TABLE 4F2A 90°C and 180°C thermosetting insulated flexible cables with sheath, non-armoured (Copper Conductors)

CURRENT-CARRYING CAPACITY (amperes):

Ambient temperature : 30°C
Conductor operating temperature:90°C

Conductor cross-sectional area	d.c. or single-phase a.c. (1 two-core cable, with or without protective conductor)	Three-phase a.c. (1 three-core, four-core or five-core cable)	single-phase a.c. or d.c. 2 single-core cables touching
1	2	3	4
(mm²)	(A)	(A)	(A)
4	42	37	-
6	55	49	-
10	76	66	-
16	103	89	-
25	136	119	-
35	-	146	200
50	-	177	250
70	-	225	310
95	-	273	369
120	-	316	432
150	-	363	497
185	-	414	564
240	-	487	673
300	-	560	773
400	-	-	924
500	-	-	1062
630	-	-	1242

NOTES:

1. The current ratings tabulated are for cables in free air but may also be used for cables resting on a surface. If the cable is to be wound on a drum on load the ratings should be reduced in accordance with NOTE 2 below and for cables which may be covered, NOTE 3 below
2. Flexible cables wound on reeling drums

The current ratings of cables used on reeling drums are to be reduced by the following factors:

a) Radial type drum
ventilated: 85%
unventilated: 75%

b) Ventilated cylindrical type drum
1 layer of cable: 85%
2 layers of cable: 65%
3 layers of cable
4 layers of cable: 35%

A radial type drum is one where spiral layers of cable are accommodated between closely spaced flanges; if fitted with solid flanges the ratings given above should be reduced and the drum is described as non-ventilated. If the flanges have suitable apertures the drum is described as ventilated.

A ventilated cylindrical cable drum is one where layers of cable are accommodated between widely spaced flanges and the drum and end flanges have suitable ventilating apertures

3. Where cable may be covered over or coiled up whilst on load, or the air movement over the cable restricted, the current rating should be reduced.

It is not possible to specify the amount of reduction but the table of rating facotrs for reeling drums can be used as a guide

4. For 180°C cables, the rating factors for ambient temperature allow a conductor operating temperature up to 150°C. Consult the cable manufacturer for further information
5. The temperature limits given in Table 52.1 should be taken into account when it is intedned top operate these cables at manimum permissible temperature
6. Where a conductor operates at a temperature exceeding 70°C it must be ascertained that the equipment connected to the conductor is suitable for the conductor operating temp (see Reg 512.1.2)

RATING FACTOR FOR AMBIENT TEMPERATURE

90°C thermosetting insulated cables:

Ambient Temp (°C)	35	40	45	50	55	60	65	70	75	80	85
Rating Factor	0.95	0.9	0.86	0.82	0.76	0.70	0.64	0.57	0.50	0.40	0.28

180°C thermosetting insulated cables:

Ambient Temp (°C)	35 to 90	95	100	105	110	115	120	125	130	135	140	145
Rating Factor	1.0	0.96	0.91	0.86	0.81	0.76	0.70	0.64	0.57	0.50	0.40	0.28

TABLE 4F2B

VOLTAGE DROP (per ampere per metre)

Conductor operating temperature:90°C

Conductor cross-sectional area	1 Two-core or 2 single-core cables, d.c.	Two-core cable, single-phase a.c.			1 three-core, four-core or five-core cable, three-phase a.c.			2 single core cables touching single-phase a.c.*		
1	2	3			4			5		
(mm²)	(mV/A/m)	(mV/A/m)			(mV/A/m)			(mV/A/m)		
4	13.2	13.2			11.1			-		
6	8.5	8.5			7.4			-		
10	5.1	5.1			4.4			-		
16	3.2	3.2			2.7			-		
		r	x	z	r	x	z	r	x	z
25	2.03	2.03	0.175	2.04	1.73	0.15	1.73	-	-	-
35	1.42	-	-	-	1.22	0.15	1.23	1.44	0.21	1.46
50	1.00	-	-	-	0.91	0.145	0.93	1.00	0.21	1.02
70	0.71	-	-	-	0.62	0.140	0.64	0.71	0.20	0.73
95	0.54	-	-	-	0.47	0.135	0.49	0.54	0.195	0.57
						-			-	
120	0.42	-	-	-	0.37	0.135	0.39	0.42	0.190	0.46
150	0.34	-	-	-	0.29	0.130	0.32	0.34	0.190	0.39
185	0.27	-	-	-	0.24	0.130	0.27	0.27	0.190	0.33
240	0.21	-	-	-	0.188	0.130	0.23	0.121	0.185	0.28
300	0.167	-	-	-	0.147	0.125	0.195	0.173	0.180	0.25
400	0.127	-	-	-	-	-	-	0.132	0.175	0.22
500	0.100	-	-	-	-	-	-	0.107	0.170	0.20
630	0.074	-	-	-	-	-	-	0.085	0.170	0.190

NOTES 1. The voltage drop figures given above are based on a conductor operating temperature of 90°C and are therefore not accurate when the operating temp is in excess of 90°C. In the case of the 180°C cables with a conductor temperature of 150°C the above resistive values should be increased by a factor of 1.2
2. * A larger voltage drop will result if the cables are spaced

battindustrial.sales@batt.co.uk

SOUTH EAST Erith (Head Office) Tel: 01322 441165 Fax: 01322 440492
SOUTH WEST Bristol Tel: 0117 966 6333 Fax: 0117 953 3602
WALES Cardiff Tel: 02920 450044 Fax: 02920 464724
MIDLANDS Birmingham Tel: 0121 321 1745 Fax: 0121 355 5320
EASTERN Peterborough Tel: 01733 558485 Fax: 01733 562015
NORTH Leeds Tel: 0113 2533565 Fax: 0113 253 6373
NORTH WEST Manchester Tel: 01204 793111 Fax: 01204 797977
NORTH EAST Teesside Tel: 01642 678633 Fax: 01642 674487