

TABLE 4F2A

90°C and 180°C thermosetting insulated flexible cables with sheath, non-armoured (COPPER CONDUCTORS)

Reproduced from *BS7671:2018 Wiring Regulations*

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% | b) Ventilated cylindrical type drum 1 layer of cable: 85% |
| unventilated: 75% | 2 layers of cable: 65% |
| | 3 layers of cable: 45% |
| | 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 factors for reeling drums can be used as a guide.

4. For 180°C cables, the rating factors for ambient temperatures allow a conductor operating temperature up to 150°C. Consult the cable manufacturer for further information.

5. Where it is intended to connect the cables in this table to equipment or accessories designed to operate at a temperature lower than the maximum operating temperature of the cable, the cables should be rated at the maximum operating temperature of the equipment or accessory.

6. Where it is intended to group a cable in this table with other cables, the cable should be rated at the lowest of the maximum operating temperatures of any of the cables in the group (see Regulation 512.1.5)

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

Conductor cross-sectional area	Single-phase AC or DC	Three-phase AC	Single-phase AC or DC
	1 two-core cable with or without protective conductor	1 three-core, four-core or five-core cable	2 single-core cables, touching
1	2	3	4
mm ²	(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

RATING FACTOR FOR AMBIENT TEMPERATURE

90°C thermosetting insulated cables:

Ambient Temperature	95°C	100°C	105°C	110°C	115°C	120°C	125°C	130°C	135°C	140°C	145°C
Rating Factor	0.95	0.91	0.86	0.82	0.76	0.70	0.64	0.57	0.50	0.40	0.28

180°C thermosetting insulated cables:

Ambient Temperature	35 to 90°C	95°C	100°C	105°C	110°C	115°C	120°C	125°C	130°C	135°C	140°C	145°C
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

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Conductor cross-sectional area	Two-core cable DC	Two-core cable, single-phase AC			1 three-core, four-core or five-core cable, three-phase AC			2 single-core cables, touching		
		Single-phase AC*			Single-phase AC*			Single-phase AC*		
1	2	3			4			6		
(mm ²)	(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	1.80	1.80	0.175	1.85	1.73	0.150	1.73	-	-	-
35	-	-	-	-	1.22	0.150	1.23	1.44	0.21	1.46
50	-	-	-	-	0.91	0.145	0.93	1.00	0.21	1.02
70	-	-	-	-	0.62	0.140	0.64	0.71	0.20	0.73
95	-	-	-	-	0.47	0.135	0.49	0.54	0.195	0.57
120	-	-	-	-	0.37	0.135	0.39	0.42	0.190	0.46
150	-	-	-	-	0.29	0.130	0.32	0.34	0.190	0.39
185	-	-	-	-	0.24	0.130	0.27	0.27	0.190	0.33
240	-	-	-	-	0.188	0.130	0.231	0.21	0.185	0.28
300	-	-	-	-	0.147	0.125	0.195	0.173	0.180	0.25
400	-	-	-	-	-	-	-	0.132	0.175	0.22
500	-	-	-	-	-	-	-	0.107	0.170	0.20
630	-	-	-	-	-	-	-	0.085	0.170	0.190

Note: *A larger voltage drop will result if the cables are spaced.