

CURRENT RATING (ac) FOR THREE SINGLE CORE 650/1100 VOLTS UN ARMoured / NON-MAGNETIC ARMoured CABLES ACCORDING TO IS:1554 (PART I) 1988

SR. NO.	NOMINAL CROSS SECTIONAL	LAID IN GROUND		LAID IN DUCT		LAID IN AIR	
		COPPER (Amps)	ALUMINIUM (Amps)	COPPER (Amps)	ALUMINIUM (Amps)	COPPER (Amps)	ALUMINIUM (Amps)
1	1.5	22	17	21	17	20	15
2	2.5	30	24	29	24	27	21
3	4	39	31	38	30	35	27
4	6	49	39	48	37	44	35
5	10	65	51	64	51	60	47
6	16	85	66	83	65	82	64
7	25	110	86	110	84	110	84
8	35	130	100	125	100	130	105
9	50	155	120	150	115	165	130
10	70	190	140	175	135	205	155
11	95	220	175	200	155	245	190
12	120	250	195	220	170	280	220
13	150	280	220	245	190	320	250
14	185	305	240	260	210	370	290
15	240	345	270	285	225	425	335
16	300	375	295	310	245	475	380
17	400	400	325	335	275	550	435
18	500	425	345	355	295	590	480
19	630	470	390	375	320	660	550
20	800	540	440	405	345	765	640
21	1000	600	490	435	370	860	720

**CURRENT RATING (ac) FOR TWIN CORE 650/1100 VOLTS UN ARMoured / ARMoured CABLES
ACCORDING TO IS:1554 (PART I) 1988**

SR. NO.	NOMINAL CROSS SECTIONAL	LAID IN GROUND		LAID IN DUCT		LAID IN AIR	
		COPPER (Amps)	ALUMINIUM (Amps)	COPPER (Amps)	ALUMINIUM (Amps)	COPPER (Amps)	ALUMINIUM (Amps)
1	1.5	23	18	20	16	20	16
2	2.5	32	25	27	21	27	21
3	4	41	32	35	27	35	27
4	6	50	40	44	34	45	35
5	10	70	55	58	45	60	47
6	16	90	70	75	58	78	59
7	25	115	90	97	76	105	78
8	35	140	110	120	92	125	99
9	50	165	135	145	115	155	125
10	70	205	160	180	140	195	150
11	95	240	190	215	170	230	185
12	120	275	210	235	190	265	210
13	150	310	240	270	210	305	240
14	185	350	275	300	240	350	275
15	240	405	320	345	275	410	325
16	300	450	355	385	305	465	365
17	400	490	385	425	345	530	420

CURRENT RATING (ac) FOR ALUMINIUM CONDUCTOR TWIN, THREE, FOUR AND FIVE-CORE, HEAT RESISTANT PVC (85°C) INSULATED, 1100 VOLTS ARMoured OR UNARMoured POWER CABLES, CONFIRMING TO IS:1554 (PART I) 1988

SR. NO.	NOMINAL CROSS SECTIONAL AREA	TWIN CORE CABLES		THREE/FOUR OR FIVE	
		LAID IN GROUND (Amps)	LAID IN AIR (Amps)	LAID IN GROUND (Amps)	LAID IN AIR (Amps)
1	1.5	21	19	18	15
2	2.5	29	25	24	21
3	4	37	32	32	27
4	6	46	42	40	36
5	10	63	56	52	48
6	16	80	70	69	61
7	25	103	93	86	84
8	35	126	118	105	101
9	50	154	149	126	125
10	70	183	179	154	155
11	95	217	221	189	185
12	120	240	261	212	215
13	150	274	287	240	245
14	185	315	328	269	287
15	225	354	370	297	305
16	240	366	388	315	346
17	300	406	436	349	376
18	400	448	502	383	448
19	500	469	538	406	490
20	630	503	591	423	538

