.74	0.73	0.73	0.72	0.71	0.70	-	-	-	-
	Spaced *	0.91	0.89	0.88	0.87	0.87	-	-	-	-	-	-	-	-	-
Single layer single core on a perforated metal cable tray, touching	Horizontal	0.90	0.85	-	-	-	-	-	-	-	-	-	-	-	-
	Vertical	0.85	-	-	-	-	-	-	-	-	-	-	-	-	-
Single layer multicore touching on ladder support		0.86	0.82	0.80	0.79	0.78	0.78	0.78	0.77	-	-	-	-	-	-

* Note : Spaced by a clearance between adjacent surfaces of at least one cable diameter. Where the horizontal clearances between adjacent cables exceeds twice cable diameter no correction factor needs to be applied.

RATING FACTORS FOR CABLES INSTALLED IN ENCLOSED TRENCHES

Conductor cross sectional area	Rating factor									
	Trench size 450 mm wide x 300 mm deep				Trench size 450 mm wide x 600 mm deep			Trench size 600 mm wide x 760 mm deep		
	2 single core cables, or 1 three- or four core cables	3 single core cables or 2 two-core cables	4 single core cables, or 2 three- or four core cables	6 single core cables, 4 two-core cables or 3 three- or four-core cables	6 single core cables, 4 two-core cables or 3 three- or four-core cables	8 single core cables or 4 three- or four core cables	12 single core cables or 8 two- or 6 three- or four-core cables	12 single core cables or 8 two- or 6 three- or four-core cables	18 single core cables, 12 two-core cables or 9 three- or four-core cables	24 single core cables, 16 two-core cables or 12 three- or four-core cables
mm ²										
4	0.93	0.90	0.87	0.82	0.86	0.83	0.76	0.81	0.74	0.69
6	0.92	0.89	0.86	0.81	0.86	0.82	0.75	0.80	0.73	0.68
10	0.91	0.88	0.85	0.80	0.85	0.80	0.74	0.78	0.72	0.66
16	0.91	0.87	0.84	0.78	0.83	0.78	0.71	0.76	0.70	0.64
25	0.90	0.86	0.82	0.76	0.81	0.76	0.69	0.74	0.67	0.62
35	0.89	0.85	0.81	0.75	0.80	0.74	0.68	0.72	0.66	0.60
50	0.88	0.84	0.79	0.74	0.78	0.73	0.66	0.71	0.64	0.59
70	0.87	0.82	0.78	0.72	0.77	0.72	0.64	0.70	0.62	0.57
95	0.86	0.81	0.76	0.70	0.75	0.70	0.63	0.68	0.60	0.55
120	0.85	0.80	0.75	0.69	0.73	0.68	0.61	0.66	0.58	0.53
150	0.84	0.78	0.74	0.67	0.72	0.67	0.59	0.64	0.57	0.51
185	0.83	0.77	0.73	0.65	0.70	0.65	0.58	0.63	0.55	0.49
240	0.82	0.76	0.71	0.63	0.69	0.63	0.56	0.61	0.53	0.48
300	0.81	0.74	0.69	0.62	0.68	0.62	0.54	0.59	0.52	0.46
400	0.80	0.73	0.67	0.59	0.66	0.60	0.52	0.57	0.50	0.44
500	0.78	0.72	0.66	0.58	0.64	0.58	0.51	0.56	0.48	0.43
630	0.77	0.71	0.65	0.56	0.63	0.57	0.49	0.54	0.47	0.41

* Note : When cables having different conductor operating temperatures are grouped together the current rating shall be based on the lowest operating temperature of any cable in the group.

RATING FACTORS FOR OTHER AMBIENT TEMPERATURES

Type of protection	Rating factor								
	Ambient temperature (°C)								
	25	30	35	40	45	50	55	60	65
Protective device is intended to provide short-circuit protection only *	1.03	1.0	0.94	0.87	0.79	0.71	0.61	0.50	0.35
Protective device is a semi-enclosed fuse to BS 3036	1.03	1.0	0.97	0.94	0.91	0.87	0.84	0.69	0.48

* Note : Except where the device is a semi-enclosed fuse to BS 3036, the factor also applies where the device is intended to provide overload protection.

