PVC Insulated Cable

For Electricity Power and Ligthing

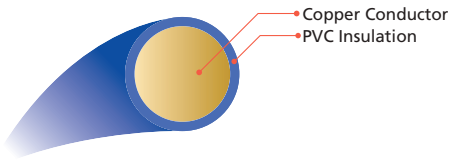
PVC – Insulated, Non – Sheathed General Purpose Cables 450 / 750V , MS 136 / BS6004

Construction

Conductor : Plain Annealed copper

Insulation : PVC compound type Tl 1

Colour of insulation : Red , Black or Other colours



Single Core

Nominal Cross-Sectional Area of conductor	Number and Diameter of Wires	Thickness of Insulation	Approx. Overall Diameter	Approx. Net weight
mm²	no/mm	mm	mm	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	3.8	36
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	7.3	180
25	7 / 2.14	1.2	9.0	284
35	19 / 1.53	1.2	10.3	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
120	37 / 2.03	1.6	17.7	1235
150	37 / 2.25	1.8	19.6	1520
185	37 / 2.52	2.0	22.0	1900
240	61 / 2.25	2.2	25.0	2480
300	61 / 2.52	2.4	27.8	3100
400	61 / 2.85	2.6	31.3	3950
500	61 / 3.20	2.8	34.9	4960
630	127 / 2.52	2.8	38.8	6330

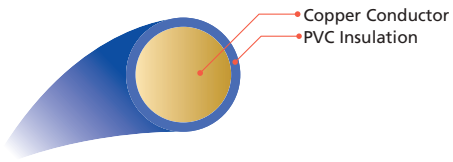
PVC – Insulated, Non – Sheathed Internal Wiring Cables 300 / 500V , MS 136 / BS6004

Construction

Conductor : Plain Annealed copper

Insulation : PVC compound type Tl 1

Colour of insulation : Red , Black or Other colours



Single Core

Nominal Cross-Sectional Area of conductor	Number and Diameter of Wires	Thickness of Insulation	Approx. Overall Diameter	Approx. Net weight
mm²	no/mm	mm	mm	kg/km
0.5	1 / 0.80	0.6	2.2	9.4
0.75	1 / 0.98	0.6	2.4	12
1.0	1 / 1.13	0.6	2.5	15
1.25	3 / 0.73	0.7	3.1	21

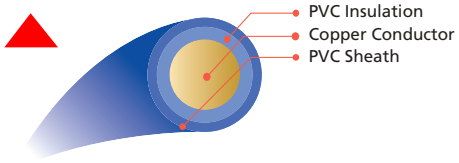
PVC – Insulated, PVC – Sheathed Cables 300 / 500V , MS 136 / BS6004

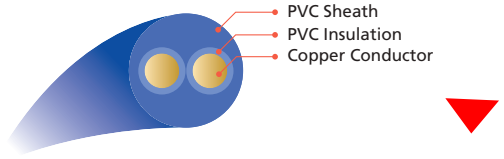
Construction

Conductor : Plain Annealed copper
Insulation : PVC compound type TI 1
Colour of cores : Single core - Red or Black
2 Cores - Red and Black
3 Cores - Red , yellow and blue
4 Cores - Red , yellow , blue and black
5 Cores - Red , yellow , blue , black and green / yellow
Formation : Two , three , four or five cores laid – up , filled where necessary with PVC or other suitable material. Optional tape over laid up cores.
Sheath : General Purpose PVC compound
Colour of sheath : Black , grey or white

Single Core

Nominal Cross-Sectional Area of Conductor	Number and Diameter of Wires	Thickness of Insulation	Thickness of Sheath	Approx. Overall Diameter	Approx. Net weight
mm²	no/mm	mm	mm	mm	kg/km
1.0	1 / 1.13	0.6	0.8	4.2	27
1.5	1 / 1.38	0.7	0.8	4.6	36
1.5	7 / 0.53	0.7	0.8	4.8	38
2.5	7 / 0.67	0.8	0.8	5.4	53
4	7 / 0.85	0.8	0.9	6.2	75
6	7 / 1.04	0.8	0.9	6.8	100
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	11.4	340
35	19 / 1.53	1.2	1.1	12.6	440



