

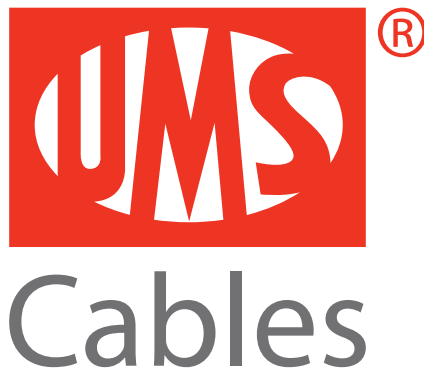


Cables

Contents

	PAGE
Company Profile & Recognition	2
XLPE Insulated Power Cables	3
XLPE Insulated, PVC Sheathed Cables (Non-Armoured) - 1 Core to 4 Cores	4 - 7
XLPE Insulated, PVC Sheathed Armoured Cables - 1 Cores to 4 Cores	8 - 11
Allowable Short Circuit Current for XLPE Insulated Cables	12
Current Rating & Voltage Drop	13
Current Rating & Voltage Drop - Installed in Air	14 - 15
Current Rating & Voltage Drop - Laid Direct in Ground	16 - 17
Current Rating & Voltage Drop - Run in Single Way Ducts	18 - 19
PVC Insulated Cables	20
PVC Insulated Cables	21
PVC Insulated, PVC Sheathed Twin Flat Cables (Non-Armoured) - 2 Cores	22
PVC Insulated, PVC Sheathed Cables (Non-Armoured) - 1 Core to 4 Cores	23 - 26
PVC Insulated, PVC Sheathed Cables (Armoured) - 2 Cores to 4 Cores	27 - 29
PVC Insulated, PVC Sheathed Multi-Core Auxiliary Cables (Non-Armoured) - Multicore	30
PVC Insulated, PVC Sheathed Multi-Core Auxiliary Cables (Armoured) - Multicore	31
PVC Insulated, PVC Sheathed Flexible Cord - 70°C and 105°C	32 - 33
Rating Factors	34
Current Rating & Voltage Drop	35
Current Rating & Voltage Drop - PVC Insulated With or Without PVC Sheathed Cable	36 - 37
Current Rating & Voltage Drop - Non Armoured Cable : Multi Cores	38
PVC Insulated, PVC Sheathed Armoured Cables. 600/1000V : Single Core	39
PVC Insulated, PVC Sheathed Armoured Cables. 600/1000V : Multi Cores	40
Allowable Short Circuit Current for PVC Insulated Cables	41
Schedule of Methods of Installation of Cables (CPS:1988)	42 - 43
Appendix	44 - 45

COMPANY PROFILE & RECOGNITION



United MS Cables Mfg Sdn Bhd (UMSC) is a subsidiary of United MS Electrical Mfg (M) Sdn Bhd. The company was set up in October 1996 to manufacture low voltage power cables. Backed by the UMS Group of Companies' strong presence in the electrical industry and the increasing development in the local housing and building industry, **UMSC** is poised to make a name for itself in the market.

The **UMSC** plant in Bandar Bukit Beruntung has a built-up area of 10,000 sq meters on 16,200 sq meters of industrial land and is well-equipped with the latest manufacturing facilities and a 60-strong workforce.

To have a competitive edge and to ensure a strong background in a capital-intensive industry, controlling the cost of major materials to a minimum is top priority. To this end, **UMSC's** Outokumpu Upcast Copper Casting Plant was commissioned in early 1999. The plant has an annual production capacity of 6000 metric tons of copper rods. This is further supported by a Niehoff M 85 rod breakdown machine with the capability to draw down the copper rods into wires for the production of copper conductors for low voltage cables. These copper conductors are in turn, used for **UMSC's** own cable production as well as to cater for the needs of other cable manufacturers.

Quality is never compromised at **UMSC**. Every **UMSC** product is subjected to the rigorous tests set by SIRIM Bhd (Standards Industrial Research Institute of Malaysia) to obtain the certification under SIRIM's prestigious Product Certification Scheme. To maintain its competitive edge, **UMSC** strongly subscribes to technology information development and market review to enable it to anticipate changing market needs. Having gained a solid reputation in the local scene, UMSC is gearing up for challenges ahead as it takes on the international arena. As such, **UMSC** is stepping up its efforts in maintaining top grade quality, now more than ever.



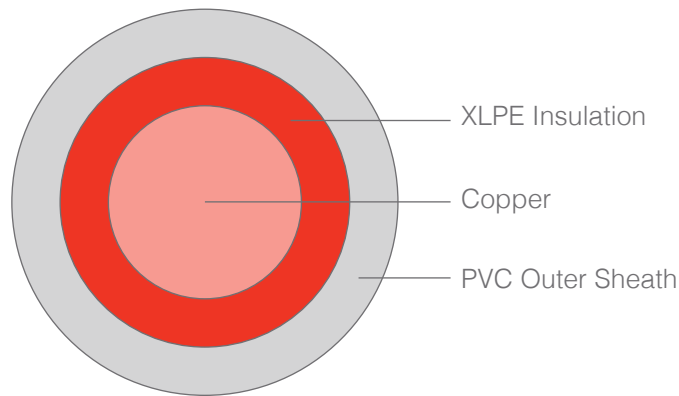
Quality & Reliable

XLPE

INSULATED POWER CABLES



XLPE INSULATED, PVC SHEATHED CABLES [NON-ARMOURED] - 1 Core



CONSTRUCTION

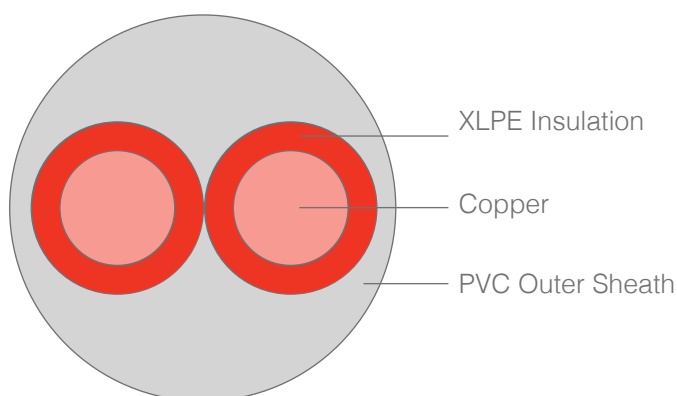
Conductor	: Plain annealed copper conductors complying with IEC 60228 class 2.
Insulation	: XLPE (cross-linked polyethylene) rate 90°C.
Colour of cores	: 1 core - Red or Natural (Black on request)
Sheath	: PVC Compound Type ST 1, colour Black

Cu / XLPE / PVC - 1 Core

Nominal Cross-Sectional Area (Sq.mm)	Construction, Number/Wire Diameter (No./mm)	Thickness of Insulation (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
16	7/1.70	0.7	1.4	9.7	215
25	7/2.14	0.9	1.4	10.9	315
35	19/1.53	0.9	1.4	12.0	415
50	19/1.78	1.0	1.4	13.4	540
70	19/2.14	1.1	1.4	15.3	755
95	19/2.52	1.1	1.5	17.3	1025
120	37/2.03	1.2	1.5	19.2	1275
150	37/2.25	1.4	1.6	21.0	1555
185	37/2.52	1.6	1.6	23.2	1955
240	61/2.25	1.7	1.7	25.8	2540
300	61/2.52	1.8	1.8	28.5	3160
400	61/2.58	2.0	1.9	32.2	4015
500	61/3.20	2.2	2.0	35.7	5035
630	127/2.52	2.4	2.2	42.5	6530

IEC 60502 / MS 2104
600/1000 V

XLPE INSULATED, PVC SHEATHED CABLES [NON-ARMOURED] - 2 Cores



CONSTRUCTION

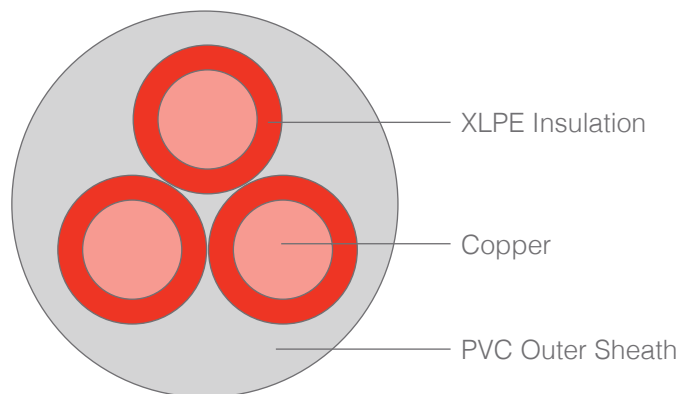
Conductor	:	Plain annealed copper conductors complying with IEC 60228 class 2.
Insulation	:	XLPE (cross-linked polyethylene) rate 90°C.
Colour of cores	:	2 cores - Red and Black
Sheath	:	PVC Compound Type ST 1, colour Black

Cu / XLPE / PVC - 2 Cores

Nominal Cross-Sectional Area (Sq.mm)	Construction, Number/Wire Diameter (No./mm)	Thickness of Insulation (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
1.5	7/0.53	0.7	1.8	10	110
2.5	7/0.67	0.7	1.8	11	140
4	7/0.85	0.7	1.8	12	180
6	7/1.04	0.7	1.8	13	230
10	7/1.35	0.7	1.8	14.5	330
16	7/1.70	0.7	1.8	17.2	490
25	7/2.14	0.9	1.8	17.5	655

IEC 60502
600/1000 V

XLPE INSULATED, PVC SHEATHED CABLES [NON-ARMOURED] - 3 Cores



CONSTRUCTION

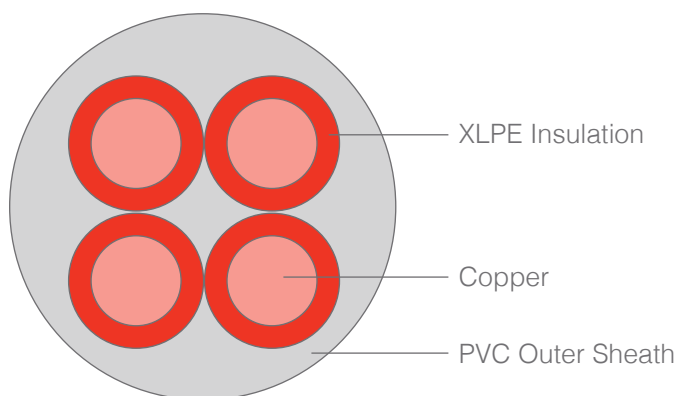
Conductor	: Plain annealed copper conductors complying with IEC 60228 class 2.
Insulation	: XLPE (cross-linked polyethylene) rate 90°C.
Colour of cores	: 3 cores - Red, Yellow and Blue
Sheath	: PVC Compound Type ST 1, colour Black

Cu / XLPE / PVC - 3 Cores

Nominal Cross-Sectional Area (Sq.mm)	Construction, Number/Wire Diameter (No./mm)	Thickness of Insulation (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
1.5	7/0.53	0.7	1.8	10.5	130
2.5	7/0.67	0.7	1.8	11.5	170
4	7/0.85	0.7	1.8	12.5	230
6	7/1.04	0.7	1.8	14.0	300
10	7/1.35	0.7	1.8	15.5	430
16	7/1.70	0.7	1.8	18.0	643
25	7/2.14	0.9	1.8	20.5	930