METRIC CONDUCTOR SIZES AND RESISTANCE (at 20°C)

Nominal cross-sectional area	Minimum number of wires in the conductor						Maximum resistance of conductor at 20°C		
	Circular conductor		Circular compacted conductor		Shaped conductor		Annealed copper conductor		Plain aluminium conductor
	Cu	Al	Cu	Al	Cu	Al	Plain wires	Metal-coated wires	
	mm ²						ohm / km	ohm / km	ohm / km
1.5	7	-	6	-	-	-	12.1	12.2	-
2.5	7	-	6	-	-	-	7.41	7.56	-
4	7	7	6	-	-	-	4.61	4.70	7.41
6	7	7	6	-	-	-	3.08	3.11	4.61
10	7	7	6	-	-	-	1.83	1.84	3.08
16	7	7	6	6	-	-	1.15	1.16	1.91
25	7	7	6	6	6	6	0.727	0.734	1.20
35	7	7	6	6	6	6	0.524	0.529	0.868
50	19	19	6	6	6	6	0.387	0.391	0.641
70	19	19	12	12	12	12	0.268	0.270	0.443
95	19	19	15	15	15	15	0.193	0.195	0.320
120	37	37	18	15	18	15	0.153	0.154	0.253
150	37	37	18	15	18	15	0.124	0.126	0.206
185	37	37	30	30	30	30	0.0991	0.1000	0.164
240	37	37	34	30	34	30	0.0754	0.0762	0.125
300	61	61	34	30	34	30	0.0601	0.0607	0.100
400	61	61	53	53	53	53	0.0470	0.0475	0.0778
500	61	61	53	53	53	53	0.0366	0.0369	0.0605
630	91	91	53	53	53	53	0.0283	0.0286	0.0469
800	91	91	53	53	-	-	0.0221	0.0224	0.0367
1000	91	91	53	53	-	-	0.0176	0.0177	0.0291

WIRE GAUGES

Gauge system		Diameter		Cross-sectional area			Weight of copper	Weight of aluminium
A.W.G.	S.W.G.	mm	mil	mm ²	sq. mil	CM	kg / km	kg / km
6/0	-	14.732	580	170.5	264200	336400	1515	460.2
5/0	-	13.119	516.5	135.2	209500	266800	1202	365.0
-	7/0	12.700	500	126.7	196400	250000	1126	342.0
-	6/0	11.786	464	109.1	169100	215300	969.9	294.6
4/0	-	11.684	460	107.2	166200	211600	953.2	289.5
-	5/0	10.973	432	94.56	146600	186600	840.6	255.3
3/0	-	10.404	409.6	85.01	131800	167800	755.8	229.5
-	4/0	10.16	400	81.07	125700	160000	720.7	218.9
-	3/0	9.449	372	70.12	108700	138400	623.4	189.3
2/0	-	9.266	364.8	67.43	104500	133100	599.5	182.1
-	2/0	8.839	348	61.36	95110	121100	545.5	165.7
0	-	8.252	324.9	53.49	82910	105600	475.5	144.4
-	0	8.230	324	53.19	82450	105000	472.9	143.6
-	1	7.620	300	45.60	70690	90000	405.4	123.1
1	-	7.348	289.3	42.41	65730	83690	377.0	114.5
-	2	7.011	276	38.60	59830	76180	343.2	104.2
2	-	6.544	257.6	33.63	52120	66370	299.0	90.80
-	3	6.401	252	32.18	49880	63500	286.1	86.88
-	4	5.893	232	27.27	42270	53820	242.4	73.63
3	-	5.827	229.4	26.66	41330	52620	237.0	71.99
-	5	5.385	212	22.77	35300	44940	202.4	61.49
4	-	5.189	204.3	21.15	32780	41730	188.0	57.10
-	6	4.877	192	18.68	28950	36860	166.1	50.43
5	-	4.621	181.9	16.77	26000	33100	149.1	45.28
-	7	4.470	176	15.69	24320	30970	139.5	42.37
6	-	4.115	162	13.30	20620	26250	118.3	35.92
-	8	4.064	160	12.97	20110	25600	115.3	35.02
7	-	3.665	144.3	10.55	16350	20820	93.78	28.48
-	9	3.658	144	10.51	16290	20740	93.41	28.37
8	-	3.264	128.5	8.367	12970	16510	74.39	22.59
-	10	3.251	128	8.302	12870	16380	73.80	22.42
-	11	2.946	116	6.818	10570	13460	60.61	18.41
9	-	2.906	114.4	6.633	10280	13090	58.96	17.91
-	12	2.642	104	5.481	8495	10820	48.72	14.80
10	-	2.588	101.9	5.261	8155	10380	46.77	14.21
-	13	2.337	92	4.289	6648	8465	38.13	11.58
11	-	2.305	90.74	4.172	6467	8234	37.09	11.26
12	-	2.053	80.81	3.309	5129	6531	29.42	8.935
-	14	2.032	80	3.243	5027	6400	28.83	8.756
-	15	1.829	72	2.627	4072	5185	23.35	7.093
13	-	1.828	71.96	2.624	4067	5178	23.33	7.085
14	-	1.628	64.08	2.081	3225	4107	18.50	5.618
-	16	1.626	64	2.075	3217	4096	18.45	5.604
15	-	1.450	57.07	1.650	2558	3257	14.67	4.456
-	17	1.422	56	1.589	2463	3136	14.13	4.290
16	-	1.291	50.82	1.309	2029	2583	11.63	3.534
-	18	1.219	48	1.167	1810	2304	10.38	3.152
17	-	1.150	45.26	1.0380	1609	2048	9.226	2.802
18	-	1.024	40.3	0.8227	1275	1624	7.314	2.221
-	19	1.016	40	0.8107	1257	1600	7.207	2.189
-	20	0.9144	36	0.6567	1018	1296	5.838	1.773
19	-	0.9117	35.89	0.6529	1012	1288	5.804	1.763
-	21	0.8128	32	0.5189	804.2	1024	4.613	1.401
20	-	0.8116	31.95	0.5174	801.9	1021	4.600	1.397
21	-	0.7230	28.46	0.4105	636.3	810.1	3.649	1.108