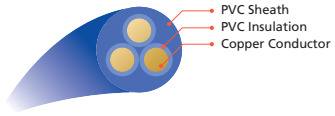


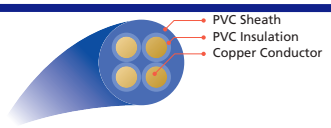
Two-Core

Nominal Cross-Sectional Area of Conductor	Number and Diameter of Wires	Thickness of Insulation	Thickness of Sheath	Approx. Overall Diameter	Approx. Net weight
mm²	no/mm	mm	mm	mm	kg/km
1.0	1 / 1.13	0.6	1.2	7.4	80
1.5	1 / 1.38	0.7	1.2	8.5	100
1.5	7 / 0.53	0.7	1.2	8.9	110
2.5	7 / 0.67	0.8	1.2	10.1	140
4	7 / 0.85	0.8	1.2	11.2	200
6	7 / 1.04	0.8	1.2	12.3	260
10	7 / 1.35	1.0	1.4	15.4	420

Three-Core

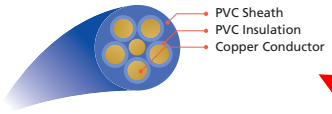
Nominal Cross-Sectional Area of conductor	Number and Diameter of Wires	Thickness of Insulation	Thickness of Sheath	Approx. Overall Diameter	Approx. Net weight
mm²	no/mm	mm	mm	mm	kg/km
1.0	1 / 1.13	0.6	1.2	7.8	93
1.5	1 / 1.38	0.7	1.2	8.9	120
1.5	7 / 0.53	0.7	1.2	9.4	130
2.5	7 / 0.67	0.8	1.2	10.7	180
4	7 / 0.85	0.8	1.2	11.9	250
6	7 / 1.04	0.8	1.4	13.5	320
10	7 / 1.35	1.0	1.4	16.3	530





Four-Core

Nominal Cross-Sectional Area of conductor	Number and Diameter of Wires	Thickness of Insulation	Thickness of Sheath	Approx. Overall Diameter	Approx. Net weight
mm²	no/mm	mm	mm	mm	kg/km
1.0	1 / 1.13	0.6	1.2	8.4	112
1.5	1 / 1.38	0.7	1.2	9.7	150
1.5	7 / 0.53	0.7	1.2	10.2	160
2.5	7 / 0.67	0.8	1.2	11.7	220
4	7 / 0.85	0.8	1.4	13.4	320
6	7 / 1.04	0.8	1.4	14.7	430
10	7 / 1.35	1.0	1.4	18.0	670



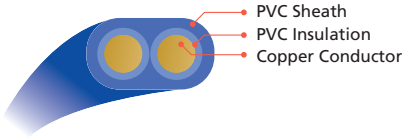
Five-Core

Nominal Cross-Sectional Area of conductor	Number and Diameter of Wires	Thickness of Insulation	Thickness of Sheath	Approx. Overall Diameter	Approx. Net weight
mm²	no/mm	mm	mm	mm	kg/km
1.0	1 / 1.13	0.6	1.2	9.1	134
1.5	1 / 1.38	0.7	1.2	10.2	180
1.5	7 / 0.53	0.7	1.2	11.0	197
2.5	7 / 0.67	0.8	1.2	12.8	250
4	7 / 0.85	0.8	1.4	14.6	390
6	7/ 1.04	0.8	1.4	16.0	520
10	7 / 1.35	1.0	1.4	19.8	820
16	7 / 1.70	1.0	1.6	23.0	1210
25	7 / 2.14	1.2	1.6	28.0	1840
35	19 / 1.53	1.2	1.6	31.4	2400

PVC – Insulated, PVC– Sheathed Cables, Flat Twin 300 / 500V , MS 136 / BS6004

Construction

Conductor : Plain Annealed copper
Insulation : PVC compound type Tl 1
Colour of cores : Red and Black (The cores shall be laid parallel.)
Sheath : General Purpose PVC compound
Colour of sheath : Black , grey and white

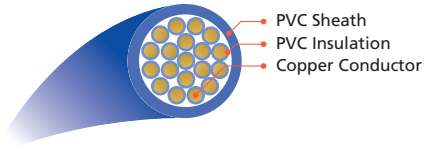


Nominal Cross-Sectional Area of conductor	Number and Diameter of Wires	Thickness of Insulation	Thickness of Sheath	Approx. Overall Diameter	Approx. Net weight
mm²	no/mm	mm	mm	mm	kg/km
1.0	1 / 1.13	0.6	0.9	6.7 x 4.4	53
1.5	1 / 1.38	0.7	0.9	7.8 x 4.9	65
1.5	7 / 0.53	0.7	0.9	8.2 x 5.1	68
2.5	7 / 0.67	0.8	1.0	9.4 x 5.8	104
4	7 / 0.85	0.8	1.0	10.7 x 6.5	150
6	7 / 1.04	0.8	1.1	12.0 x 7.3	200
10	7 / 1.35	1.0	1.2	14.9 x 8.8	320
16	7 / 1.70	1.0	1.3	17.2 x 10.1	460

