

D1 = Diameter over bedding sheath d = Diameter of armour wire D2 = Diameter over outer sheath

Electrical and physical properties of 3 and 4 core PVC insulated PVC bedded *SWA PVC sheathed 600/1000 V cables with aluminium or copper conductors and manufactured to SANS 1507-3.

* Where the armouring of cable is used as the earth continuity path, it may be necessary to replace some of the steel wires with tinned copper wires (ECC) or to use a supplementary earth continuity conductor.

Technical Data

Copper Conductors

Cable Size (mm)	Electrical Properties						Physical Properties							
	Current Rating			Impedance (Ω /km)	Volt Drop (mV/A/m)	1 Sec Short Circuit Rating (kA)	Nominal Diameters						Approx. Mass	
	Ground (A)	Ducts (A)	Air (A)				D1		d		D2		3c (kg/km)	4c (kg/km)
				3c (mm)	4c (mm)	3c (mm)	4c (mm)	3c (mm)	4c (mm)					
1,5	24	20	19	14,48	25,080	0,17	8,51	9,33	1,25	1,25	14,13	14,95	448	501
2,5	32	26	26	8,87	15,363	0,28	9,61	10,56	1,25	1,25	15,23	16,18	522	597
4	42	34	35	5,52	9,561	0,46	11,40	12,57	1,25	1,25	17,02	18,39	667	762
6	53	43	45	3,69	6,391	0,69	12,58	13,90	1,25	1,25	18,4	19,72	790	910
10	70	58	62	2,19	3,793	1,15	14,59	16,14	1,25	1,25	20,41	21,96	996	1169
16	91	75	83	1,38	2,390	1,84	16,55	19,18	1,25	1,25	22,37	25,92	1295	1768
25	119	96	110	0,8749	1,515	2,87	19,46	21,34	1,60	1,60	26,46	28,34	1838	2196
35	143	116	135	0,6335	1,097	4,02	20,89	23,97	1,60	1,60	27,89	31,17	2215	2732
50	169	138	163	0,4718	0,817	5,75	24,26	28,14	1,60	1,60	31,46	36,54	2871	3893
70	210	171	207	0,3325	0,576	8,05	27,07	31,29	2,00	2,00	35,47	40,09	3617	4837
95	251	205	251	0,2460	0,427	10,92	31,19	35,82	2,00	2,00	39,99	44,62	4901	6115
120	285	234	290	0,2012	0,348	13,80	33,38	38,10	2,00	2,00	42,18	47,40	5720	7269
150	320	263	332	0,1698	0,294	17,25	36,68	42,05	2,00	2,00	45,98	52,65	6908	9250
185	361	298	378	0,1445	0,250	21,27	40,82	46,75	2,50	2,50	51,12	57,45	8690	11039
240	416	344	445	0,1220	0,211	27,60	46,43	53,06	2,50	2,50	57,13	64,16	10767	13726
300	465	385	510	0,1090	0,189	34,50	51,10	58,53	2,50	2,50	62,20	70,13	12950	16544