WIRE GAUGES

Gauge system		Diameter		Cross-sectional area			Weight of copper	Weight of aluminium
A.W.G.	S.W.G.	mm	mil	mm ²	sq. mil	CM	kg / km	kg / km
-	22	0.7112	28	0.3973	615.8	784.0	3.532	1.073
22	-	0.6439	25.35	0.3256	504.7	642.6	2.895	0.8792
-	23	0.6096	24	0.2919	452.4	576.0	2.595	0.7880
23	-	0.5733	22.57	0.2581	400.1	509.4	2.295	0.6970
-	24	0.5588	22	0.2452	380.1	484.0	2.180	0.6622
24	-	0.5106	20.1	0.2047	317.3	404.0	1.820	0.5528
-	25	0.5080	20	0.2027	314.2	400.0	1.802	0.5472
-	26	0.4572	18	0.1642	254.5	324.0	1.460	0.4433
25	-	0.4546	17.9	0.1623	251.6	320.4	1.443	0.4383
-	27	0.4166	16.4	0.1363	211.3	269.0	1.212	0.3680
26	-	0.4049	15.94	0.1288	199.6	254.1	1.145	0.3477
-	28	0.3759	14.8	0.1110	172.0	219.0	0.9867	0.2997
27	-	0.3606	14.2	0.1021	158.3	201.5	0.9077	0.2757
-	29	0.3454	13.6	0.09372	145.3	185.0	0.8332	0.2530
28	-	0.3211	12.64	0.08097	125.5	159.8	0.7198	0.2186
-	30	0.3150	12.4	0.07791	120.8	153.8	0.6926	0.2104
-	31	0.2947	11.6	0.06819	105.7	134.6	0.6062	0.1841
29	-	0.2860	11.26	0.06422	99.54	126.7	0.5709	0.1734
-	32	0.2743	10.8	0.05908	91.58	116.6	0.5252	0.1595
30	-	0.2548	10.03	0.05097	79.01	100.6	0.4531	0.1376
-	33	0.2540	10	0.05067	78.54	100.0	0.4505	0.1368
-	34	0.2337	9.2	0.04289	66.48	84.64	0.3813	0.1158
31	-	0.2268	8.928	0.04039	62.60	79.71	0.3590	0.1090
-	35	0.2134	8.4	0.03575	55.42	70.56	0.3178	0.09653
32	-	0.2019	7.95	0.03203	49.64	63.20	0.2847	0.08647
-	36	0.1930	7.6	0.02927	45.36	57.76	0.2602	0.07902
33	-	0.1798	7.08	0.02540	39.37	50.13	0.2258	0.06858
-	37	0.1727	6.8	0.02343	36.32	46.24	0.2083	0.06326
34	-	0.1602	6.305	0.02014	31.22	39.75	0.1791	0.05439
-	38	0.1524	6	0.01824	28.27	36.00	0.1622	0.04925
35	-	0.1426	5.615	0.01597	24.76	31.53	0.1420	0.04313
-	39	0.1321	5.2	0.01370	21.24	27.04	0.1218	0.03700
36	-	0.1270	5	0.01267	19.63	25.00	0.1126	0.03420
-	40	0.1219	4.8	0.01167	18.10	23.04	0.1038	0.03152
37	-	0.1131	4.453	0.01005	15.57	19.83	0.08931	0.02713
-	41	0.1118	4.4	0.009810	15.21	19.36	0.08721	0.02649
-	42	0.1016	4	0.008107	12.57	16.00	0.07207	0.02189
38	-	0.1007	3.965	0.007968	12.35	15.72	0.07084	0.02151
-	43	0.09140	3.6	0.006567	10.18	12.96	0.05838	0.01773
39	-	0.08970	3.531	0.006319	9.794	12.47	0.05618	0.01706
-	44	0.08128	3.2	0.005189	8.042	10.24	0.04613	0.01401
40	-	0.07988	3.145	0.005012	7.768	9.891	0.04456	0.01353
41	45	0.07113	2.8	0.003973	6.159	7.842	0.03532	0.01073
42	-	0.06334	2.494	0.003151	4.884	6.219	0.02801	0.008508
-	46	0.06069	2.4	0.002919	4.524	5.760	0.02595	0.007880
43	-	0.05641	2.221	0.002499	3.873	4.932	0.02222	0.006747
-	47	0.05080	2	0.002027	3.142	4.000	0.01802	0.005472
44	-	0.05023	1.978	0.001982	3.072	3.911	0.01762	0.005351
45	-	0.04474	1.761	0.001572	2.436	3.102	0.01397	0.004244
-	48	0.04064	1.6	0.001297	2.011	2.560	0.01153	0.003502
46	-	0.03984	1.568	0.001246	1.932	2.460	0.01108	0.003365
47	-	0.03548	1.397	0.0009884	1.532	1.951	0.008787	0.002669
48	-	0.03159	1.244	0.0007838	1.215	1.547	0.006968	0.002116
-	49	0.03048	1.2	0.007297	1.131	1.440	0.006487	0.00197
49	-	0.02813	1.108	0.0006216	0.9635	1.227	0.005526	0.001678
-	50	0.02540	1	0.0005067	0.7854	1.000	0.004505	0.001368
50	-	0.02505	0.9863	0.0004929	0.7641	0.9728	0.004382	0.001331