PVC – Insulated, PVC– Sheathed Multi– Core Auxilliary Cables 300 / 500V, MS 136

Construction

Conductor : Plain Annealed copper
Insulation : PVC compound type TI 1
Identification of cores : Black numbers shall be printed on white cores
Assembly : For cables having seven cores , the cores shall be laid with a right hand direction of lay. For cables having more than seven cores , the direction of lay shall alternate for each successive layer. Optional tape over laid up cores.
Sheath : PVC compound type TM 1
Colour of sheath : Grey or black



Number of Cores	Conductor		Thickness of Insulation	Thickness of Sheath	Approx. Overall Diameter	Approx. Net weight
	Nominal Area	Number and diameter of wire				
no	mm²	no/mm	no / mm	mm	mm	kg/km
7				1.2	11.9	245
10				1.3	15.2	350
12				1.3	15.7	400
19	1.5	7 / 0.53	0.7	1.4	18.5	590
27				1.5	22.3	820
37				1.6	25.1	1090
48				1.6	28.7	1390
7				1.3	14.2	360
10				1.4	18.0	505
12				1.4	18.6	580
19	2.5	7 / 0.67	0.8	1.5	22.0	870
27				1.6	26.5	1210
37				1.7	30.3	1610
48				1.8	34.8	2060
7				1.4	15.8	500
10				1.5	20.4	710
12	4	7 / 0.85	0.8	1.5	21.1	820
19				1.6	24.7	1230
27				1.7	30.2	1710

Rating Factors for Groups of More Than One Circuit of Single – Core Cables, or More Than One Multicore Cable

Method of Installation		Rating factor													
		Number of Circuits or multicoe cables													
		2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**12**	**14**	**16**	**18**	**20**
Enclosed or bunched and clipped direct to a non-metalic 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-metalic surface	Touching	0.85	0.79	0.75	0.73	0.72	0.72	0.71	0.7	•	•	•	•	•	•
	Space *	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	0.72	0.71	0.70	•	•	•	•	•
	Space *	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	•	•	•	•	•	•

* Spaced by a clearance between adjacent surfaces of at least one cable diameter (D e). Where the horizontal clearances between adjacent cables exceeds 2D no correction factor need be applied.

Rating Factors for Groups of More Than One Circuit of Single – Core Cables, or More Than One Multicore Cable

Type of Protection	Rating factor							
	Ambient temperature(°C)							
	25	30	35	40	45	50	55	60
The overcurrent 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 overcurrent 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

* 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

Rating Factors for Cables Installed in Enclosed Trenches

Conductor Cross-Sectional Area	Rating Factor									
	Trench size 450mm wide x 300mm deep				Trench size 450mm wide x 600mm deep			Trench size 600mm wide x 760mm 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 cable, 4 two-core cabels, or 3 three- or four-core cables	8 single-core cables, or 4 three- or four core cables	12 single-core cables, 8 two-core cables, or 6 three- or four core cables	12 single-core cable, 8 two-core cables, or 6 three- or four core cables	18 single-core cable, 12 two-core cables, or 9 three- or four core cables	24 single-core cable, 12 two-core cables, or 12 three- or four core cables
mm²										
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

* 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.

Current-Carrying Capacity for Single-Core PVC-Insulated Cables, Non-Armoured, with or without Sheath to MS 136/BS6004

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

Cunductor Cross-Sectional Area	Method of Installation										
	Enclosed in conduit in thermally insulating 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		
									Horizontal Flat spaced	Vertical Flat spaced	Trefoil
	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	2 cables, single-phase a.c or d.c or 3 cables three- phase a.c	2 cables, single-phase a.c or d.c or 3 cables three- phase a.c	3 cables trefoil three phase a.c
mm²	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**
1	11	10.5	13.5	12	15.5	14	•	•	•	•	•
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

Current-Carrying Capacity for multicore PVC-Insulated Cables to MS136/BS6004

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

Conductor Cross-sectional Area	Method of Installation							
	Enclosed in an insulating wall, etc.		Enclosed in conduit on a wall or ceiling or in trunking		Clipped direct		On a perforated cable tray 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
mm²	A	A	**A**	**A**	**A**	**A**	**A**	**A**
1	11	10	13	11.5	15	13.5	17	14.5
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