IEC 60502
600/1000 V

XLPE INSULATED, PVC SHEATHED CABLES [NON-ARMOURED] - 4 Cores



CONSTRUCTION

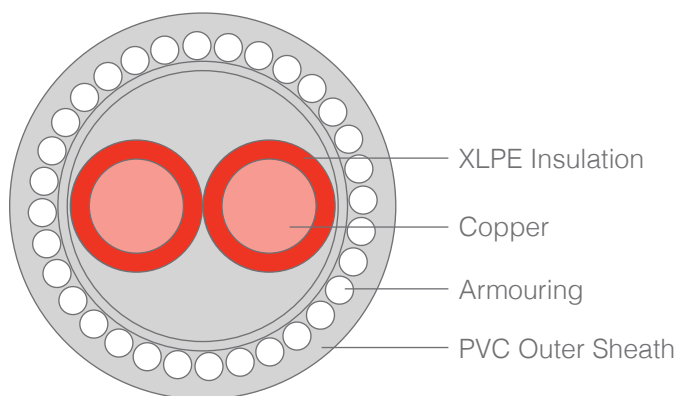
Conductor	: Plain annealed copper conductors complying with IEC 60228 class 2.
Insulation	: XLPE (cross-linked polyethylene) rate 90°C.
Colour of cores	: 4 cores - Red, Yellow, Blue and Black
Sheath	: PVC Compound Type ST 1, colour Black

Cu / XLPE / PVC - 4 Cores

Nominal Cross-Sectional Area (Sq.mm)	Construction, Number/Wire Diameter (No./mm)	Thickness of Insulation (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
1.5	7/0.53	0.7	1.8	11.5	160
2.5	7/0.67	0.7	1.8	12.5	210
4	7/0.85	0.7	1.8	13.5	280
6	7/1.04	0.7	1.8	15.0	380
10	7/1.35	0.7	1.8	17.0	550
16	7/1.70	0.7	1.8	19.0	825
25	7/2.14	0.9	1.8	22.0	1260
35	19/153	0.9	1.8	24.2	1650
50	19/1.78	1.0	1.9	27.3	2180
70	19/2.14	1.1	2.0	32.0	3080
95	19/2.52	1.1	2.1	35.8	4170
120	37/2.03	1.2	2.3	39.8	5260
150	37/2.25	1.4	2.4	44.0	6390

IEC 60502
600/1000 V

XLPE INSULATED, PVC SHEATHED ARMOURED CABLES - 2 Cores



CONSTRUCTION

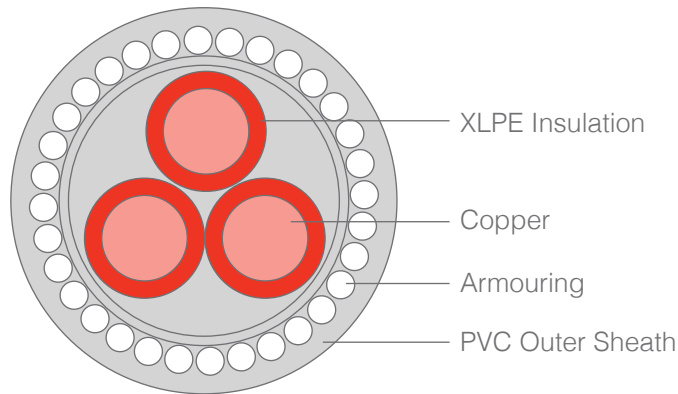
Conductor	: Plain annealed copper conductors complying with IEC 60228 class 2.
Insulation	: XLPE (cross-linked polyethylene) rate 90°C.
Colour of cores	: 2 cores - Red and Black
Bedding	: PVC Compound Type ST 1, Colour Black
Armour	: Galvanised steel wire
Sheath	: PVC Compound Type ST 1, colour Black

Cu / XLPE / Swa / PVC - 2 Cores

Nominal Cross-Sectional Area (Sq.mm)	Number and Diameter of Wire (No./mm)	Thickness of Insulation (mm)	Diameter of Steel Wire (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
1.5	7/0.53	0.7	0.9	1.8	14.0	320
2.5	7/0.67	0.7	0.9	1.8	14.5	370
4	7/0.85	0.7	1.25	1.8	16.5	500
6	7/1.04	0.7	1.25	1.8	17.5	590
10	7/1.35	0.7	1.25	1.8	19.0	730
16	7/1.70	0.7	0.8	1.8	21.0	860
25	7/2.14	0.9	1.6	1.8	23.0	1270

IEC 60502 / MS 2107
600/1000 V

XLPE INSULATED, PVC SHEATHED ARMOURED CABLES - 3 Cores



CONSTRUCTION

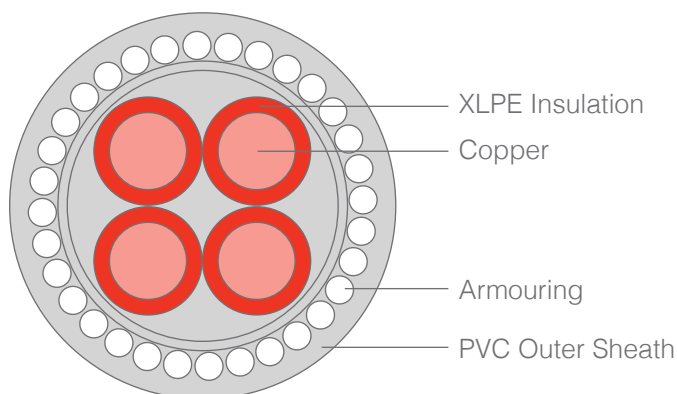
Conductor	: Plain annealed copper conductors complying with IEC 60228 class 2.
Insulation	: XLPE (cross-linked polyethylene) rate 90°C.
Colour of cores	: 3 cores - Red, Yellow and Blue
Bedding	: PVC Compound Type ST 1, Colour Black
Armour	: Galvanised steel wire
Sheath	: PVC Compound Type ST 1, colour Black

Cu / XLPE / Swa / PVC - 3 Cores

Nominal Cross-Sectional Area (Sq.mm)	Number and Diameter of Wire (No./mm)	Thickness of Insulation (mm)	Diameter of Steel Wire (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
1.5	7/0.53	0.7	0.9	1.8	14.5	360
2.5	7/0.67	0.7	1.25	1.8	16.0	480
4	7/0.85	0.7	1.25	1.8	17.0	570
6	7/1.04	0.7	1.25	1.8	18.5	680
10	7/1.35	0.7	1.25	1.8	20.0	860
16	7/1.70	0.7	0.8	1.8	22.0	1050
25	7/2.14	0.9	1.6	1.8	25.0	1650

IEC 60502 / MS 2107
600/1000 V

XLPE INSULATED, PVC SHEATHED ARMOURED CABLES - 4 Cores



CONSTRUCTION

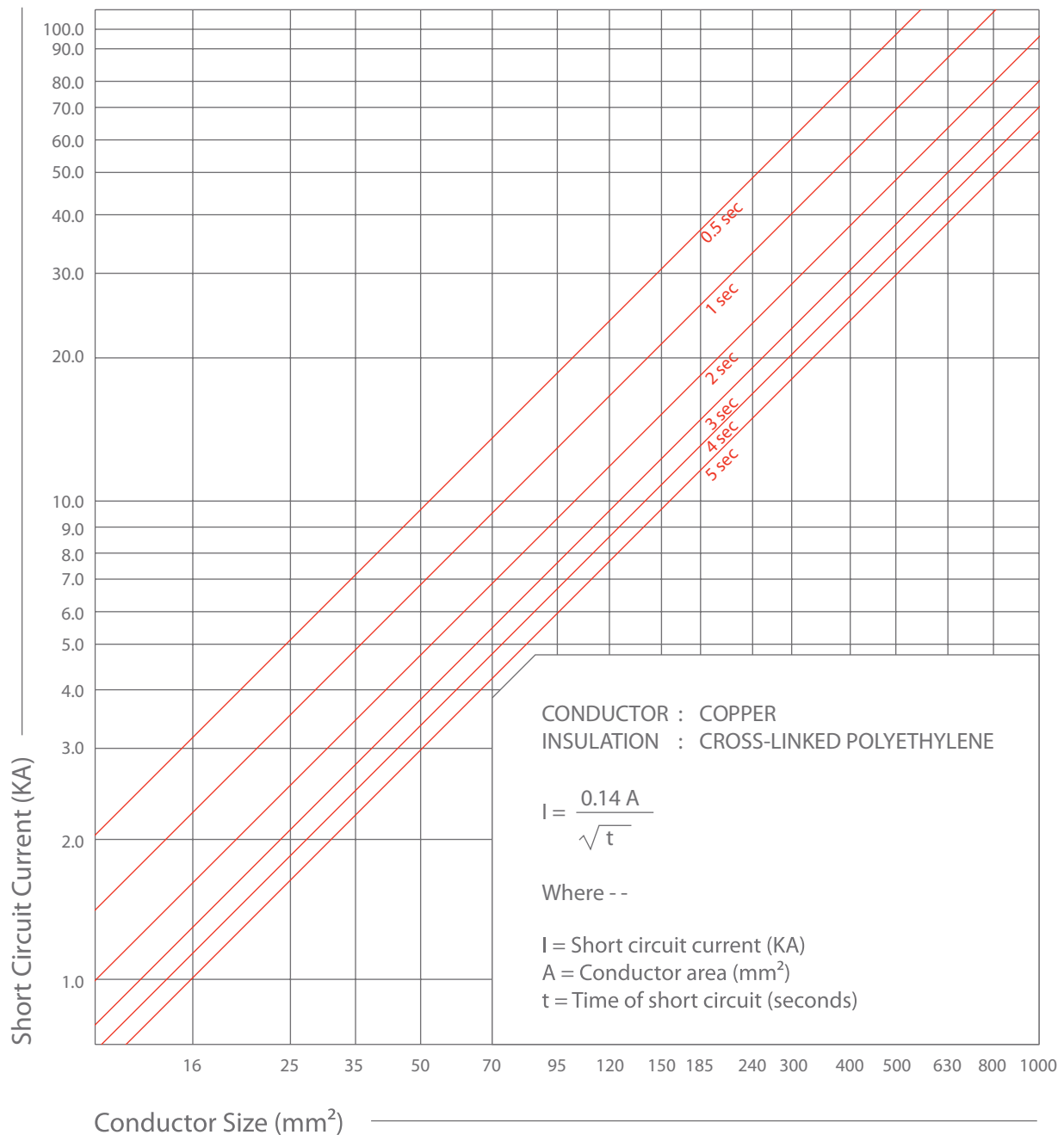
Conductor	: Plain annealed copper conductors complying with IEC 60228 class 2.
Insulation	: XLPE (cross-linked polyethylene) rate 90°C.
Colour of cores	: 4 cores - Red, Yellow, Blue and Black
Bedding	: PVC Compound Type ST 1, Colour Black
Armour	: Galvanised steel wire
Sheath	: PVC Compound Type ST 1, colour Black

Cu / XLPE / Swa / PVC - 4 Cores

Nominal Cross-Sectional Area (Sq.mm)	Number and Diameter of Wire (No./mm)	Thickness of Insulation (mm)	Diameter of Steel Wire (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
1.5	7/0.53	0.7	0.9	1.8	15.0	400
2.5	7/0.67	0.7	1.25	1.8	17.0	540
4	7/0.85	0.7	1.25	1.8	18.0	660
6	7/1.04	0.7	1.25	1.8	19.5	790
10	7/1.35	0.7	1.25	1.8	21.5	1010
16	7/1.70	0.7	0.8	1.8	25.3	1530
25	7/2.14	0.9	1.6	1.8	28.0	2100
35	19/153	0.9	1.6	1.9	30.0	2500
50	19/1.78	1.0	1.6	2.0	33.7	3400
70	19/2.14	1.1	1.6	2.2	39.0	4550
95	19/2.52	1.1	2.0	2.3	43.7	5800
120	37/2.03	1.2	2.5	2.5	49.0	7250
150	37/2.25	1.4	2.5	2.6	53.5	8950