COMMON CONVERSION FACTOR

Equivalent			Reciprocal		
Mass					
1	cwt	=	50.802	kg	0.0197
1	oz	=	28.349	gm	0.0352
1	lb	=	0.4536	kg	2.2046
1	lb	=	0.00454	tonne (metric)	220.26
1	ton (long)	=	1.016	tonne (metric)	0.09842
Length					
1	in	=	25.4	mm	0.03937
1	ft	=	0.3048	mm	3.2808
1	yd	=	0.9144	mm	1.0936
1	mile	=	1.6093	km	0.6214
Area					
1	in ²	=	645.16	mm ²	0.00155
1	ft ²	=	0.0929	m ²	10.7642
1	yd ²	=	0.8361	m ²	1.196
Volume					
1	in ³	=	16.387	cm ³ (ml or cc)	0.061
1	ft ³	=	0.0283	m ³	35.3335
1	ft ³	=	6.229	gal (Imp)	0.1605
1	ft ³	=	28.328	l	0.0353
1	yd ³	=	0.7645	m ³	1.3079
1	gal (USA)	=	0.8327	gal (Imp)	1.2009
Force					
1	lbf	=	0.4535	kgf	2.2046
1	kgf	=	9.8065	N	0.1019
1	ton (long) f	=	9.964	kN	0.10036
Pressure and Stress					
1	atm	=	0.1013	MPa	9.869
1	atm	=	1.0133	bar	0.9869
1	lbf / in ² (psi)	=	6.894	kN / mm ² (kPa)	0.145
1	bar	=	1.0197	kgf / cm ²	0.09806
Energy (Work and Heat)					
1	HP.h	=	2544.5	Btu	0.00393
1	Btu	=	0.000293	kW.h	3413
1	Btu	=	1.0551	kJ	0.9478
1	Btu	=	107.59	kgf.m	0.00929
1	cal	=	4.187	J	0.239