Voltage Drop for Single-Core PVC-Insulated Cables, Non-Armoured, with or without Sheath to MS 136/BS6004

Conductor operating temperature: 70°C

Conductor Cross Sectional Area	Method of Installation																		
	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			Spaced *			Enclosed in conduit etc. in or on a wall			In trefoil			Flat spaced *		
mm²	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
1	44	44			44			44			38			38			38		
1.5	29	29			29			29			25			25			25		
2.5	18	18			18			18			15			15			15		
4	11	11			11			11			9.5			9.5			9.5		
6	7.3	7.3			7.3			7.3			6.4			6.4			6.4		
10	4.4	4.4			4.4			4.4			3.8			3.8			3.8		
16	2.8	2.8			2.8			2.8			2.4			2.4			2.4		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
25	1.75	1.80	0.33	1.80	1.75	0.200	1.75	1.75	0.29	1.80	1.50	0.29	1.55	1.50	0.175	1.50	1.50	0.32	1.55
35	1.25	1.30	0.31	1.30	1.25	0.195	1.25	1.25	0.28	1.30	1.10	0.27	1.10	1.10	0.170	1.10	1.10	0.32	1.15
50	0.93	0.95	0.30	1.00	0.93	0.190	0.95	0.93	0.28	0.97	0.81	0.26	0.85	0.80	0.165	0.82	0.80	0.32	0.86
70	0.63	0.65	0.29	0.72	0.63	0.185	0.66	0.63	0.27	0.69	0.56	0.25	0.61	0.55	0.160	0.57	0.55	0.31	0.63
95	0.46	0.49	0.28	0.56	0.47	0.180	0.50	0.47	0.27	0.54	0.42	0.24	0.48	0.41	0.155	0.43	0.40	0.31	0.51
120	0.36	0.39	0.27	0.47	0.37	0.175	0.41	0.37	0.26	0.45	0.33	0.23	0.41	0.32	0.150	0.36	0.32	0.30	0.44
150	0.29	0.31	0.27	0.41	0.30	0.175	0.34	0.29	0.26	0.39	0.27	0.23	0.36	0.26	0.150	0.30	0.26	0.30	0.40
185	0.23	0.25	0.27	0.37	0.24	0.170	0.29	0.24	0.26	0.35	0.22	0.23	0.32	0.21	0.145	0.26	0.21	0.30	0.36
240	0.180	0.195	0.26	0.33	0.185	0.165	0.25	0.185	0.25	0.31	0.17	0.23	0.29	0.160	0.145	0.22	0.160	0.29	0.34
300	0.145	0.160	0.26	0.31	0.150	0.165	0.22	0.150	0.25	0.29	0.14	0.23	0.27	0.130	0.140	0.190	0.130	0.29	0.32
400	0.105	0.130	0.26	0.29	0.120	0.160	0.20	0.115	0.25	0.27	0.12	0.22	0.25	0.105	0.140	0.175	0.100	0.29	0.31
500	0.086	0.110	0.26	0.28	0.098	0.155	0.185	0.093	0.24	0.26	0.10	0.22	0.25	0.086	0.135	0.160	0.081	0.29	0.30
630	0.068	0.094	0.25	0.27	0.081	0.155	0.175	0.076	0.24	0.25	0.08	0.22	0.24	0.072	0.135	0.150	0.066	0.28	0.29

NOTE : * Spacing larger than one cable diameter will result in larger voltage drop.
For cables having conductors greater than 16mm² the voltage drop is given in three values ; the impedance values given as (mV/A/m)z, together with the resistive component (mV/A/m)r and the reative component (mV/A/m)x. For more details please refer to BS 7671 : 1992, Requirements for Electrical Installations, IEE Wiring Regulations, 16th Edition.

Voltage Drop for Multicore PVC – Insulated Cable to MS136/BS6004

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		
mm²	mV/A/m	mV/A/m			mV/A/m		
1	44		44			44	
1.5	29		29			29	
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	
		r	**x**	**z**	r	**x**	**z**
25	1.75	1.75	0.170	1.75	1.50	0.145	1.50
35	1.25	1.25	1.65	1.25	1.10	0.145	1.10

Note : For information of r,x,z, please refer to footnote of voltage drop for single – core cables.