

Single-Core Cross-Linked Polyolefin Insulated Cable



Specification

- In accordance with rail specification TDE/76/P/16
- **Conductor:** Class 5 tinned copper conductors to BS EN 60228
- **Insulation:** Grey cross-linked polyolefin insulation*
- **Flame Retardant** to BS EN 60332-3-22 (NMV 7) (IEC 60332-3-22 Category A)
- **Voltage Rating:** 1900/3300 V
- **Temperature Rating:** 90°C maximum conductor operating temperature (per TDE/76/P/16) May also be used at conductor temperatures up to and including 125°C
- Not recommended to be handled or installed at temperatures below 5°C

Application

Designed for traction and rolling stock these single-core cables are suitable for fixed installations within vehicles, jumper connections between vehicles and between motor and underframe. These cables are also designed for use in connections to coil windings, wiring of motor vehicles, control panels and switchgear and may also be used in high temperature zones.

*The insulation material is cross-linked by an irradiation process and displays the following characteristics:

Minimum oxygen index: 29%.

Maximum HCL emission @ 800°C: 5%.

When using these cables at or near 125°C conductor operating temperature care should be exercised to ensure that any materials that come into contact with the cables are not adversely affected.

Construction

All cables employ flexible conductors with flame retardant cross-linked polyolefin insulation, which combines outstanding oil-resistance with superior thermal, electrical and physical properties.

Single-Core Cross-Linked Polyolefin Insulated Cable

PADS Catalogue Number	Anixter Number	Conductor			Nominal Outer Diameter mm	Nominal Weight Diameter kg/km	Minimum Bending Radius Fixed Bend mm
		Number and Nominal Diameter of Strands #/mm	Nominal Conductor Area mm ²	Thickness of Insulation mm			
-	RAD-0005	16/0.2	0.50	0.80	2.59	14	16
-	RAD-0007	24/0.2	0.75	0.80	2.82	17	17
-	RAD-0010	32/0.2	1.0	0.80	2.92	19	18
6/110950	RAD-00116	37/0.2	1.16	0.80	3.00	20	18
-	RAD-0015	30/0.25	1.5	0.80	3.32	24	20
6/110960	RAD-0018	37/0.25	1.8	0.80	3.5	28	30
-	RAD-0025	50/0.25	2.5	0.80	3.76	35	30
6/110970	RAD-0026	37/0.3	2.6	0.80	3.90	37	30
-	RAD-0040	56/0.3	4.0	0.80	4.29	50	30
6/110980	RAD-0047	37/0.4	4.7	1.00	4.80	63	30
-	RAD-0060	84/0.3	6.0	1.20	5.67	80	40
6/110990	RAD-0077	61/0.4	7.7	1.20	6.00	99	40
6/111000	RAD-0100	80/0.4	10	1.20	7.00	124	50
6/111010	RAD-0160	126/0.4	16	1.20	8.10	184	50
6/111020	RAD-0250	196/0.4	25	1.60	10.30	287	70
6/111030	RAD-0350	276/0.4	35	1.60	11.70	398	80
6/111040	RAD-0500	396/0.4	50	1.70	13.70	566	90
6/111050	RAD-0700	360/0.5	70	1.80	16.00	777	100
6/111060	RAD-0950	475/0.5	95	2.00	18.50	1014	120
6/111070	RAD-1200	608/0.5	120	2.20	20.40	1289	130
6/111080	RAD-1500	756/0.5	150	2.30	22.60	1586	140
6/111090	RAD-1850	925/0.5	185	2.40	24.80	1921	150
6/111100	RAD-2400	1221/0.5	240	2.40	27.80	2502	170
6/111110	RAD-3000	1525/0.5	300	3.00	32.00	3186	200
6/111120	RAD-4000	2013/0.6	400	3.00	36.00	4267	220

PADS numbers referenced were originally known as BR (British Rail) catalogue numbers.

Single-Core Cross-Linked Polyolefin Insulated Cable — Technical Information

Nominal conductor area mm ²	1.5	2.5	4.0	6.0	10	16	25	35	50	70	95
Continuous current ratings A	35	47	63	81	112	150	199	246	306	379	458

Nominal conductor area mm ²	120	150	185	240	300	400
Continuous current ratings A	530	610	695	819	941	1127

Derating factors for ambient temperatures other than 40°C:

Ambient air temp °C	20	25	30	35	40	45	50	55	60	70	80
Rating factor	1.11	1.08	1.06	1.03	1.0	0.97	0.94	0.91	0.87	0.80	0.73

Ambient air temp °C	85	90	95	100
Rating factor	0.69	0.64	0.59	0.54

1. Current ratings are based upon one isolated cable in free air.
2. Ambient air temperature 40°C. Conductor temperature 125°C.

Derating factor for maximum conductor temperature other than 125°C ambient 40°C:

Max conductor temp °C	125	100	90	70
Derating factor	1.0	0.84	0.77	0.59

Reference should also be made to the IEE Wiring Regulations 17th Edition to ensure compliance.

Derating factors for variation in ambient temperatures:

Ambient air temp °C	25	30	35	40	50	55
Derating factor	1.03	1.00	0.97	0.95	0.89	0.86

Single-Core Cross-Linked Polyolefin Insulated Cable – Technical Information

Current ratings for 125°C rated wire based on IEE Wiring Regulations installation methods:

Nominal Conductor Area mm ²	Installation Method 3 ('Enclosed')		Installation Method 1 ('Clipped Direct')	
	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.
1.0	19	17	21	19
1.5	24	21	28	25
2.5	33	29	37	35
4.0	44	39	51	46
6.0	57	50	65	59
10	79	69	90	81
16	105	94	120	109
25	139	123	157	144
35	172	151	195	178
50	208	185	251	230
70	265	236	323	295
95	320	286	392	360
120	371	330	455	418
150	414	362	526	482
185	473	413	602	552
240	559	488	711	651
300	645	563	820	752
400	754	659	958	875

30°C ambient air temperature. 125°C conductor operating temperature.

VOLTAGE DROP

Nominal Conductor Area mm ²	Voltage Drop Per Ampere Per Metre		
	d.c. mV	Single Phase a.c. mV	3 Phase a.c. mV
1.0	51.0	51.0	44.0
1.5	35.0	35.0	31.0
2.5	21.0	21.0	18.0
4.0	13.0	13.0	12.0
6.0	8.7	8.7	7.5
10	5.0	5.0	4.3
16	3.2	3.2	2.7
25	2.0	2.03	1.8
35	1.4	1.45	1.3
50	1.0	1.01	0.88
70	0.71	0.73	0.63
95	0.54	0.56	0.49
120	0.42	0.45	0.39
150	0.34	0.38	0.33
185	0.28	0.32	0.28
240	0.21	0.26	0.23
300	0.17	0.23	0.20