IEC 60502 / MS 2107
600/1000 V

ALLOWABLE SHORT CIRCUIT CURRENT FOR XLPE INSULATED CABLES



CURRENT RATING & VOLTAGE DROP

Current rating are based on the following conditions : _____

- A. Ambient air temperature 30°C
- B. Gound temperature 25°C
- C. Soll thermal resistivity 1.2° m/w
- D. Dept of laying for 600/1000V cables 0.5 meter
- E. Maximum conductor operating temperature 90°C
- F. Spacing between cables laid :
 - 1. Flat formation - 2 times of cable overall diameter with cable touching
 - 2. Trefoll

Rating factors for other temperature :

cable in AIR		cable in GROUND	
Temperature	Rating Factor	Temperature	Rating Factor
25°C	1.04	15°C	1.07
30°C	1.00	20°C	1.04
35°C	0.95	25°C	1.00
40°C	0.90	30°C	0.96
45°C	0.85	35°C	0.92
50°C	0.79	40°C	0.88
55°C	0.73	45°C	0.83

CURRENT RATING & VOLTAGE DROP

CABLE INSTALLED IN AIR

XLPE INSULATED, PVC SHEATHED CABLES (NON ARMoured)

Copper Conductor	Single Core						Two Cores		Three & Four Cores	
	Two Cables Spaced #		Three Cables				Current Rating	Approx. Volt Drop Per amp Per metre	Current Rating	Approx. Volt Drop Per amp Per metre
			Trefoil Touching		Laid Flat Spaced #					
Norminal Cross-Sectional Area	Current Rating	Approx. Volt Drop Per amp Per metre	Current Rating	Approx. Volt Drop Per amp Per metre	Current Rating	Approx. Volt Drop Per amp Per metre				
IEC 502 600/1000V										
sq.mm	amp	mV	amp	mV	amp	mV	amp	mV	amp	mV
16	-	-	-	-	-	-	115	2.90	96	2.60
25	-	-	-	-	-	-	150	1.90	130	1.60
35	-	-	-	-	-	-	180	1.30	160	1.20
50	255	1.00	215	0.85	250	0.88	225	1.00	190	0.87
70	330	0.72	270	0.61	325	0.64	280	0.70	245	0.61
95	410	0.56	340	0.44	395	0.49	350	0.52	300	0.45
120	480	0.46	400	0.36	470	0.41	405	0.42	350	0.36
150	550	0.40	460	0.31	540	0.36	465	0.35	410	0.30
185	640	0.35	530	0.26	620	0.32	540	0.29	465	0.25
240	760	0.31	630	0.22	740	0.29	630	0.24	560	0.21
300	900	0.29	740	0.19	880	0.27	740	0.21	630	0.19
400	1060	0.27	870	0.17	1040	0.26	835	0.19	715	0.18
500	1250	0.26	1020	0.16	1210	0.25	-	-	-	-
630	1480	0.25	1140	0.15	1420	0.24	-	-	-	-

Adjacent cable surface separated by one cable diameter.

CURRENT RATING & VOLTAGE DROP

CABLE INSTALLED IN AIR XLPE INSULATED, PVC SHEATHED ARMoured CABLES

Copper Conductor	Single Core				Two Cores		Three and Four Cores	
	Two Cables Spaced #		Three Cables		Current Rating	Approx. Volt Drop Per amp Per metre	Current Rating	Approx. Volt Drop Per amp Per metre
	Current Rating	Approx. Volt Drop Per amp Per metre	Trefoil Touching					
Current Rating			Approx. Volt Drop Per amp Per metre					
Normalal Cross-Sectional Area								
IEC 502 600/1000V								
sq.mm	amp	mV	amp	mV	amp	mV	amp	mV
16	-	-	-	-	114	2.90	100	2.60
25	-	-	-	-	152	1.90	133	1.60
35	-	-	-	-	190	1.30	162	1.20
50	271	1.00	223	0.86	228	1.00	195	0.87
70	342	0.73	285	0.62	285	0.70	247	0.61
95	418	0.56	347	0.46	356	0.52	304	0.45
120	485	0.47	404	0.37	409	0.42	352	0.36
150	542	0.42	461	0.32	466	0.35	409	0.30
185	618	0.37	532	0.27	542	0.29	466	0.25
240	722	0.33	627	0.23	637	0.24	551	0.21
300	817	0.31	713	0.21	732	0.21	627	0.19
400	893	0.29	817	0.19	825	0.19	710	0.18
500	988	0.28	912	0.18	-	-	-	-
630	1093	0.27	1026	0.17	-	-	-	-

Adjacent cable surface separated by one cable diameter.

* Single core armoured cable are aluminium wire armoured.

CURRENT RATING & VOLTAGE DROP

CABLE INSTALLED DIRECT IN GROUND

XLPE INSULATED, PVC SHEATHED CABLES (NON ARMoured)

Copper Conductor	Single Core							Two Cores		Three & Four Cores	
	Two Cables Spaced #		Three Cables					Current Rating	Approx. Volt Drop Per amp Per metre	Current Rating	Approx. Volt Drop Per amp Per metre
			Trefoil or Laid Touching			Laid Flat Spaced #					
			Current Rating	Approx. Volt Drop Per amp Per meter		Current Rating	Approx. Volt Drop Per amp Per metre				
Trefoil	Flat										
Norminal Cross-Sectional Area	Current Rating	Approx. Volt Drop Per amp Per metre									
IEC 502 600/1000V											
sq.mm	amp	mV	amp	mV	mV	amp	mV	amp	mV	amp	mV
16	-	-	-	-	-	-	-	130	2.80	110	2.50
25	-	-	-	-	-	-	-	165	1.80	135	1.60
35	-	-	-	-	-	-	-	200	1.30	165	1.10
50	265	1.00	215	0.85	0.87	230	0.88	235	0.97	200	0.84
70	325	0.72	265	0.61	0.62	285	0.64	295	0.68	245	0.59
95	380	0.56	310	0.44	0.45	330	0.49	360	0.50	295	0.44
120	440	0.46	360	0.36	0.37	375	0.41	400	0.41	340	0.35
150	495	0.40	405	0.31	0.32	425	0.36	465	0.34	375	0.29
185	570	0.35	455	0.26	0.27	485	0.32	510	0.29	430	0.25
240	660	0.31	530	0.22	0.23	570	0.29	610	0.24	500	0.21
300	740	0.29	610	0.19	0.21	640	0.27	670	0.21	560	0.18
400	850	0.27	690	0.17	0.19	740	0.26	770	0.19	660	0.16
500	950	0.26	780	0.16	0.18	840	0.25	-	-	-	-
630	1100	0.25	890	0.15	0.17	940	0.24	-	-	-	-

Adjacent cable surface separated by one cable diameter.

CURRENT RATING & VOLTAGE DROP

CABLE INSTALLED DIRECT IN GROUND

XLPE INSULATED, PVC SHEATHED ARMoured CABLES

Copper Conductor	Single Core				Two Cores		Three and Four Cores	
	Two Cables Spaced #		Three Cables		Current Rating	Approx. Volt Drop Per amp Per metre	Current Rating	Approx. Volt Drop Per amp Per metre
	Current Rating	Approx. Volt Drop Per amp Per metre	Trefoil or Laid Touching					
Current Rating			Approx. Volt Drop Per amp Per metre					
Norminal Cross-Sectional Area								
IEC 502 600/1000V								
sq.mm	amp	mV	amp	mV	amp	mV	amp	mV
16	-	-	-	-	130	2.90	105	2.60
25	-	-	-	-	165	1.90	140	1.60
35	-	-	-	-	200	1.30	165	1.20
50	255	0.99	220	0.86	235	1.00	200	0.87
70	315	0.70	270	0.62	295	0.70	245	0.61
95	375	0.53	320	0.46	355	0.52	295	0.45
120	430	0.43	365	0.37	400	0.42	335	0.36
150	475	0.37	405	0.32	445	0.35	375	0.30
185	540	0.31	435	0.27	500	0.29	430	0.25
240	620	0.26	520	0.23	585	0.24	495	0.21
300	700	0.24	585	0.21	650	0.22	550	0.19
400	770	0.21	650	0.19	730	0.19	620	0.18
500	850	0.20	720	0.18	-	-	-	-
630	930	0.19	780	0.17	-	-	-	-

Adjacent cable surface separated by one cable diameter.

* Single core armoured cable are aluminium wire armoured.

CURRENT RATING & VOLTAGE DROP

CABLE RUN IN SINGLE WAY DUCTS

XLPE INSULATED, PVC SHEATHED CABLES (NON ARMoured)

Copper Conductor	Single Core					Two Cores		Three & Four Cores	
	Two Cables : Ducts Touching		Three Cables : Ducts Touching			Current Rating	Approx. Volt Drop Per amp Per metre	Current Rating	Approx. Volt Drop Per amp Per metre
	Current Rating	Approx. Volt Drop Per amp Per metre	Trefoil or Flat						
			Current Rating	Approx. Volt Drop Per amp Per meter					
Trefoil					Flat				
Normal Cross-Sectional Area									
IEC 502 600/1000V									
sq.mm	amp	mV	amp	mV	mV	amp	mV	amp	mV
16	-	-	-	-	-	110	2.90	87	2.50
25	-	-	-	-	-	130	1.80	120	1.60
35	-	-	-	-	-	160	1.30	135	1.10
50	245	1.10	225	0.93	0.94	190	0.98	165	0.85
70	300	0.80	275	0.70	0.72	240	0.69	200	0.60
95	350	0.65	320	0.56	0.57	285	0.51	240	0.44
120	405	0.55	370	0.48	0.50	330	0.41	280	0.36
150	455	0.50	415	0.43	0.45	370	0.35	310	0.30
185	520	0.45	465	0.39	0.41	425	0.29	355	0.25
240	610	0.40	540	0.35	0.37	485	0.24	410	0.21
300	690	0.37	610	0.32	0.35	560	0.21	465	0.19
400	790	0.35	700	0.30	0.32	630	0.19	530	0.18
500	900	0.32	790	0.28	0.31	-	-	-	-
630	1030	0.30	900	0.26	0.29	-	-	-	-

