

Fire Resistant Armoured Power Cable

600/1000V



Application

Armoured fire resistant cable for use in fixed wiring installations where it is necessary for the cable to retain circuit integrity in the event of a fire, e.g. emergency services, alarm systems, lighting, etc., and in situations where power must be maintained to allow controlled shutdown of equipment.

Specifications

- In accordance with BS7846.
- BASEC Approved.
- **Conductors:** Stranded Class 2 copper conductors to BS EN 60228.
- Mica/glass tape (S).
- **Insulation:** XLPE insulation type GP8 to BS7655.
- **Core Identification:**
 - 2 core - brown, blue
 - 3 core - brown, black, grey
 - 4 core - brown, black, grey, blue
 - 5 core + above - number printed
- **Inner Sheath:** LSF inner sheath Type LTS1 to BS7655.
- Mild galvanised steel wires to BSEN10257-1.
- **Outer Sheath:** Black LSF outer sheath Type LTS1 to BS7655.
- Fire resistant to IEC60331 and categories CWZ of BS6387 and BS5839 Clause 26.2.
- Flame retardant to BS EN 60332-3-24 & IEC60332-3-24 Cat. C as a minimum.
- Meets BS7622 and IEC 61034 smoke emission test and pH30 BS EN 50200.
- **Temperature Rating:** 90°C maximum conductor operating temperature.
- **Voltage Rating:** 600/1000V.

Fire Resistant Armoured Power Cable

600/1000V

Anixter Number	Number of Cores	Nominal Conductor Area mm ²	Insulation Thickness mm	Diameter Under Armour mm	Armour Wire Size mm	Nominal O/D mm	Approx Weight kg/km	Min Bending Radius (fixed bend) mm
Two Core								
BS7846-2C-0015	2	1.5*	0.6	8.6	0.9	13.0	313	90
BS7846-2C-0025	2	2.5*	0.7	9.9	0.9	14.5	384	90
BS7846-2C-0040	2	4.0*	0.7	10.9	0.9	15.5	434	100
BS7846-2C-0060	2	6.0*	0.7	11.9	0.9	16.5	505	110
BS7846-2C-0100	2	10*	0.7	14.2	0.9	19.0	808	120
BS7846-2C-0160	2	16†	0.7	16.0	1.25	21.5	949	130
BS7846-2C-0250	2	25†	0.9	19.3	1.25	25.0	1263	150
BS7846-2C-0350	2	35†	0.9	21.9	1.6	28.5	1737	170
BS7846-2C-0500	2	50//	1.0	19.7	1.6	26.5	1826	220
BS7846-2C-0700	2	70	1.1	23.0	1.6	30.0	2342	250
BS7846-2C-0950	2	95	1.1	26.0	2.0	34.0	3234	280
BS7846-2C-1200	2	120	1.2	28.8	2.0	37.0	4064	300
BS7846-2C-1500	2	150	1.4	31.6	2.0	40.0	4668	320
BS7846-2C-1850	2	185	1.6	36.2	2.5	46.0	5974	360
BS7846-2C-2400	2	240	1.7	40.0	2.5	50.0	7614	400
BS7846-2C-3000	2	300	1.8	44.8	2.5	55.0	8967	440
BS7846-2C-4000	2	400	2.0	49.4	2.5	60.0	10930	480
Three Core								
BS7846-3C-0015	3	1.5*	0.6	9.1	0.9	13.5	343	90
BS7846-3C-0025	3	2.5*	0.7	10.4	0.9	15.0	414	100
BS7846-3C-0040	3	4.0*	0.7	11.9	0.9	16.4	505	100
BS7846-3C-0060	3	6.0*	0.7	12.9	0.9	17.5	778	110
BS7846-3C-0100	3	10*	0.7	15.0	1.25	20.5	909	120
BS7846-3C-0160	3	16†	0.7	16.8	1.25	22.5	1192	140
BS7846-3C-0250	3	25†	0.9	20.9	1.6	27.5	1737	170
BS7846-3C-0350	3	35†	0.9	24.2	1.6	31.0	2151	180
BS7846-3C-0500	3	50 //	1.0	23.2	1.6	30.0	2516	250
BS7846-3C-0700	3	70	1.1	26.0	1.6	33.0	3273	280
BS7846-3C-0950	3	95	1.1	29.8	2.0	38.0	4513	320
BS7846-3C-1200	3	120	1.2	33.6	2.0	42.0	5533	350
BS7846-3C-1500	3	150	1.4	37.4	2.5	47.0	6912	390
BS7846-3C-1850	3	185	1.6	41.2	2.5	51.0	8306	420
BS7846-3C-2400	3	240	1.7	45.8	2.5	56.0	10504	460
BS7846-3C-3000	3	300	1.8	50.6	2.5	61.0	12431	510
BS7846-3C-4000	3	400	2.0	57.2	2.5	68.0	15280	560

Continued overleaf...