1 mil = 0.001 in = 0.0254 mm

1 CM (Circular mil) = 0.7854 x 10⁻⁶in² = 0.5067 x 10⁻³mm²

FORMULA FOR ELECTRIC CALCULATION

To Calculate	Given	D.C	A.C. single phase	A.C. 3 phase
Current (A)	kW	$A = \frac{1000 \times kW}{V}$	$A = \frac{1000 \times kW}{V \times pf}$	$A = \frac{1000 \times kW}{1.73 \times V \times pf}$
Current (A)	kVA	---	$A = \frac{1000 \times kVA}{V}$	$A = \frac{1000 \times kVA}{1.73 \times V}$
Current (A)	hp	$A = \frac{746 \times hp}{V \times eff}$	$A = \frac{746 \times hp}{V \times eff \times pf}$	$A = \frac{746 \times hp}{1.73 \times eff \times pf}$
Power (kW)	VA	$kW = \frac{A \times V}{1000}$	$kW = \frac{A \times V \times pf}{1000}$	$kW = \frac{1.73 \times A \times V \times pf}{1000}$
Apparent Power (kVA)	VA	---	$kW = \frac{A \times V}{1000}$	$kW = \frac{1.73 \times A \times V}{1000}$

pf - Power factor of equipment or system under consideration

eff - Efficiency of motor or machinery

V - Line voltage

PUBLICATIONS REFERRED TO

BS 6004	Electric Cables - PVC Insulated, Non-armoured Cables For Voltages Up To And Including 450/750 V, For Electric Power, Lighting and Internal Wiring
BS 6346	Electric Cables - PVC Insulated, Armoured Cables For Voltages Of 600/1000 V And 1900/3300 V
BS 6360	Specification For Conductor In Insulated Cables And Cords
BS 6746	Specification For PVC Insulation And Sheath Of Electric Cables
BS 7655	Specification For Insulation And Sheath Materials For Cables Part 3 = PVC Insulating Compounds Section 3.1 : Harmonized Types Section 3.2 : Hard Grade Types Part 4 = PVC Sheathing Compounds Section 4.1 : Harmonized Types Section 4.2 : General Application Section 4.3 : Special Application - RF Cables
BS 7671	Requirements For Electrical Installations
BS EN 50525-2-31	Electric Cables - Low Voltage Energy Cables Of Rated Voltages Up To And Including 450/750 V (Uo/U) Part 2-31 : Cables For General Applications - Single Core Non-sheathed Cables With Thermoplastic PVC Insulation
MS 2100	Electric Cable And Wire : 600/1000 (Um = 1200) V Single Core PVC Insulated Cable - Non-armoured
MS 2101	Electric Cable And Wire : 600/1000 (Um = 1200) V Single Core PVC Insulated Cable - Armoured
MS 2102	Electric Cable And Wire : 600/1000 (Um = 1200) V Multi Core PVC Insulated Cable - Non-armoured
MS 2103	Electric Cable And Wire : 600/1000 (Um = 1200) V Multi Core PVC Insulated Cable - Armoured
MS 2112-3	Electric Cable And Wire - Polyvinyl Chloride (PVC) Insulated Cables Of Rated Voltages Up To And Including 450/750 V Part 3 : Non-sheathed Cables For Fixed Wiring
IEC 60227-3	Polyvinyl Chloride Insulated Cables Of Rated Voltages Up To And Including 450/750 V Part 3 : Non-sheathed Cables For Fixed Wiring
IEC 60502-1	Power Cables With Extruded Insulation And Their Accessories For Rated Voltages From 1 kV (Um = 1.2 kV) Up To 30 kV (Um = 36 kV) Part 1 : Cables For Rated Voltages Of 1 kV (Um = 1.2 kV) And 3 kV (Um = 3.6 kV)

The manufacturer reserves the right to modify or vary the construction or specification or any of the products at their discretion and without prior notice. The information contained herein is in line with the appropriate standards and sound electrical practice - it is believed to be reliable but as each applicant is unique, the manufacturer can accept no responsibility as to the suitability of any products for a particular use, or for any errors or omissions, unintentional or otherwise.

Note:

Note:



UNIVERSAL CABLE (M) BERHAD
(Co. No. : 7042-D)

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