CURRENT RATING & VOLTAGE DROP

CABLE RUN IN SINGLE WAY DUCTS

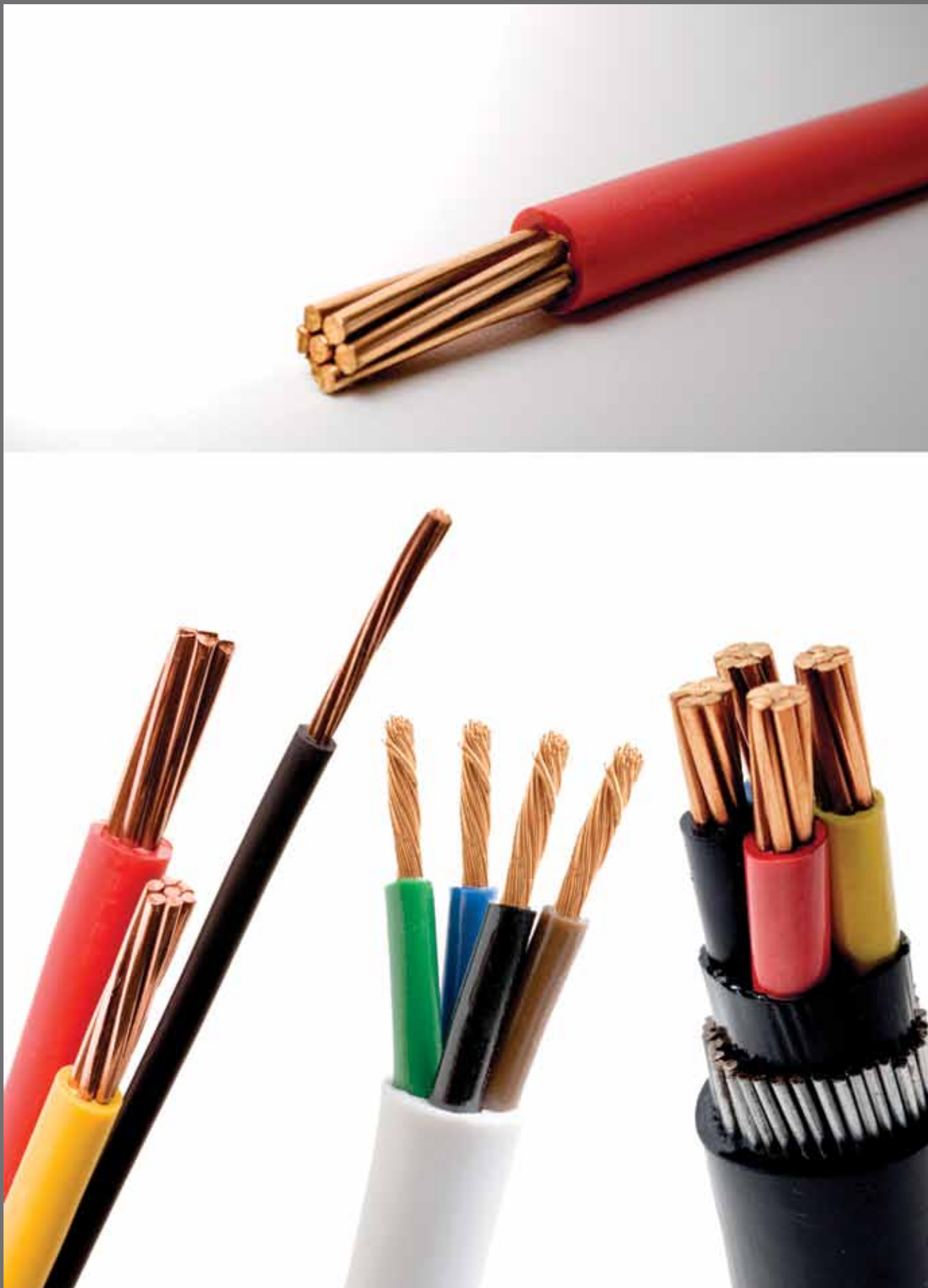
XLPE INSULATED, PVC SHEATHED ARMoured CABLES

Copper Conductor	Single Core				Two Cores		Three & Four Cores	
	Two Cables : Ducts Touching		Three Cables : Ducts Touching		Current Rating	Approx. Volt Drop Per amp Per metre	Current Rating	Approx. Volt Drop Per amp Per metre
	Current Rating	Approx. Volt Drop Per amp Per metre	Current Rating	Approx. Volt Drop Per amp Per metre				
Normal Cross-Sectional Area								
IEC 502 600/1000V								
sq.mm	amp	mV	amp	mV	amp	mV	amp	mV
16	-	-	-	-	105	2.90	87	2.60
25	-	-	-	-	135	1.90	115	1.60
35	-	-	-	-	165	1.30	140	1.20
50	240	1.10	220	0.93	195	1.00	165	0.87
70	290	0.80	260	0.70	240	0.70	200	0.61
95	340	0.65	310	0.56	290	0.52	245	0.45
120	385	0.55	345	0.48	330	0.42	280	0.36
150	415	0.50	380	0.43	375	0.35	315	0.30
185	450	0.45	410	0.39	425	0.29	355	0.25
240	515	0.40	465	0.35	485	0.24	410	0.21
300	565	0.37	510	0.32	550	0.22	460	0.19
400	600	0.35	540	0.30	620	0.20	520	0.18
500	640	0.33	580	0.28	-	-	-	-
630	700	0.30	620	0.26	-	-	-	-

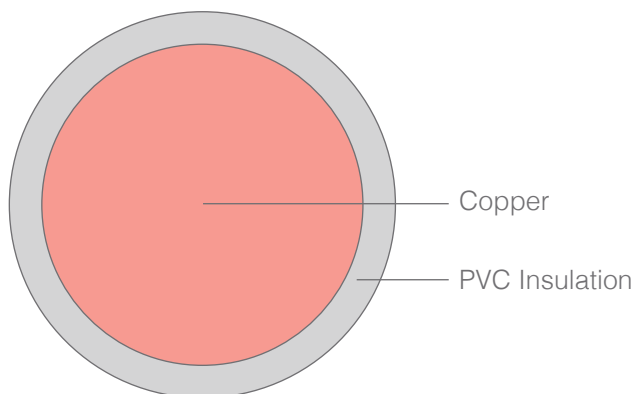
* Single core armoured cable are aluminium wire armoured.

PVC

INSULATED CABLES for Electrical Power, Lighting & Electricity Supply



PVC INSULATED CABLES



CONSTRUCTION

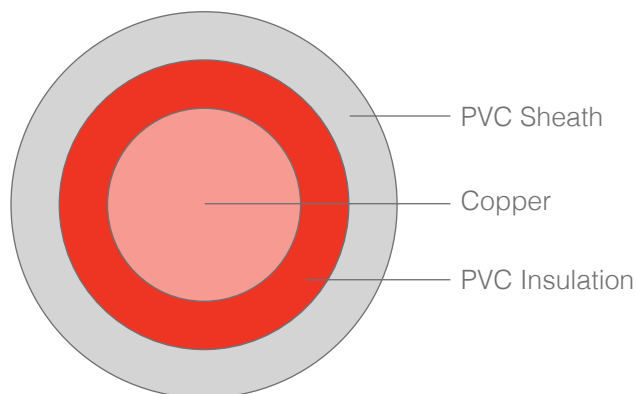
Conductor : Plain annealed copper conductor.
 Insulation : PVC Compound Type PVC A 70°
 Colour of Insulation : Red, Yellow, Blue, Black, Green or White

Cu / PVC - 1 Core

Nominal Cross-Sectional Area (Sq.mm)	Construction, Number/Wire Diameter (No./mm)	Thickness of Insulation (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
1.5	1/1.38	0.7	2.9	22
1.5	7/0.53	0.7	3.1	22
2.5	1/1.78	0.8	3.5	34
2.5	7/0.67	0.8	3.7	35
4	7/0.85	0.8	4.3	51
6	7/1.04	0.8	4.9	72
10	7/1.35	1.0	6.2	120
16	7/1.70	1.0	7.2	180
25	7/2.14	1.2	9.0	283
35	19/1.53	1.2	10.2	380
50	19/1.78	1.4	12.0	515
70	19/2.14	1.4	13.8	720
95	19/2.52	1.6	16.1	995

MS 2100
 450 / 750V

PVC INSULATED, PVC SHEATHED CABLES (NON-ARMOURED) - 1 Core



CONSTRUCTION

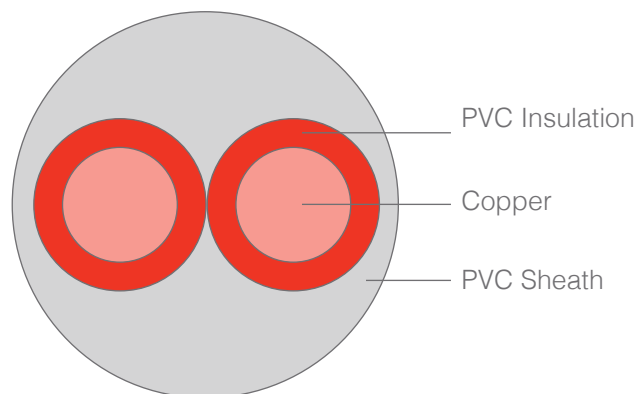
Conductor	: Plain annealed copper conductor.
Insulation	: PVC Compound Type PVC A 70°
Colour of Cores	: 1 Core - Red or Black
Sheath	: PVC Compound Type ST 1, Colour Black.

Cu / PVC / PVC - 1 Core

Nonimal Cross- Sectional Area (sq.mm)	Construction, Number/ Wire Diameter (No./mm)	Thickness of Insulation (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
10	7/1.35	1.0	0.9	8.1	155
16	7/1.70	1.0	1.0	9.4	225
25	7/2.14	1.2	1.1	11.3	340
35	19/153	1.2	1.1	12.6	430
50	19/1.78	1.4	1.4	15.1	605
70	19/2.14	1.4	1.4	16.9	830
95	19/2.52	1.6	1.5	19.4	1135

IEC 60502-1
600/1000V

PVC INSULATED, PVC SHEATHED CABLES (NON-ARMOURED) - 2 Cores



CONSTRUCTION

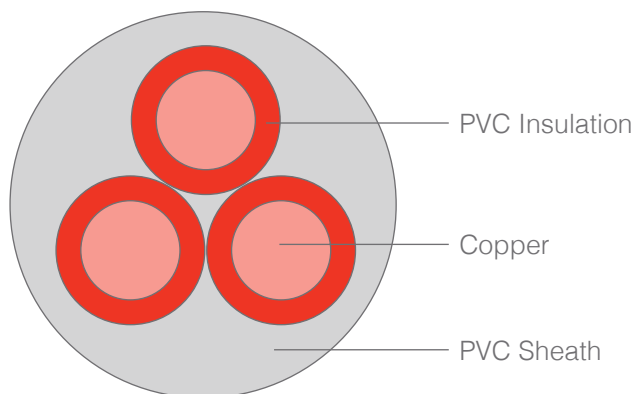
Conductor	: Plain annealed copper conductor.
Insulation	: PVC Compound Type PVC A 70°
Colour of Cores	: 2 Cores - Red and Black
Sheath	: PVC Compound Type ST 1, Colour Black.

Cu / PVC / PVC - 2 Cores

Nonimal Cross- Sectional Area (sq.mm)	Construction, Number/ Wire Diameter (No./mm)	Thickness of Insulation (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
1.5	7/0.53	0.8	1.8	11.0	140
2.5	7/0.67	0.8	1.8	12.0	170
4	7/0.85	1.0	1.8	14.0	230
6	7/1.04	1.0	1.8	15.0	290
10	7/1.35	1.0	1.8	16.2	380
16	7/1.70	1.0	1.8	18.3	580
25	7/2.14	1.2	1.8	21.0	880

MS 2102, IEC 60502-1
600/1000V

PVC INSULATED, PVC SHEATHED CABLES (NON-ARMoured) - 3 Cores



CONSTRUCTION

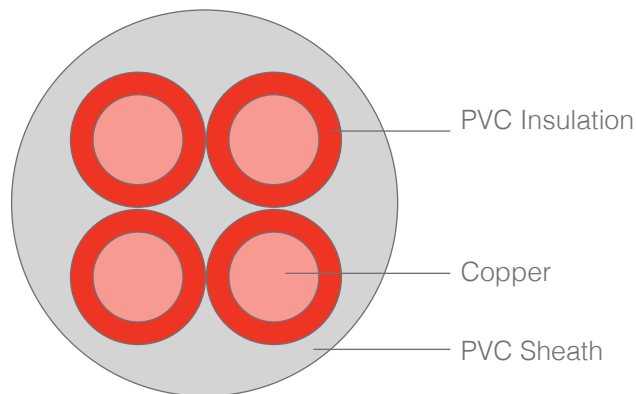
Conductor	: Plain annealed copper conductor.
Insulation	: PVC Compound Type PVC A 70°
Colour of Cores	: 3 Cores - Red, Yellow and Blue
Sheath	: PVC Compound Type ST 1, Colour Black.