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Power and Wiring Cables

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Fire Resistant Armoured Power Cable

600/1000V (continued)

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Anixter Number	Number of Cores	Nominal Conductor Area mm ²	Insulation Thickness mm	Diameter Under Armour mm	Armour Wire Size mm	Nominal O/D mm	Approx Weight kg/km	Min Bending Radius (fixed bend) mm
Four Core								
BS7846-4C-0015	4	1.5*	0.6	10.1	0.9	14.5	394	90
BS7846-4C-0025	4	2.5*	0.7	11.4	0.9	16.0	475	100
BS7846-4C-0040	4	4.0*	0.7	12.9	0.9	17.5	586	110
BS7846-4C-0060	4	6.0*	0.7	14.5	1.25	20.0	828	130
BS7846-4C-0100	4	10*	0.7	17.0	1.25	22.5	1071	140
BS7846-4C-0160	4	16†	0.7	18.8	1.25	24.5	1424	160
BS7846-4C-0250	4	25†	0.9	23.4	1.6	30.0	2111	180
BS7846-4C-0350	4	35†	0.9	26.2	1.6	33.0	2616	200
BS7846-4C-0500	4	50//	1.0	26.0	1.6	33.0	3161	270
BS7846-4C-0700	4	70	1.1	38.0	2.0	39.0	4430	320
BS7846-4C-0950	4	95	1.1	34.6	2.0	43.0	5706	350
BS7846-4C-1200	4	120	1.2	38.4	2.5	48.0	7422	390
BS7846-4C-1500	4	150	1.4	43.2	2.5	53.0	8797	430
BS7846-4C-1850	4	185	1.6	47.8	2.5	58.0	10629	470
BS7846-4C-2400	4	240	1.7	53.6	2.5	64.0	13556	520
BS7846-4C-3000	4	300	1.8	59.2	2.5	70.0	15953	560
BS7846-4C-4000	4	400	2.0	66.3	3.15	79.0	20372	640
7C + 1.5sqmm								
A2EF-070015-02	7	1.5*	0.6	11.9	0.9	16.5	561	110
A2EF-120015-02	12	1.5*	0.6	16.0	1.25	21.5	962	140
A2EF-190015-02	19	1.5*	0.6	19.2	1.25	24.5	1217	160
A2EF-270015-02	27	1.5*	0.6	22.9	1.6	29.5	1722	190
A2EF-370015-02	37	1.5*	0.6	26.4	1.6	33.0	2132	210

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Fire Resistant Armoured Power Cable

600/1000V (continued)

Anixter Number	Number of Cores	Nominal Conductor Area mm ²	Insulation Thickness mm	Diameter Under Armour mm	Armour Wire Size mm	Nominal O/D mm	Approx Weight kg/km	Min Bending Radius (fixed bend) mm
7C + 2.5sqmm								
A2EF-070025-02	7	2.5*	0.7	13.9	0.9	18.5	638	120
A2EF-120025-02	12	2.5*	0.7	18.4	1.25	24.5	1086	150
A2EF-190025-02	19	2.5*	0.7	22.4	1.6	29.0	1641	180
A2EF-270025-02	27	2.5*	0.7	27.2	1.6	34.0	2122	210
A2EF-370025-02	37	2.5*	0.7	29.2	1.6	36.0	2605	230
7C + 4.0sqmm								
A2EF-070040-02	7	4.0*	0.7	15.5	1.25	21.0	922	130
A2EF-120040-02	12	4.0*	0.7	21.1	1.6	27.5	1593	170
A2EF-190040-02	19	4.0*	0.7	25.0	1.6	32.0	2076	190
A2EF-270040-02	27	4.0*	0.7	31.0	1.6	38.0	2732	230
A2EF-370040-02	37	4.0*	0.7	35.0	2.0	43.0	3751	260

*Circular stranded conductors.

// Cables having conductors of nominal area 50sqmm and above will have shaped stranded conductors.

† Circular or circular compacted stranded conductors.

For more technical information refer to page 1:74.

For conductor and armour resistances refer to page 19:31.

For gross cross-sectional area of armour refer to page 19:34.

For conductor short-circuit ratings refer to page 19:28.