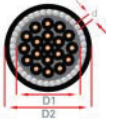
Aluminium Conductors

Cable Size (mm)	Electrical Properties						Physical Properties							
	Current Rating			Impedance (Ω /km)	Volt Drop (mV/A/m)	1 Sec Short Circuit Rating (kA)	Nominal Diameters						Approx. Mass	
	Ground (A)	Ducts (A)	Air (A)				D1		d		D2		3c (kg/km)	4c (kg/km)
				3c (mm)	4c (mm)	3c (mm)	4c (mm)	3c (mm)	4c (mm)					
25	90	73	80	1,4446	2,502	1,80	17,76	20,65	1,60	1,60	24,76	27,65	1301	1554
35	108	87	99	1,0465	1,813	2,52	19,33	21,93	1,60	1,60	26,33	29,13	1477	1757
50	129	104	119	0,7749	1,342	3,61	21,87	25,05	1,60	1,60	29,07	32,25	1782	2150
70	158	130	151	0,5388	0,9333	5,05	24,76	29,27	1,60	1,60	31,96	37,67	2132	2930
95	192	157	186	0,3934	0,681	6,86	28,68	33,73	2,00	2,00	37,08	42,53	2908	3647
120	219	179	216	0,3148	0,545	8,66	31,09	35,44	2,00	2,00	39,89	44,24	3328	4023
150	245	201	250	0,2607	0,452	10,83	33,99	39,39	2,00	2,50	42,79	49,69	3837	5276
185	278	229	287	0,2133	0,369	13,35	37,80	44,51	2,00	2,50	47,10	54,81	4557	6231
240	324	268	342	0,1708	0,296	17,32	42,60	50,04	2,50	2,50	52,90	61,14	5977	7550

Under short circuit conditions a maximum conductor temperature of 160 C° is allowed for a maximum of 1 second

PVC Current Ratings are Based on the following Environmental Parameters

Maximum Sustained Conductor Temperature	Ground Temperature	Ambient Air Temperature (Free Air Shaded)	Ground Thermal Resistivity	Depth of Laying to top of Cable or Duct
70°C	25°C	30°C	1,2 K.m/W	500mm



D1 = Diameter over bedding sheath d = Diameter of armour wire D2 = Diameter over outer sheath

Electrical and physical properties of Multicore PVC Insulated PVC Bedded *SWA PVC sheathed 600/1000 V cables with stranded copper conductors manufactured to SANS 1507-3.

* Where the armouring of cable is used as the earth continuity path, it may be necessary to replace some of the steel wires with tinned copper wires (ECC) or to use a supplementary earth continuity conductor.

Technical Data

1.5mm Multicore Cables

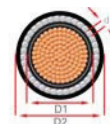
No of Cores	Electrical Properties					Physical Properties			
	Current Rating			Impedance	Capacitance	Nominal Diameters			Mass
	Ground	Ducts	Air			(mm)			
(A)	(A)	(A)	(Ω /km)	(nF/lm)	D1	d	D2	(kg/km)	
2	29	23	22	14,4782	422	8,1	1,25	13,8	422
3	24	20	19	14,4782	422	8,6	1,25	14,3	456
4	24	20	19	14,4782	422	9,5	1,25	15,1	510
5	21	17	17	14,4782	422	10,3	1,25	15,8	577
6	20	16	16	14,4782	422	11,4	1,25	17,0	613
7	18	15	15	14,4782	422	11,4	1,25	17,0	629
8	17	14	14	14,4782	422	12,6	1,25	18,2	710
10	16	13	13	14,4782	413	14,8	1,25	20,7	837
12	15	12	12	14,4782	413	15,3	1,25	21,2	901
14	14	11	12	14,4782	413	16,2	1,60	22,0	980
19	12	10	11	14,4782	379	19,2	1,60	25,9	1404
24	11	9	10	14,4782	379	22,4	1,60	29,3	1687
27	11	8	10	14,4782	379	22,9	1,60	29,8	1783
30	10	8	9	14,4782	379	23,7	1,60	30,7	1867
37	9	7	9	14,4782	379	25,9	1,60	32,8	2153