Cu / PVC / PVC - 3 Cores

Nonimal Cross- Sectional Area (sq.mm)	Construction, Number/ Wire Diameter (No./mm)	Thickness of Insulation (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
1.5	7/0.53	0.8	1.8	11.5	170
2.5	7/0.67	0.8	1.8	12.5	210
4	7/0.85	1.0	1.8	14.5	290
6	7/1.04	1.0	1.8	16.0	370
10	7/1.35	1.0	1.8	17.0	500
16	7/1.70	1.0	1.8	19.4	750
25	7/2.14	1.2	1.8	23.5	1200

MS2102, IEC 60502-1

PVC INSULATED, PVC SHEATHED CABLES (NON-ARMOURED) - 4 Cores



CONSTRUCTION

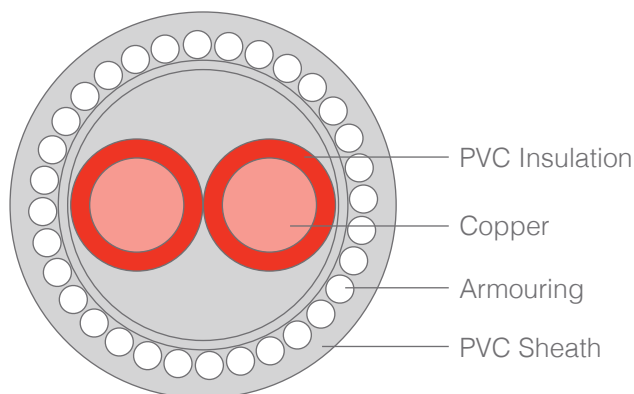
Conductor	: Plain annealed copper conductor.
Insulation	: PVC Compound Type PVC A 70°
Colour of Cores	: 4 Cores - Red, Yellow, Blue and Black
Sheath	: PVC Compound Type ST 1, Colour Black.

Cu / PVC / PVC - 4 Cores

Nonimal Cross- Sectional Area (sq.mm)	Construction, Number/ Wire Diameter (No./mm)	Thickness of Insulation (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
1.5	7/0.53	0.8	1.8	12.5	200
2.5	7/0.67	0.8	1.8	13.5	250
4	7/0.85	1.0	1.8	16.0	360
6	7/1.04	1.0	1.8	17.0	470
10	7/1.35	1.0	1.8	18.5	630
16	7/1.70	1.0	1.8	21.3	950
25	7/2.14	1.2	1.8	24.5	960
35	19/153	1.2	1.8	25.6	1820
50	19/1.78	1.4	1.9	29.2	2310
70	19/2.14	1.4	2.0	33.0	3200
95	19/2.52	1.6	2.2	38.3	4380
120	37/2.03	1.6	2.3	41.8	5430
150	37/2.25	1.8	2.5	46.3	6680

MS2102, IEC 60502-1

PVC INSULATED, PVC SHEATHED CABLES (ARMOURED) 2 Cores



CONSTRUCTION

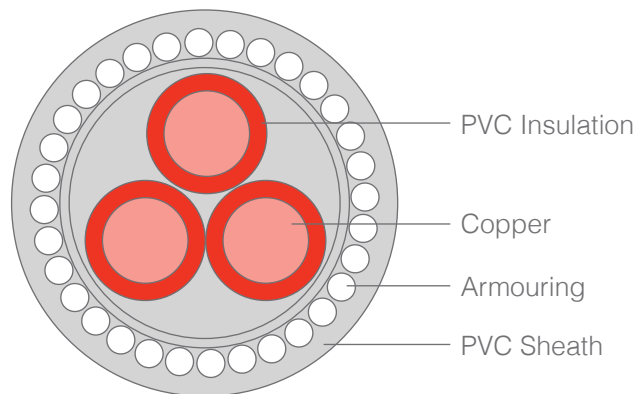
Conductor	: Plain annealed copper conductor.
Insulation	: PVC Compound Type PVC A 1 70°
Colour of Cores	: 2 Cores - Red and Black
Bedding	: PVC Compound Type ST 1, Colour Black.
Armour	: Galvanised Steel Wire
Sheath	: PVC Compound Type ST 1, Colour Black.

Cu / PVC / SWA / PVC - 2 Cores

Nominal Cross- Sectional Area (sq.mm)	Construction Number/Wire Diameter (No./mm)	Thickness of Insulation (mm)	Thickness of Bedding (mm)	Diameter of Steel Wire (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
1.5	7/0.53	0.6	0.8	0.9	1.4	12.6	325
2.5	7/0.67	0.7	0.8	0.9	1.4	13.6	380
4.0	7/0.85	0.8	0.8	0.9	1.4	15.2	470
6.0	7/1.04	0.8	0.8	0.9	1.5	16.5	540
10	7/1.35	1.0	0.8	1.25	1.6	20.2	880
16	7/1.70	1.0	0.8	1.25	1.6	22.5	1080
25	7/2.14	1.2	1.0	1.6	1.7	23.5	1450

MS 2103 / IEC 60502-1
600/1000V

PVC INSULATED, PVC SHEATHED CABLES (ARMOURED) 3 Cores



CONSTRUCTION

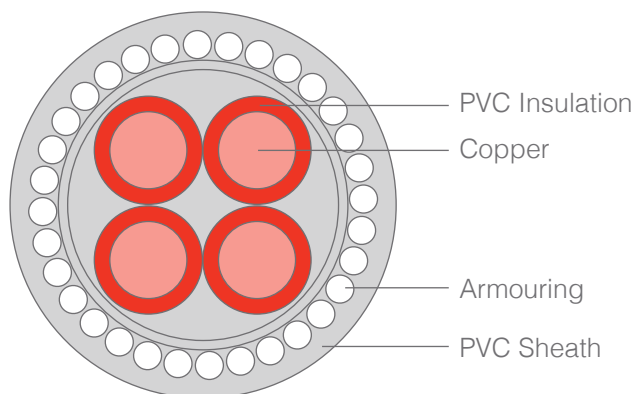
Conductor	: Plain annealed copper conductor.
Insulation	: PVC Compound Type PVC 70°
Colour of Cores	: 3 Cores - Red, Yellow and Blue
Bedding	: PVC Compound Type ST 1, Colour Black.
Armour	: Galvanised Steel Wire
Sheath	: PVC Compound Type ST 1, Colour Black.

Cu / PVC / SWA / PVC - 3 Cores

Nominal Cross- Sectional Area (sq.mm)	Construction Number/Wire Diameter (No./mm)	Thickness of Insulation (mm)	Thickness of Bedding (mm)	Diameter of Steel Wire (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
1.5	7/0.53	0.6	0.8	0.9	1.4	13.0	345
2.5	7/0.67	0.7	0.8	0.9	1.4	14.0	415
4.0	7/0.85	0.8	0.8	0.9	1.4	15.7	530
6.0	7/1.04	0.8	0.8	1.25	1.5	18.0	730
10	7/1.35	1.0	0.8	1.25	1.6	21.1	1030
16	7/1.70	1.0	0.8	1.25	1.6	23.2	1250
25	7/2.14	1.2	1.0	1.6	1.7	25.0	1800

MS 2103 / IEC 60502-1
600/1000V

PVC INSULATED, PVC SHEATHED CABLES (ARMOURED) 4 Cores



CONSTRUCTION

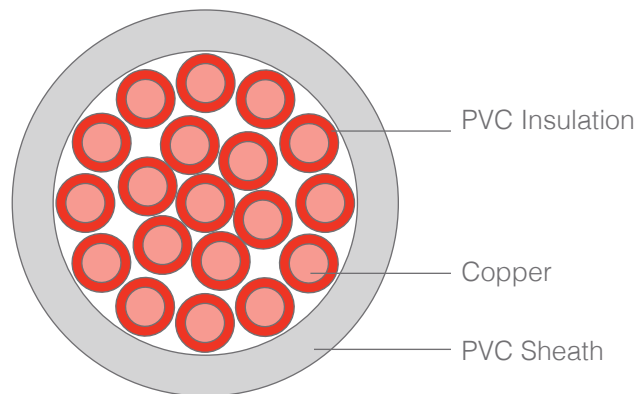
Conductor	: Plain annealed copper conductor.
Insulation	: PVC Compound Type PVC A 70°
Colour of Cores	: 4 Cores - Red, Yellow, Blue and Black
Bedding	: PVC Compound Type ST 1, Colour Black.
Armour	: Galvanised Steel Wire
Sheath	: PVC Compound Type ST 1, Colour Black.

Cu / PVC / SWA / PVC - 4 Cores

Nominal Cross-Sectional Area (sq.mm)	Construction Number/Wire Diameter (No./mm)	Thickness of Insulation (mm)	Thickness of Bedding (mm)	Diameter of Steel Wire (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
1.5	7/0.53	0.6	0.8	0.9	1.4	13.7	385
2.5	7/0.67	0.7	0.8	0.9	1.4	15.1	470
4.0	7/0.85	0.8	0.8	1.25	1.5	17.8	735
6.0	7/1.04	0.8	0.8	1.25	1.5	19.2	860
10	7/1.35	1.0	0.8	1.25	1.6	22.7	1200
16	7/1.70	1.0	1.0	1.6	1.7	26.4	1750
25	7/2.14	1.2	1.0	1.6	1.8	28.0	2250
35	19/153	1.2	1.0	1.6	1.9	30.8	2770
50	19/1.78	1.4	1.2	2.0	2.0	36.0	3840
70	19/2.14	1.4	1.2	2.0	2.1	39.0	4870
95	19/2.52	1.6	1.2	2.0	2.2	44.6	6300
120	37/2.03	1.6	1.4	2.5	2.4	50.0	8070
150	37/2.25	1.8	1.4	2.5	2.5	54.1	9580

MS 2103 / IEC 60502-1
600/1000V

PVC INSULATED, PVC SHEATHED MULTI-CORE AUXILIARY CABLES (NON-ARMOURED) - Multicore



CONSTRUCTION

Conductor	: Plain annealed copper conductor.
Insulation	: PVC Compound Type PVC/A
Colour of Insulation	: White with Number Marking
Sheath	: PVC Compound Type ST1, Black.

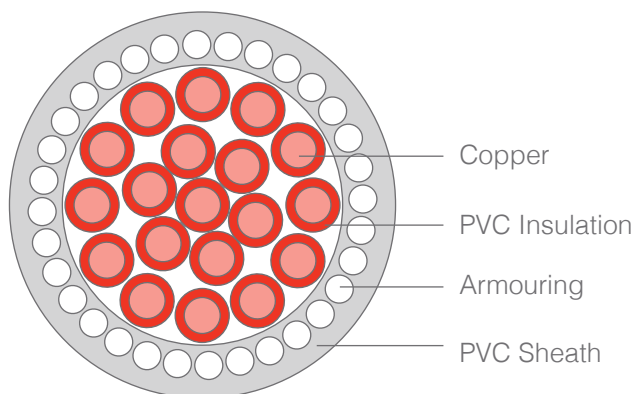
Cu / PVC / PVC - Multicore

Number of Cores (No.)	Nominal Cross-Sectional Area (sq.mm)	Construction Number/Wire Diameter (No./mm)	Thickness of Insulation (mm)	Thickness of Sheath (mm)	Approx. Overall Diameter (mm)	Approx. Net Weight (kg/km)
5	1.5	7/0.53	0.8	1.8	13.5	240
7	1.5	7/0.53	0.8	1.8	14.5	280
10	1.5	7/0.53	0.8	1.8	18.0	400
12	1.5	7/0.53	0.8	1.8	18.5	450
19	1.5	7/0.53	0.8	1.8	21.0	650
27	1.5	7/0.53	0.8	1.8	25.0	890
37	1.5	7/0.53	0.8	1.8	28.0	1160
40	1.5	7/0.53	0.8	1.8	29.0	1250
48	1.5	7/0.53	0.8	1.9	32.0	1500
5	2.5	7/0.67	0.8	1.8	14.5	300
7	2.5	7/0.67	0.8	1.8	15.5	370
10	2.5	7/0.67	0.8	1.8	19.5	520
12	2.5	7/0.67	0.8	1.8	20.0	600
19	2.5	7/0.67	0.8	1.8	23.5	870
27	2.5	7/0.67	0.8	1.8	27.5	1200
37	2.5	7/0.67	0.8	1.9	31.5	1600
40	2.5	7/0.67	0.8	1.9	32.5	1730
48	2.5	7/0.67	0.8	1.9	36.0	2060

MS 2102 / IEC 60502-1

*Note : Cables with different number of cores are also available, please consult from our sales representative.