For armour short-circuit ratings refer to page 19:36.

NB: 25mm² and 35mm² cables may be supplied with SHAPED conductors. Details on dimensions, weights etc., available on request.

Technical Information

- Fire Resistant Armoured Cables to BS7846 600/1000V

For further guidance refer to the BS7671 (IEE Wiring Regulations - latest edition).

For cables of seven core and above it is assumed only two cores are loaded simultaneously (i.e. live and neutral) and the two core rating should be taken.

For ambient air temperatures other than 30°C, the following factors should be applied.

Ambient air temp °C	25	30	35	40	45	50	55	60	65	70	75	80
Rating factor	1.04	1.0	0.94	0.91	0.87	0.82	0.76	0.71	0.65	0.58	0.50	0.41

VOLTAGE DROP (per Ampere per metre):

Nominal Cross Sectional Area of Conductor	One Twin		One 3 or 4 Core Cable 3 Phase a.c.
	a.c.	d.c.	
mm ²	mV	mV	mV
1.5	31	31	27
2.5	19	19	16
4	12	12	10
6	7.9	7.9	6.8
10	4.7	4.7	4.0
16	2.9	2.9	2.5
25	1.90	1.85	1.65
35	1.35	1.35	1.15
50	1.00	0.98	0.87
70	0.69	0.67	0.60
95	0.52	0.49	0.45
120	0.42	0.39	0.37
150	0.35	0.31	0.30
185	0.29	0.25	0.25
240	0.24	0.195	0.21
300	0.21	0.155	0.185
400	0.19	0.120	0.165

Technical Information

CURRENT CARRYING CAPACITY (Amperes)

Nominal Cross Sectional Area of Conductor	Installation Method			
	In Free Air or on Perforated Cable Tray		Clipped Direct	
	One Twin Cable a.c. or d.c.	One, 3 or 4 Core Cable 3 Phase a.c.	One Twin Cable a.c. or d.c.	One, 3 or 4 Core Cable 3 Phase a.c.
mm ²	A	A	A	A
1.5	29	25	27	23
2.5	39	33	36	31
4	52	44	49	42
6	66	56	62	53
10	90	78	85	73
16	115	99	110	94
25	152	131	146	124
35	188	162	180	154
50	228	197	219	187
70	291	251	279	238
95	354	304	338	289
120	410	353	392	335
150	472	406	451	386
185	539	463	515	441
240	636	546	607	520
300	732	628	698	599
400	847	728	787	673

Conductor operating temperature 90°C

Ambient air temperature 30°C

If ratings for these cables buried direct in ground or in single-way duct are required, refer to ratings for XLPE/SWA cables detailed on page 1:104

Armour Resistances

Max. DC Resistance of Conductor & Armour for 2, 3, 4 & 5 Core XLPE Insulated Cables Having Steel Wire Armour

XLPE/PVC/SWA/PVC Cables to BS5467

XLPE/LSF/SWA/LSF Cables to BS6724

MICA/XLPE/LSF/SWA/LSF Cables to BS7846

Nominal Conductor Area	Max Resistance per Km of Cable @ 20°C					
	Copper Conductor (plain)	Steel Wire Armour Cables with Stranded Copper Conductors				
		Two Core 600/1000V	Three Core 600/1000V		Four Core 600/1000V	Five-core 600/1000V
mm ²	ohms/km	ohms/km	ohms/km	ohms/km	ohms/km	ohms/km
1.5	12.1	10.2	9.5	-	8.8	8.2
2.5	7.41	8.8	8.2	-	7.7	6.8
4.0	4.61	7.9	7.5	-	6.8	6.2
6.0	3.08	7.0	6.7	-	4.3	3.9
10	1.83	6.0	4.0	-	3.7	3.4
16	1.15	3.7	3.5	1.9	3.1	3.2
25	0.727	3.7	2.5	1.7	2.3	1.8
35	0.524	2.6	2.3	1.8	2.0	1.6
50	0.387	2.3	2.0	1.3	1.8	1.1
70	0.268	2.0	1.8	1.2	1.2	0.94
95	0.193	1.4	1.3	1.1	1.1	—
120	0.153	1.3	1.2	0.76	0.76	—
150	0.124	1.2	0.78	0.71	0.68	—
185	0.0991	0.82	0.71	0.65	0.61	—
240	0.0754	0.73	0.63	0.59	0.54	—
300	0.0601	0.67	0.58	0.55	0.49	—
400	0.0470	0.59	0.52	0.50	0.35	—