CURRENT RATING (AC) FOR COPPER CONDUCTOR, PVC (70°C) INSULATED, MULTI CORE 650/1100 VOLTS, ARMoured OR UNARMoured, CONTROL CABLES CONFIRMING TO IS: 1554 (PART-1) 1988																			
NOMINAL AREA IN SQ.MM	NO. OF CORES IN CABLE	2	3	4	5	6	7	10	12	14	16	19	24	27	30	37	44	52	61
CURRENT RATING IN AMPERE																			
1.5 sq.mm.	LAID IN GROUND (Amps.)	23	21	21	21	15	14	13	12	11	11	10	9	9	9	8	7	7	6
	LAID IN DUCT (Amps.)	20	17	17	17	13	13	11	10	10	9	9	8	8	7	7	6	6	6
	LAID IN AIR (Amps.)	20	17	17	17	13	13	11	10	10	9	9	8	8	7	7	6	6	6
2.5 sq.mm.	LAID IN GROUND (Amps.)	32	27	27	27	21	20	18	17	16	15	14	13	12	12	11	10	10	9
	LAID IN DUCT (Amps.)	27	24	24	24	18	17	15	14	13	13	12	11	10	10	9	9	8	8
	LAID IN AIR (Amps.)	27	24	24	24	18	17	15	14	13	13	12	11	10	10	9	9	8	8

CURRENT RATING (AC) FOR COPPER CONDUCTOR, HEAT RESISTANT PVC (85°C) INSULATED, MULTI CORE 650/1100 VOLTS, ARMoured OR UNARMoured, CONTROL CABLES CONFIRMING TO IS: 1554																			
NOMINAL AREA IN SQ.MM	NO. OF CORES IN CABLE	2	3	4	5	6	7	10	12	14	16	19	24	27	30	37	44	52	61
CURRENT RATING IN AMPERE																			
1.5 sq.mm.	LAID IN GROUND (Amps.)	26	24	24	24	17	16	15	14	13	13	12	10	10	10	9	8	8	7
	LAID IN DUCT (Amps.)	23	20	20	20	15	15	13	12	12	10	10	9	9	8	8	7	7	7
	LAID IN AIR (Amps.)	23	20	20	20	15	15	13	12	12	11	11	9	9	8	8	7	7	7
2.5 sq.mm.	LAID IN GROUND (Amps.)	36	31	31	31	24	23	20	19	19	17	16	15	14	14	13	12	11	10
	LAID IN DUCT (Amps.)	30	28	28	28	21	20	18	17	17	15	14	13	12	12	10	10	9	9
	LAID IN AIR (Amps.)	30	28	28	28	21	20	18	17	17	16	15	13	12	12	11	10	9	9

SHORT CIRCUIT RATING FOR PVC INSULATED CABLES							
Sr. No.	NOMINAL CROSS SECTIONAL AREA IN SQ.MM.	SHORT CIRCUIT CURRENT RATING FOR 1 SEC. IN K Amps		Sr. No.	NOMINAL CROSS SECTIONAL AREA IN SQ.MM.	SHORT CIRCUIT CURRENT RATING FOR 1 SEC. IN K Amps	
		COPPER	ALUMINIUM			COPPER	ALUMINIUM
1	1.5	0.173	0.114	11	95.0	10.900	7.220
2	2.5	0.288	0.190	12	120.0	13.800	7.120
3	4	0.460	0.304	13	150	17.300	11.400
4	6	0.690	0.456	14	185	21.300	14.000
5	10	1.150	0.760	15	240	27.600	18.240
6	16	1.840	1.220	16	300	34.500	22.800
7	25	2.880	1.900	17	400	46.000	30.400
8	35	4.030	2.660	18	500	57.500	38.000
9	50	5.750	3.800	19	630	71.900	47.500
10	70	8.050	5.320	20	800	92.000	60.800
				21	1000	115.000	76.00

RATING FACTORS FOR VARIATION IN GROUND TEMPERATURE (FOR CABLES LAID DIRECT IN THE GROUND)

GROUND TEMP °C	15	20	25	30	35	40	45
RATING FACTOR	1.17	1.12	1.06	1.00	0.94	0.87	0.79

RATING FACTORS FOR VARIATION IN AMBIENT AIR TEMPERATURE

AIR TEMP °C	20	25	30	35	40	45	50
RATING FACTOR	1.32	1.25	1.16	1.09	1.00	0.91	0.81

RATING FACTORS FOR VARIATION IN GROUND TEMPERATURE (FOR CABLES LAID DIRECT IN THE DUCT)