PVC INSULATED, PVC SHEATHED MULTI-CORE AUXILIARY CABLES (ARMOURED) - Multicore



CONSTRUCTION

Conductor	: Plain annealed copper conductor.
Insulation	: PVC Compound Type PVC/A
Colour of Insulation	: White with Number Marking
Armour	: Galvanised steel wire
Sheath	: PVC Compound Type ST1, Black.

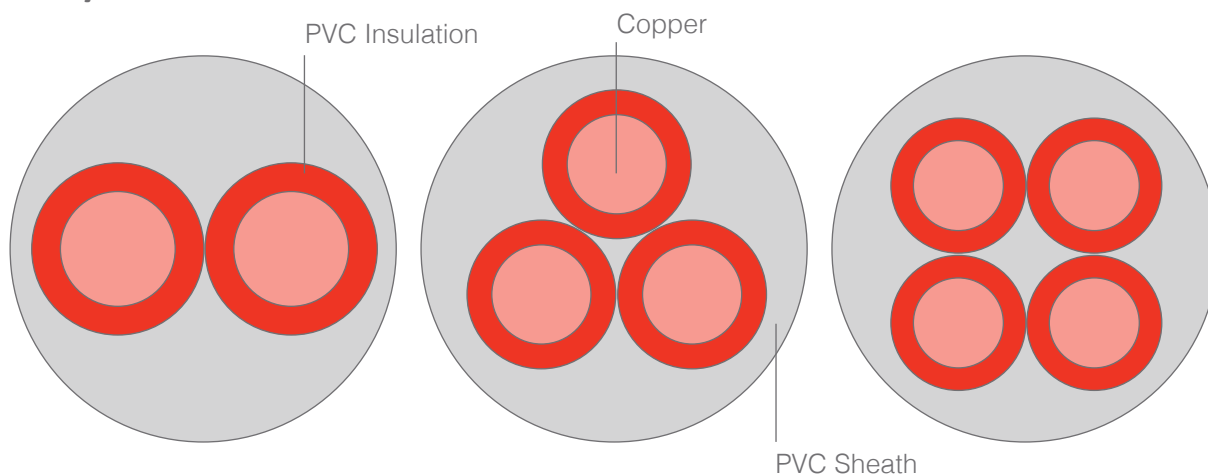
Cu / PVC / SWA / PVC - Multicore

Number of Cores	Nominal Cross-Sectional Area	Construction Number/Wire Diameter	Thickness of Insulation	GI Wire Diameter	Thickness of Sheath	Approx. Overall Diameter	Approx. Net Weight
(No.)	(sq.mm)	(No./mm)	(mm)	(mm)	(mm)	(mm)	(kg/km)
5	1.5	7/0.53	0.8	0.9	1.8	16.5	480
7	1.5	7/0.53	0.8	0.9	1.8	17.5	550
10	1.5	7/0.53	0.8	1.25	1.8	21.0	730
12	1.5	7/0.53	0.8	1.25	1.8	21.5	800
19	1.5	7/0.53	0.8	1.6	1.8	25.5	1320
27	1.5	7/0.53	0.8	1.6	1.8	29.5	1690
37	1.5	7/0.53	0.8	1.6	1.9	32.5	2080
40	1.5	7/0.53	0.8	1.6	1.9	33.5	2210
48	1.5	7/0.53	0.8	2.0	1.9	37.5	2790
5	2.5	7/0.67	0.8	1.25	1.8	17.5	570
7	2.5	7/0.67	0.8	1.25	1.8	18.5	660
10	2.5	7/0.67	0.8	1.25	1.8	22.5	890
12	2.5	7/0.67	0.8	1.6	1.8	23.0	980
19	2.5	7/0.67	0.8	1.6	1.8	27.5	1610
27	2.5	7/0.67	0.8	1.6	1.9	32.5	2100
37	2.5	7/0.67	0.8	1.6	2.0	36.0	2600
40	2.5	7/0.67	0.8	2.0	2.0	37.5	3010
48	2.5	7/0.67	0.8	2.0	2.1	41.5	3540

MS 2103 / IEC 60502-1

*Note : Cables with different number of cores are also available, please consult from our sales representative.

PVC INSULATED, PVC SHEATHED FLEXIBLE CORD (70 °C)



CONSTRUCTION

Conductor	: Plain annealed copper conductor, Class 5
Insulation	: PVC Compound Type PVC/D
Colour of Insulation	: 2 Cores (Brown,Blue) , 3 Cores (Brown,Blue,Green/Yellow) , 4 Cores (Brown,Blue,Green/Yellow,Black)
Sheath	: PVC Compound Type ST5

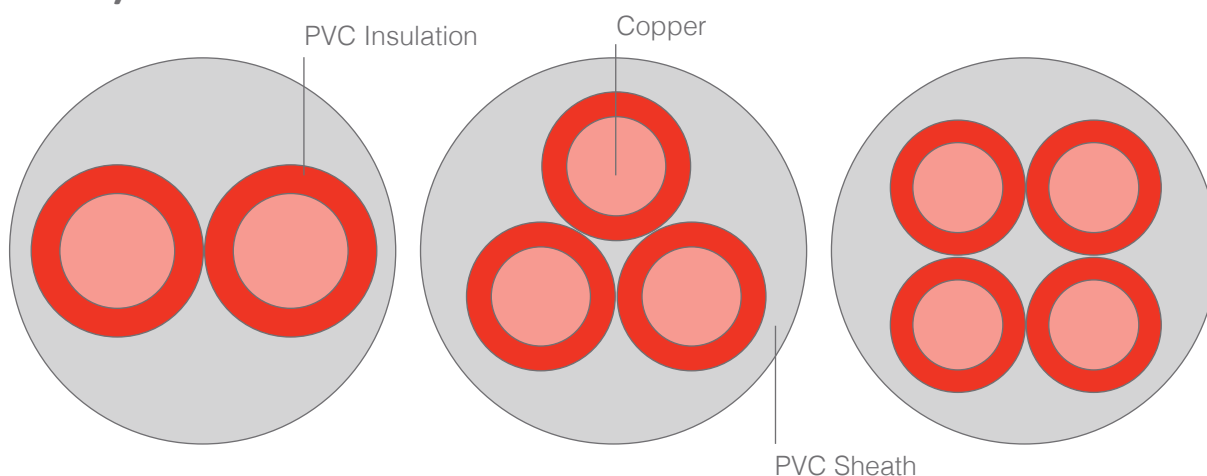
Cu / PVC / PVC

Number of Cores (No.)	Nominal Cross-Sectional Area (sq.mm)	Voltage Rating (No./mm)	Construction Number/Wire Diameter (No./mm)	Thickness of Insulation (mm)	Thickness of Sheath (mm)	Overall Diameter (kg/km)
MS 2112-5, IEC 60227-5, BS 6500 Flat Cords						
2	0.5	300/300	16/0.20	0.5	0.6	3.0x4.9 - 3.7x5.9
2	0.75	300/500	16/0.20	0.6	0.8	3.7x6.0 - 4.5x7.2
2	1	300/500	24/0.20	0.6	0.8	3.9x6.2 - 4.7x7.5
MS 2112-5, IEC 60227-5, BS 6500 Circular Cords						
2	0.5	300/300	16/0.20	0.5	0.6	4.6 - 5.9
2	0.75	300/300	24/0.20	0.5	0.6	4.9 - 6.3
3	0.5	300/300	16/0.20	0.5	0.6	4.9 - 6.3
3	0.75	300/300	24/0.20	0.5	0.6	5.2 - 6.7
2	0.75	300/500	16/0.20	0.6	0.8	5.7 - 7.2
2	1	300/500	24/0.20	0.6	0.8	5.9 - 7.5
**2	1.25	300/500	40/0.20	0.7	0.8	6.3 - 8.0
2	1.5	300/500	30/0.25	0.7	0.8	6.9 - 8.6
2	2.5	300/500	50/0.25	0.8	1	8.4 - 10.6
3	0.75	300/500	16/0.20	0.6	0.8	6.0 - 7.6
3	1	300/500	24/0.20	0.6	0.8	6.3 - 8.0
**3	1.25	300/500	40/0.20	0.7	0.9	6.9 - 8.7
3	1.5	300/500	30/0.25	0.7	0.9	7.4 - 9.4
3	2.5	300/500	50/0.25	0.8	1.1	9.2 - 11.4
4	0.75	300/500	16/0.20	0.6	0.8	6.6 - 8.3
4	1	300/500	24/0.20	0.6	0.9	7.1 - 9.0
4	1.5	300/500	30/0.25	0.7	1.0	8.4 - 10.5
4	2.5	300/500	50/0.25	0.8	1.1	10.1 - 12.5

BS6500, MS2112, IEC60227

*Note : 1.25sq.mm is only available to BS6500

PVC INSULATED, PVC SHEATHED FLEXIBLE CORD (105 °C)



CONSTRUCTION

Conductor	: Plain annealed copper conductor, Class 5
Insulation	: PVC Compound Type PVC/E
Colour of Insulation	: 2 Cores (Brown,Blue) , 3 Cores (Brown,Blue,Green/Yellow) , 4 Cores (Brown,Blue,Green/Yellow,Black)
Sheath	: PVC Compound Type ST10

Cu / PVC / PVC

Number of Cores (No.)	Nominal Cross-Sectional Area (sq.mm)	Voltage Rating (No./mm)	Construction Number/Wire Diameter (No./mm)	Thickness of Insulation (mm)	Thickness of Sheath (mm)	Overall Diameter (kg/km)
MS 2112-5 Flat Cords						
2	0.75	300/500	16/0.20	0.6	0.8	5.7 - 7.2
2	1	300/500	24/0.20	0.6	0.8	5.9 - 7.5
MS 2112-5 Circular Cords						
2	0.75	300/500	16/0.20	0.6	0.8	5.7 - 7.2
2	1	300/500	24/0.20	0.6	0.8	5.9 - 7.5
2	1.5	300/500	30/0.25	0.7	0.8	6.9 - 8.6
2	2.5	300/500	50/0.25	0.8	1	8.4 - 10.6
3	0.75	300/500	16/0.20	0.6	0.8	6.0 - 7.6
3	1	300/500	24/0.20	0.6	0.8	6.3 - 8.0
3	1.25	300/500	40/0.20	0.7	0.9	6.9 - 8.7
3	1.5	300/500	30/0.25	0.7	0.9	7.4 - 9.4
3	2.5	300/500	50/0.25	0.8	1.1	9.2 - 11.4
4	0.75	300/500	16/0.20	0.6	0.8	6.6 - 8.3
4	1	300/500	24/0.20	0.6	0.9	7.1 - 9.0
4	1.5	300/500	30/0.25	0.7	1.0	8.4 - 10.5
4	2.5	300/500	50/0.25	0.8	1.1	10.1 - 12.5

MS 2112

RATING FACTORS

The following tables taken from the Code of Practice CPS : 1988 for the Wiring of Electrical Equipment of Buildings. These tables include current ratings and the associated voltage drops at an ambient temperature of 30°C for different conditions of installation and for detailed information, reference should be made to the appropriate CPS Regulations.

Correction factors for group of more than one circuit of single-core cables, or more than one multicore cables

For Group		Correction factor (Cg)													
Reference method of installation		Number of circuits or multicore cables													
		2	3	4	5	6	7	8	9	10	12	14	16	18	20
Enclosed bunched and clipped 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 supports		0.86	0.82	0.80	0.79	0.78	0.78	0.78	0.77	-	-	-	-	-	-

* 'Space' means a clearance between adjacent surfaces of at least one cable diameter (D) where the horizontal clearances between adjacent cables exceeds 2D, no correction factor need to be applied.