Armour Resistances

Max. DC Resistance of Conductor & Armour for Auxiliary XLPE Insulated Cables Having Steel Wire Armour

XLPE/PVC/SWA/PVC Cables to BS5467

XLPE/LSF/SWA/LSF Cables to BS6724 600/1000V

MICA/XLPE/LSF/SWA/LSF Cables to BS7846 600/1000V

Nominal Conductor Area	Max Resistance per Km of Cable @ 20°C					
	Copper Conductor (plain)	Steel Wire Armour				
		Number of Cores*				
		7	12	19	27	37
mm ²	ohms/km	ohms/km				
1.5	12.1	7.5	4.0	3.5	2.3	2.0
2.5	7.41	6.3	3.5	2.3	1.9	1.7
4.0	4.61	4.0	2.3	2.0	1.7	1.2

* For non-preferred sizes, the maximum resistance shall not be greater than that of the next lowest preferred number of cores.

Gross Cross-sectional Area of Armour for 2, 3 & 4 Core PVC Insulated Cables

PVC/PVC/SWA/PVC Cables to BS6346 and ENATS 09-6 600/1000V

Nominal Conductor Area	Gross cross-sectional area of round armour wires		
	Steel Wire Armour Cables with Stranded Copper Conductors		
	Two Core	Three Core	Four Core
mm ²	mm ²	mm ²	mm ²
1.5	15	16	17
2.5	17	19	20
4.0	20	22	34
6.0	22	34	38
10	40	42	46
16	46	50	72

Gross Cross-Sectional Gross Cross-sectional Area of Armour for 2, 3, 4, & 5 Core XLPE Insulated Cables

XLPE/PVC/SWA/PVC Cables to BS5467 600/1000V

XLPE/LSF/SWA/LSF Cables to BS6724 600/1000V

MICA/XLPE/LSF/SWA/LSF Cables to BS7846 600/1000V

Nominal Conductor Area	Gross cross-sectional area of round armour wires			
	Steel Wire Armour Cables with Stranded Copper Conductors			
	Two Core	Three Core	Four Core	Five Core
mm ²	mm ²	mm ²	mm ²	mm ²
1.5	15	16	17	19
2.5	17	19	20	22
4.0	19	20	22	25
6.0	22	23	36	40
10	26	39	42	46
16	42	45	50	72
25	42	62	70	88
35	60	68	78	100
50	68	78	90	144
70	80	90	131	166
95	113	128	147	—
120	125	141	206	—
150	138	201	230	—
185	191	220	255	—
240	215	250	289	—
300	235	269	319	—
400	265	304	452	—

Gross Cross-sectional Area of Armour for Auxiliary XLPE Insulated Cables

XLPE/PVC/SWA/PVC Cables to BS5467

XLPE/LSF/SWA/LSF Cables to BS6724

MICA/XLPE/LSF/SWA/LSF Cables to BS7846

Nominal Conductor Area	Gross cross-sectional area of round armour wires				
	Number of Cores				
	7	12	19	27	37
mm ²	mm ²	mm ²	mm ²	mm ²	mm ²
1.5	20	39	45	70	78
2.5	24	45	70	84	94
4.0	39	68	80	96	138

Conductor Short-Circuit Ratings

XLPE Insulated Cables

Short-Circuit Ratings

Conductor Size mm ²	0.2s duration kA	1.0s duration kA	3.0s duration kA
1.5	0.479	0.214	0.123
2.5	0.799	0.357	0.206
4.0	1.27	0.572	0.330
6.0	1.91	0.858	0.495
10	3.19	1.43	0.825
16	5.11	2.28	1.32
25	7.99	3.57	2.06
35	11.1	5.0	2.88
50	15.9	7.15	4.12
70	22.3	10.0	5.77
95	30.3	13.5	7.84
120	38.3	17.1	9.9
150	47.9	21.4	12.3
185	59.1	26.4	15.2
240	76.7	34.3	19.8
300	95.9	42.9	24.7
400	127	57.2	33.0
500	159	71.5	41.2
630	201	90.0	52.0

N.B: The above ratings assume an adiabatic temperature rise and are based on a conductor temperature of 90°C at start of short-circuit and 250°C at end of shortcircuit.