2.5mm Multicore Cables

No of Cores	Electrical Properties					Physical Properties			
	Current Rating			Impedance	Capacitance	Nominal Diameters			Mass
	Ground	Ducts	Air			(mm)			
(A)	(A)	(A)	(Ω /km)	(nF/lm)	D1	d	D2	(kg/km)	
2	37	31	31	8,8668	487	9,0	1,25	14,7	475
3	32	26	26	8,8668	487	9,6	1,25	15,2	524
4	32	26	26	8,8668	487	10,6	1,25	16,2	606
5	27	22	22	8,8668	487	11,5	1,25	17	690
6	25	20	21	8,8668	487	12,7	1,25	18,5	737
7	24	19	20	8,8668	487	12,7	1,25	18,5	756
8	22	18	19	8,8668	487	13,0	1,25	18,9	806
10	21	17	18	8,8668	477	16,6	1,60	22,5	1000
12	19	15	17	8,8668	434	18,1	1,60	24,8	1306
14	18	14	16	8,8668	434	19,0	1,60	25,7	1421
19	16	13	14	8,8668	434	21,4	1,60	28,1	1695
24	14	12	13	8,8668	434	25,1	1,60	32,0	2053
27	14	11	13	8,8668	434	25,7	1,60	32,6	2181
30	13	10	12	8,8668	434	26,6	2,00	34,8	2594
37	12	10	11	8,8668	410	29,4	2,00	37,6	3011

PVC Current Ratings are Based on the following Environmental Parameters

Maximum Sustained Conductor Temperature	Ground Temperature	Ambient Air Temperature (Free Air Shaded)	Ground Thermal Resistivity	Depth of Laying to top of Cable or Duct
70°C	25°C	30°C	1,2 K.m/W	500mm



D1 = Diameter over insulation d = Diameter of armour wire D2 = Diameter over outer sheath

Electrical and physical properties of single core stranded copper conductors, PVC Insulated, PVC bedded, AWA PVC's heated 600 / 1000 V cables manufactured to SANS 1507-3

Technical Data

4mm Multicore Cables

No of Cores	Electrical Properties					Physical Properties			
	Current Rating			Impedance	Capacitance	Nominal Diameters			Mass
	Ground	Ducts	Air			(mm)			
(A)	(A)	(A)	(Ω/km)	(nF/lm)	D1	d	D2	(kg/km)	
2	50	41	41	5,5171	487	10,2	1,25	16,3	597
3	42	34	35	5,5171	487	10,9	1,25	17,0	669
4	42	34	35	5,5171	487	12,3	1,25	18,4	764
5	35	28	29	5,5171	487	13,6	1,25	19,7	884
6	33	27	28	5,5171	487	14,9	1,25	21,0	961
7	31	25	26	5,5171	487	14,9	1,25	21,0	986
8	29	24	25	5,5171	487	18,1	1,25	24,2	1079
10	27	22	24	5,5171	477	20,2	1,60	27,0	1251
12	25	20	22	5,5171	434	20,4	1,60	28,2	1211
14	23	19	21	5,5171	434	22,8	1,60	29,6	1885
19	21	16	19	5,5171	434	24,9	2,00	32,5	2282

6mm Multicore Cables

No of Cores	Electrical Properties					Physical Properties			
	Current Rating			Impedance	Capacitance	Nominal Diameters			Mass
	Ground	Ducts	Air			(mm)			
(A)	(A)	(A)	(Ω/km)	(nF/lm)	D1	d	D2	(kg/km)	
2	62	51	53	3,6868	556	11,8	1,25	17,4	684
3	53	43	45	3,6868	556	12,6	1,25	18,4	791
4	53	43	45	3,6868	556	13,9	1,25	19,7	911

Sustained Current Rating Factors for Non-Standard Conditions for both PVDAC and Multicore LV PVC Cables

Maximum Conductor Temperature (°C)	Ground Temperature (°C)				Maximum Conductor Temperature (°C)	Air Temperature (°C)			
	25	30	35	40		30	35	40	45
70	1,00	0,94	0,88	0,82	70	1,00	0,94	0,87	0,79

Depth of Laying (mm)	Direct in Ground
500	1,00
800	0,96
1000	0,94
1250	0,92
1500	0,90

Current Rating Factors for Grouping of Multicore Cables Installed Horizontally in Air

No of Cables in group	Direct in ground				
	Axial Spacing (mm)				
	Touching	150	300	450	600
2	0,81	0,87	0,91	0,93	0,94
3	0,70	0,78	0,84	0,87	0,90
4	0,63	0,74	0,81	0,86	0,89
5	0,59	0,70	0,78	0,83	0,87
6	0,55	0,67	0,76	0,82	0,86