- Note
- The factors in the table are applicable to groups of cables all of one size. The value of current derived from application of the appropriate factors if the maximum continuous current to be carried by any of the cables in group.
 - If, due to known operating conditions, cable is expected to carry not more than 30% of its grouped rating, it may be ignored for the purpose of obtaining the rating factor for the rest of the group.

Rating factors for other Ambient Temperature

Type of Protection	Rating Factor							
	Ambient Temperature °C							
	25	30	35	40	45	50	55	60
The over current 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
The over current 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

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

CURRENT RATING & VOLTAGE DROP

The following tables taken from the Code of Practice CPS : 1988 for the Wiring of Electrical Equipment of Buildings. These tables include current ratings and the associated voltage drops at an ambient temperature of 30°C for different conditions of installation and for detailed information, reference should be made to the appropriate CPS Regulations.

Current rating are based on the following conditions :

- | | |
|--|-----------|
| A. Ambient air temperature | 30°C |
| B. Ground temperature | 15°C |
| C. Soil thermal resistivity | 1.2° m/w |
| D. Depth of laying for 600/1000V cables | 0.5 meter |
| E. Maximum conductor operating temperature | 70°C |

Rating factors for other temperature :

cable in AIR		cable in GROUND	
Temperature	Rating Factor	Temperature	Rating Factor
25°C	1.06	15°C	1.00
30°C	1.00	20°C	0.95
35°C	0.94	25°C	0.90
40°C	0.87	30°C	0.85
45°C	0.79	35°C	0.80

CURRENT RATING & VOLTAGE DROP

PVC INSULATED, WITH OR WITHOUT PVC SHEATHED CABLE SINGLE CORE - PG.01

Copper conductor		Enclosed in conduit or trunking (ref. CP5 Method 3)			
Nominal cross-sectional area	Number and diameter of wire	2 cables, single-phase, ac or dc		3 & 4 cables, three-phase, ac	
		Current rating	Approx. volt drop per amp per meter	Current rating	Approx. volt drop per amp per meter
sq.mm	No./mm	A	mV/A/m	A	mV/A/m
1.0	1/1.13	13.5	44	12	38
1.5	1/1.38				
	7/0.53	17.5	29	15.5	25
	1/1.78				
2.5	7/0.67	24	18	21	15
4	7/0.85	32	11	28	9.5
6	7/1.04	41	7.3	36	6.4
10	7/1.35	57	4.4	50	3.8
16	7/1.70	76	2.8	68	2.4
			ac dc		
25	7/2.14	101	1.8 1.75	89	1.55
35	19/1.53	125	1.3 1.25	110	1.10
50	19/1.78	151	1.0 0.93	134	0.85
70	19/2.14	192	0.72 0.63	171	0.61
95	19/2.52	232	0.56 0.46	207	0.48
120	37/2.03	269	0.47 0.36	239	0.41
150	37/2.25	300	0.41 0.29	262	0.36
185	37/2.52	341	0.37 0.23	296	0.32
240	61/2.25	400	0.33 0.18	346	0.29
300	61/2.52	458	0.31 0.145	394	0.27
400	61/2.85	546	0.29 0.105	467	0.25
500	61/3.20	626	0.28 0.086	533	0.25
630	127/2.52	720	0.27 0.068	611	0.24

MS136 or BS6004 & MS274 or BS6346

CURRENT RATING & VOLTAGE DROP

PVC INSULATED, WITH OR WITHOUT PVC SHEATHED CABLE SINGLE CORE - PG.02

Copper Conductor		Clipped direct to non-metallic surface (ref. CP 5 Method 1)				Laid in free air (ref. CP 5 Method 12)			
Nominal cross-sectional area	Number and diameter of wire	2 cables, single-phase		3 & 4 cables, three-phase		2 cables, single-phase 3 cables, three-phase ac horizontal flat space		3 cables, three-phase ac trefoil	
		Current rating	Approx. volt drop per amp per metre	Current rating	Approx. volt drop per amp per metre	Current rating	Approx. volt drop per amp per metre	Current rating	Approx. volt drop per amp per metre
sq.mm	No./mm	A	mV/A/m	A	mV/A/m	A	mV/A/m	A	mV/A/m
1.0	1/1.13	15.5	44	14	38	-	-	-	-
1.5	1/1.38								
1.5	7/0.53	20	29	18	25	-	-	-	-
2.5	1/1.78								
2.5	7/0.67	27	18	25	15	-	-	-	-
4									
4	7/0.85	37	11	33	9.5	-	-	-	-
6	7/1.04	47	7.3	43	6.4	-	-	-	-
10	7/1.35	65	4.4	59	3.8	-	-	-	-
16	7/1.70	87	2.8	79	2.4	-	-	-	-
25									
25	7/2.14	114	1.75	104	1.5	-	-	-	-
35	19/1.53	141	1.25	129	1.1	-	-	-	-
50									
50	19/1.78	182	ac 0.95 dc 0.93	167	0.82	219	0.97	167	0.82
70	19/2.14	234	0.66 0.63	214	0.57	281	0.69	216	0.57
95									
95	19/2.52	284	0.50 0.46	261	0.43	341	0.54	264	0.43
120	37/2.03	330	0.41 0.36	303	0.36	396	0.45	308	0.36
150	37/2.25	381	0.34 0.29	349	0.30	456	0.39	356	0.30
185	37/2.52	436	0.29 0.23	400	0.26	521	0.35	409	0.26
240									
240	61/2.25	515	0.25 0.18	472	0.22	615	0.31	485	0.22
300	61/2.52	594	0.22 0.145	545	0.19	709	0.29	561	0.19
400	61/2.85	694	0.20 0.105	634	0.175	852	0.27	656	0.175
500	61/3.20	792	0.185 0.086	723	0.160	982	0.26	749	0.160
630	127/2.52	904	0.175 0.068	826	0.150	1138	0.25	855	0.150

MS136 or BS6004 & MS274 or BS6346

CURRENT RATING & VOLTAGE DROP

PVC NON-ARMoured CABLES MULTI CORES

Copper Conductor		Laid on cable tray (ref. CP 5 Method 11 or 13 (free air))				Clipped direct to non-metallic surface (ref. CP 5 Method 1)			
Nominal cross-sectional area	Number and diameter of wire	2 cores, single-phase, ac or dc		3 or 4 cores, three-phase, ac		2 cores, single-phase, ac or dc		3 or 4 cores, three-phase, ac	
		Current rating	Approx. volt drop per amp per metre	Current rating	Approx. volt drop per amp per metre	Current rating	Approx. volt drop per amp per metre	Current rating	Approx. volt drop per amp per metre
sq.mm	No./mm	A	mV/A/m	A	mV/A/m	A	mV/A/m	A	mV/A/m
1.0	1/1.13	17	44	14.5	38	15	44	13.5	38
1.5	1/1.38	22	29	18.5	25	19.5	59	17.5	25
1.5	7/0.53	22	29	18.5	25	19.5	59	17.5	25
2.5	1/1.78	30	18	25	15	27	18	24	15
2.5	7/0.67	30	18	25	15	27	18	24	15
4	7/0.85	40	11	35	9.5	36	11	32	9.5
6	7/1.04	51	7.3	43	6.4	46	7.3	41	6.4
10	7/1.35	70	4.4	60	3.8	63	4.4	57	3.8
16	7/1.70	94	2.8	80	2.4	85	2.8	76	2.4
25	7/2.14	119	1.75	101	1.5	112	1.75	96	1.5
35	19/1.53	148	1.25	126	1.1	138	1.25	119	1.1
50	19/1.78	180	0.94	153	0.81	168	0.94	144	0.81
70	19/2.14	232	0.65	196	0.57	213	0.65	184	0.57
95	19/2.52	282	0.50	238	0.43	258	0.50	223	0.43
120	37/2.03	328	0.41	276	0.35	299	0.41	259	0.35
150	37/2.25	379	0.34	319	0.29	344	0.34	299	0.29
185	37/2.52	434	0.29	364	0.25	392	0.29	341	0.25
240	61/2.25	514	0.24	430	0.21	461	0.24	403	0.21
300	61/2.25	593	0.21	497	0.185	530	0.21	464	0.185
400	61/2.85	715	0.185	597	0.160	634	0.185	557	0.160

MS136 or BS6004 & MS274 or BS6346

CURRENT RATING & VOLTAGE DROP

PVC INSULATED, PVC SHEATHED ARMoured CABLES. 600/1000V SINGLE CORE

Copper Conductor	Laid on cable tray (ref. CP 5 Method 1)				Laid in free ai (ref. CP 5 Method 12)			
Normal cross-sectional area	2 cables, single-phase ac flat & touching		3 & 4 cables, three-phase ac flat & touching		2 cables, dc horizontal space		3 cables, three-phase ac trefoil	
	Current rating	Approx. volt drop per amp per metre	Current rating	Approx. volt drop per amp per metre	Current rating	Approx. volt drop per amp per metre	Current rating	Approx. volt drop per amp per metre
sq.mm	amp	mV/A/m	A	mV/A/m	A	mV/A/m	A	mV/A/m
50	205	0.95	189	0.84	229	0.93	181	0.82
70	259	0.68	238	0.62	294	0.63	231	0.58
95	313	0.52	285	0.50	357	0.46	280	0.45
120	360	0.43	327	0.43	415	0.36	324	0.37
150	413	0.37	373	0.38	479	0.29	373	0.32
185	469	0.32	422	0.34	548	0.23	425	0.27
240	550	0.27	492	0.30	648	0.18	501	0.23
300	624	0.24	547	0.28	748	0.145	567	0.21
400	723	0.22	618	0.26	885	0.105	657	0.195
500	805	0.21	673	0.25	1035	0.086	731	0.18
630	891	0.195	728	0.24	1218	0.068	809	0.17

MS136 or BS6004 & MS274 or BS6346

CURRENT RATING & VOLTAGE DROP

PVC INSULATED, PVC SHEATHED ARMoured CABLES. 600/1000V MULTI CORES

Copper Conductor	Clipped direct (ref. CP 5 Method 1)				Laid on cable tray (ref. CP 5 Method 11 or 13)			
Normal cross-sectional area	2 cores		3 & 4 cores		2 cores		3 & 4 cores	
	Current rating	Approx. volt drop per amp per metre	Current rating	Approx. volt drop per amp per metre	Current rating	Approx. volt drop per amp per metre	Current rating	Approx. volt drop per amp per metre
sq.mm	A	mV/A/m	A	mV/A/m	A	mV/A/m	A	mV/A/m
1.5	21	29	18	25	22	29	19	25
2.5	28	18	25	15	31	18	26	15
4	38	11	33	9.5	41	11	35	9.5
6	49	7.3	42	6.4	53	7.3	45	6.4
10	67	4.4	58	3.8	72	4.4	62	3.8
16	89	2.8	77	2.4	97	2.8	83	2.4
25	118	1.75	102	1.5	128	1.75	110	1.5
35	145	1.25	125	1.1	157	1.25	135	1.1
50	175	0.9	151	0.81	190	0.94	163	0.81
70	222	0.65	192	0.57	241	0.65	207	0.57
95	269	0.5	231	0.43	291	0.50	251	0.43
120	310	0.41	267	0.35	336	0.41	290	0.35
150	356	0.34	306	0.29	386	0.34	332	0.29
185	405	0.29	348	0.25	439	0.29	378	0.25
240	476	0.24	409	0.21	516	0.24	445	0.21
300	547	0.21	469	0.185	592	0.21	510	0.185
400	621	0.185	540	0.160	683	0.185	590	0.160