GROUND TEMP °C	15	20	25	30	35	40	45	50
RATING FACTOR	1.17	1.12	1.06	1.00	0.94	0.87	0.79	0.71

Thermally admissible short circuit current ratings of PVC insulated cables with Aluminium and Copper conductor may be calculated as follows, based on full load conductor temperature

Conductor Temperature prior to short circuit

= 70°C for GP PVC Cables

= 85°C for GP PVC Cables

Maximum permissible conductor temperature during short circuit = 160°C

Duration of short circuit = 1 second

The short circuit current may be calculated from the following formula $I_{sh} = K \cdot A/t$

Where

I_{sh} = Short Circuit current in kilo Amps during the time t .

K = Constant

= 0.076 for GP PVC insulated cables with Aluminium conductor

= 0.115 for GP PVC insulated cables with Copper conductor

= 0.069 for HR PVC insulated cables with Aluminium conductor

= 0.104 for HR PVC insulated cables with Copper conductor

A = Cross sectional area of conductor in sq.mm.

t = Duration of short circuit

*** "GP PVC" means General Purpose PVC insulation as per IS : 5831/1984

"HR PVC" means Heat Resistant PVC insulation as per IS : 5831/1984

Rating factor for depth of laying for 1100 volts, twin and multicore cables in single - way ducts	
75 Cms	1
90 Cms	0.99
105 Cms	0.98
120 Cms	0.97
150 Cms	0.96
180 Cms	0.95
270 Cms	0.92

Rating factor for depth of laying for 1100 volts, laid direct in ground			
Depth of laying	Size		
	Up to 25 sq.mm.	above 25 to 300 sq.mm	above 300 sq.mm.
75 Cms	1.00	1.00	1.00
90 Cms	0.99	0.98	0.97
105 Cms	0.98	0.97	0.96
120 Cms	0.97	0.96	0.95
150 Cms	0.96	0.94	0.92
180 Cms or above	0.95	0.93	0.91

Rating factors for groups of twin and multicore cables laid direct in ground in horizontal formation

No. of Cables	Rating factor for axial spacing				
	Touching	15 Cm	30 Cm	45 Cm	60 Cm
2 Cables	0.79	0.82	0.87	0.90	0.91
3 Cables	0.69	0.75	0.79	0.83	0.86
4 Cables	0.62	0.69	0.74	0.79	0.82
6 Cables	0.54	0.61	0.69	0.75	0.78
8 Cables	0.50	0.57	0.66	0.72	0.76

Group[rating factors for circuits of three single core cable in trefoil and touching horizontal formation laid direct in ground

No. of Cables	Rating factor for axial spacing				
	Touching	15 Cm	30 Cm	45 Cm	60 Cm
2 Cables	0.78	0.81	0.85	0.88	0.90
3 Cables	0.68	0.71	0.77	0.81	0.83
4 Cables	0.61	0.65	0.72	0.76	0.79
6 Cables	0.53	0.58	0.66	0.71	0.76
8 Cables	0.48	0.54	0.62	0.67	0.72

Rating factors for groups of twin and multicore cables laid direct in

No. of Cables	Rating factor for axial spacing				
	Touching	15 Cm	30 Cm	45 Cm	60 Cm
2 Cables	0.60	0.67	0.73	0.76	0.78
3 Cables	0.51	0.57	0.63	0.67	0.69
4 Cables	0.45	0.51	0.57	0.59	0.61
6 Cables	0.44	0.49	0.53	0.57	0.58
8 Cables	0.40	0.45	0.49	0.52	0.54

Group[rating factors for circuits of two single core cables. Side

No. of Cables	Rating factor for axial spacing				
	Touching	15 Cm	30 Cm	45 Cm	60 Cm
2 Cables	0.79	0.86	0.91	0.93	0.95
3 Cables	0.69	0.78	0.84	0.88	0.91
4 Cables	0.64	0.73	0.81	0.86	0.88
6 Cables	0.56	0.67	0.77	0.83	0.87
8 Cables	0.51	0.65	0.75	0.82	0.86