No of Cables	2	3	5	6	9
Condition	Derating Factor				
Cables touching	0,86	0,81	0,75	0,74	0,72
Clearance D* between cables	0,91	0,89	0,87	0,87	0,85

* Note: - D is overall diameter of one cable

Technical Data

Rated Area	Approximate Diameters			Approx. Mass	Impedance	Cables in Trefoil Formation			
						Current Rating			Voltage Drop per A mp per metre
						Ground	Ducts	Air	
(mm)	D1	d	D2	(kg/km)	(Ω km)	(A)	(A)	(A)	(mV)
25	8,35	1,25	15,45	563	0,879	125	112	121	1,52
35	9,40	1,25	16,50	700	0,639	156	140	147	1,11
50	10,95	1,25	18,05	846	0,479	183	165	177	0,83
70	12,59	1,25	19,89	1128	0,339	223	200	221	0,59
95	14,74	1,25	22,04	1504	0,257	266	238	273	0,45
120	16,16	1,60	25,16	1784	0,213	301	269	314	0,37
150	17,99	1,60	26,99	2102	0,182	336	299	357	0,32
185	20,10	1,60	29,30	2547	0,157	370	329	401	0,27
240	23,11	1,60	32,31	3114	0,134	410	363	481	0,23
300	26,25	2,0	37,05	4124	0,123	476	420	546	0,21
400	29,50	2,0	41,50	5133	0,118	529	465	622	0,19
500	32,51	2,0	44,51	6203	0,106	581	509	695	0,18
630	38,75	2,5	51,75	8218	0,099	623	541	779	0,17

PVC Current Ratings are Based on the following Environmental Parameters

Maximum Sustained Conductor Temperature	Ground Temperature	Ambient Air Temperature	Ground Thermal Resistivity	Depth of Laying to top of Cable
70°C	25°C	30°C	1,2 K.m/W	500mm

WIRE GAUGE SIZE AND AMPERAGE FOR FUSE CIRCUIT BREAKER FOR WATTS

Element Wattage	Phases	Circute Breaker Size (Amp)				Copper Wire Size in Gauge			
		208V	240V	277V	480V	208V	240V	277V	480V
3kW	1	20 A	20 A	15 A	15 A	12	12	14	14
	3	20 A	20 A	-	15 A	12	12	-	14
3.8kW	1	25 A	20 A	-	-	10	10	-	-
	-	-	-	-	-	-	-	-	-
4kW	1	25 A	25 A	20 A	15 A	10	10	12	14
	3	25 A	25 A	-	15 A	10	10	-	14
4.5kW	1	30 A	25 A	25 A	15 A	10	10	10	14
	3	30 A	25A	-	15 A	10	10	-	14
5kW	1	30 A	30 A	25 A	15 A	10	10	10	14
	3	30 A	30 A	-	15A	10	10	-	14
5.5kW	1	35 A	30 A	25 A	15 A	8	10	10	14
	3	35 A	30 A	-	15 A	8	10	-	14
6kW	1	40 A	35 A	30 A	20 A	8	8	10	12
	3	35 A	30 A	-	15 A	8	10	-	14
8kW	1	50 A	45 A	40 A	25 A	8	8	8	10
	3	45 A	40 A	-	20 A	8	8	-	12
9kW	1	-	50 A	45 A	25 A	-	8	8	10
	3	50 A	45 A	-	25 A	8	8	-	10
10kW	1	-	-	50 A	30 A	-	-	8	10
	3	-	50 A	-	25 A	-	8	-	10
11kW	1	--	50 A	30 A	-	-	8	10	
	3	-	50 A	-	25 A	-	8	-	10
12kW	1	-	-	-	35 A	-	-	-	8
	3	-	-	-	30 A	-	-	-	10