MS274 or BS6346

ALLOWABLE SHORT CIRCUIT CURRENT FOR PVC INSULATED CABLES

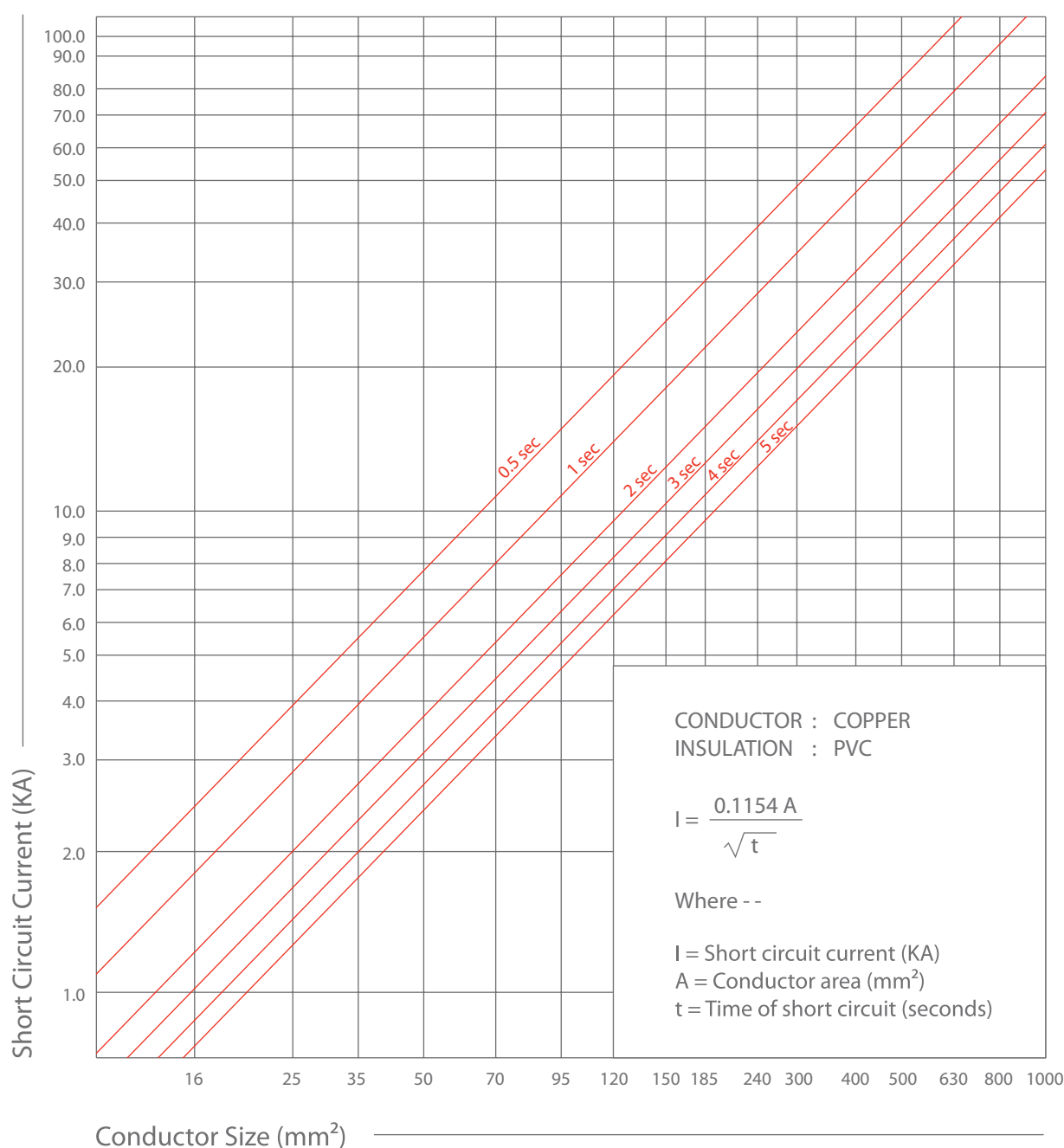


TABLE 9A - PG.01

SCHEDULE OF METHODS OF INSTALLATION OF CABLES (CPS:1988)

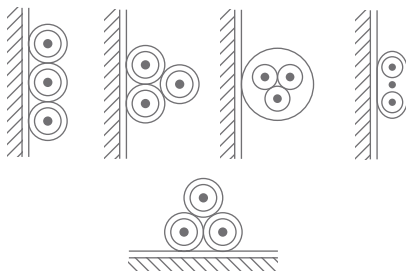
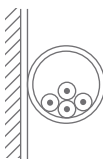
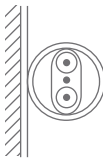
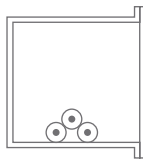
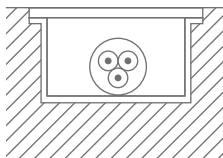
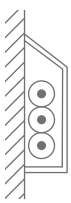
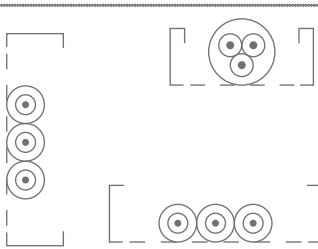
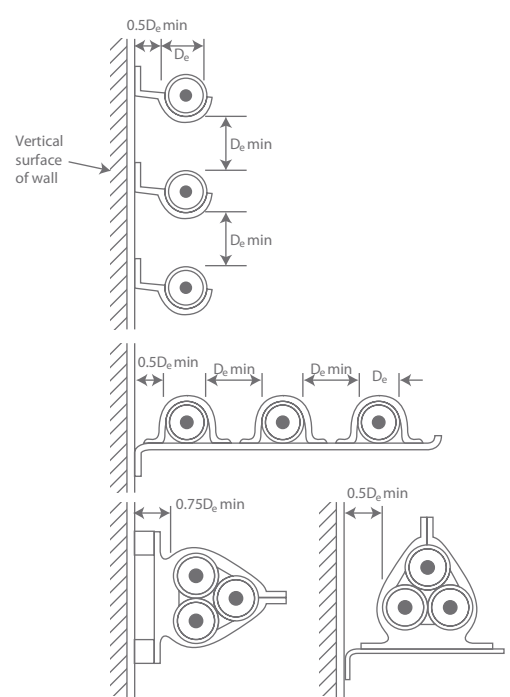
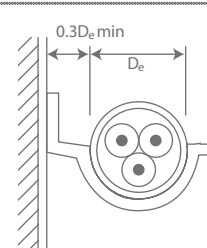
Installation method		Examples	Appropriate reference method for determining current-carrying capacities
Number	Description		
1	2	3	4
Open and clipped direct :			
1	Sheathed cables clipped direct to or lying on a non-metallic surface		Method 1
In conduit :			
3	Single-core non-sheathed cables in metallic conduit on a wall or ceiling		Method 3
5	Multicore cables having non-metallic sheath, in metallic or non-metallic conduit on a wall or ceiling.		Method 3
In trunking :			
8	Cables in trunking on a wall or suspended in air		Method 3
9	Cables in flush floor trunking		Method 3
10	Single-core cables in skirting trunking		Method 3

TABLE 9A - PG.02

SCHEDULE OF METHODS OF INSTALLATION OF CABLES (CPS:1988)

Installation method		Examples	Appropriate reference method for determining current-carrying capacities
Number	Description		
1	2	3	4
On trays :			
11	Sheathed cables on a perforated cable tray, bunched and unenclosed. A perforated cable tray is considered as a tray in which the holes occupy at least 30% of the surface area.		Method 11
In free air :			
12	Sheathed single-core cables in free air (any supporting metalwork under the cables occupying less than 10% of the plan area). Two or three cables vertically one above the other, distance between cables equal to the overall cable diameter (D_e); distance from the wall not less than $0.5D_e$. Two or three cables horizontally with spacing as above. Three cables in trefoil, distance between wall and surface of nearest cable $0.5D_e$ or nearest cables $0.75D_e$.		Method 12
13	Sheathed multicore cables in free air distance between wall and cable surface not less than $0.3D_e$. (any supporting metalwork occupying less than 10% of the plan area)		Method 13

APPENDIX

APPENDIX PG.01

TABLE 1
TYPICAL PROPERTIES OF VARIOUS INSULATION MATERIAL

Insulation	Specific Gravity	Relative Permittivity	Thermal resistivity (°C m/w)	Volume Resistivity at 20°C (ohm-cm)	Max. Cond. Temp. (°C)	Max. Short. Circuit Temp. (°C)
PVC	1.44	5.0 - 8.0	5.0 - 6.0	10 ¹⁴	70	160
PE	0.92	2.3	3.5	10 ¹⁶	70	130
XLPE	0.92	2.5	3.5	10 ¹⁶	90	250
EPR	1.20	3.0	3.5 - 5.0	10 ¹⁵	90	250
IMPREGNATED PAPER	1.10	3.3 - 3.9	6.0	10 ¹⁵	65 - 80	160 - 250

TABLE 2
PROPERTIES OF CONDUCTORS

Properties	Unit	Aluminium	Annealed Copper
Density	g/cm ³	2.703	8.89
Volume Resistivity	ohm mm ³ /km	28.264	17.241
Coefficient of Resistance	Per°C	0.00403	0.00393
Ultimate Tensile Strength	N/mm ²	205	275

TABLE 3
STRANDED CONDUCTORS FOR SINGLE-CORE & MULTICORE CABLES

Nominal Cross-Sectional Area		Maximum DC Resistance of Conductor at 20°C		Nominal Cross-Sectional Area		Maximum DC Resistance of Conductor at 20°C	
		Copper Conductor	Aluminium Conductor			Copper Conductor	Aluminium Conductor
mm ²	No./mm	ohm/Km	ohm/Km	mm ²	No./mm	ohm/Km	ohm/Km
1.5	1/1.38	1.21	-	120	37/2.03	0.153	0.253
1.5	7/0.53	1.21	-	120	37/2.03	0.153	0.253
2.5	1/1.78	7.41	-	150	37/2.25	0.124	0.206
2.5	7/0.67	7.41	-	150	37/2.25	0.124	0.206
4	7/0.85	4.61	7.41	185	37/2.52	0.0991	0.164
6	7/1.04	3.08	4.61	-	37/2.88	-	-
10	7/1.35	1.83	3.08	240	61/2.25	0.0754	0.125
16	7/1.70	1.15	1.91	300	61/2.52	0.0601	0.100
25	7/2.14	0.727	1.20	400	61/2.85	0.0470	0.0778
35	19/1.53	0.524	0.868	500	61/3.20	0.0366	0.0605
50	19/1.78	0.387	0.641	630	127/2.52	0.0283	0.0469
70	19/2.14	0.268	0.443	-	-	-	-
95	19/2.52	0.193	0.320	-	-	-	-

APPENDIX

APPENDIX PG.02

TABLE 4
FORMULA FOR ELECTRICAL 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	$A = \frac{746 \times hp}{V \times eff}$	$A = \frac{746 \times hp}{V \times eff \times pf}$	$A = \frac{746 \times hp}{1.73 \times V \times eff \times pf}$
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		$kVA = \frac{A \times V}{1000}$	$kVA = \frac{1.73 \times A \times V}{1000}$

TABLE 5
UNITS CONVERSION FACTOR

Lenght				Energy			
Equivalent			Reciprocal	Equivalent			Reciprocal
1 feet	0.3048	m	3.2808	1 HP.h	2544.5	Btu	0.00393
1 yard	0.9144	m	1.0936	1 Btu	0.000293	kw.h	3413
1 mile	1.6093	km	0.6214	1 Btu	1.0551	Kj	0.9478
1 inch	25.400	mm	0.03937	1 Btu	107.59	kgf.m	0.00929

United MS Cable Mfg Sdn Bhd reserves the right to modify specification of any of the products at our discretion and without notice. We do not responsible to the suitability of any product for a particular use, or for any errors or omissions,unintentional or otherwise.