Armour Short-Circuit Ratings

Two Core XLPE/PVC/SWA/PVC 600/1000V

Two Core XLPE/LSF/SWA/LSF 600/1000V

Two Core MICA/XLPE/LSF/SWA/LSF 600/1000V

Short-Circuit Ratings

Conductor Size mm ²	0.2s duration kA	1.0s duration kA	3.0s duration kA
1.5	1.54	0.69	0.398
2.5	1.75	0.782	0.451
4.0	1.95	0.874	0.505
6.0	2.26	1.01	0.583
10	2.68	1.20	0.693
16	4.32	1.93	1.11
25	4.32	1.93	1.11
35	6.17	2.76	1.59
50	7.0	3.13	1.81
70	8.23	3.68	2.12
95	11.6	5.20	3.0
120	12.9	5.75	3.32
150	14.2	6.35	3.67
185	19.7	8.79	5.07
240	22.1	9.89	5.71
300	24.1	10.8	6.24
400	27.3	12.2	7.04

N.B: The above ratings assume an adiabatic temperature rise and are based on an armour temperature of 80°C at start of short-circuit and 200°C at end of short-circuit.

Armour Short-Circuit Ratings

Three Core XLPE/PVC/SWA/PVC 600/1000V

Three Core XLPE/LSF/SWA/LSF 600/1000V

Three Core MICA/XLPE/LSF/SWA/LSF 600/1000V

Short-Circuit Ratings

Conductor Size mm ²	0.2s duration kA	1.0s duration kA	3.0s duration kA
1.5	1.65	0.736	0.425
2.5	1.95	0.874	0.505
4.0	2.06	0.920	0.531
6.0	2.37	1.06	0.612
10	4.0	1.79	1.03
16	4.63	2.07	1.20
25	6.37	2.85	1.65
35	7.0	3.13	1.81
50	8.03	3.59	2.07
70	9.26	4.14	2.39
95	13.2	5.89	3.4
120	14.5	6.49	3.75
150	20.7	9.25	5.34
185	22.6	10.1	5.84
240	25.7	11.5	6.64
300	27.7	12.4	7.16
400	31.3	14.0	8.08

N.B: The above ratings assume an adiabatic temperature rise and are based on an armour temperature of 80°C at start of short-circuit and 200°C at end of short-circuit.

Armour Short-Circuit Ratings

Four Core XLPE/PVC/SWA/PVC 600/1000V

Four Core XLPE/LSF/SWA/LSF 600/1000V

Four Core MICA/XLPE/LSF/SWA/LSF 600/1000V

Short-Circuit Ratings

Conductor Size mm ²	0.2s duration kA	1.0s duration kA	3.0s duration kA
1.5	1.75	0.782	0.451
2.5	2.06	0.920	0.531
4.0	2.26	1.01	0.583
6.0	3.71	1.66	0.958
10	4.32	1.932	1.12
16	5.14	2.30	1.33
25	7.2	3.22	1.86
35	8.03	3.59	2.07
50	9.26	4.14	2.39
70	13.25	6.03	3.48
95	15.1	6.76	3.90
120	21.2	9.48	5.47
150	23.7	10.6	6.12
185	26.2	11.7	6.77
240	29.7	13.3	7.68
300	32.9	14.7	8.49
400	46.5	20.8	12.0

N.B: The above ratings assume an adiabatic temperature rise and are based on an armour temperature of 80°C at start of short-circuit and 200°C at end of short-circuit.

Armour Short-Circuit Ratings

Five Core XLPE/PVC/SWA/PVC 600/1000V

Five Core XLPE/LSF/SWA/LSF 600/1000V

Five Core MICA/XLPE/LSF/SWA/LSF 600/1000V

Short-Circuit Ratings

Conductor Size mm ²	0.2s duration kA	1.0s duration kA	3.0s duration kA
1.5	1.95	0.874	0.505
2.5	2.26	1.01	0.583
4.0	2.57	1.15	0.664
6.0	4.11	1.84	1.06
10	6.98	2.12	1.22
16	7.40	3.31	1.91
25	9.06	4.05	2.34
35	10.3	4.6	2.66
50	14.8	6.62	3.82
70	17.1	7.64	4.41
95	–	–	–
120	–	–	–
150	–	–	–
185	–	–	–
240	–	–	–
300	–	–	–
400	–	–	–

N.B: The above ratings assume an adiabatic temperature rise and are based on an armour temperature of 80°C at start of short-circuit and 200°C at end of short-circuit.

Armour Short-Circuit Ratings

Auxiliary XLPE/PVC/SWA/PVC 600/1000V

Auxiliary XLPE/LSF/SWA/LSF 600/1000V

Auxiliary MICA/XLPE/LSF/SWA/LSF 600/1000V

Short-Circuit Ratings

Conductor Size No. x mm ²	0.2s duration kA	1.0s duration kA	3.0s duration kA
7 x 1.5	2.06	0.920	0.531
12 x 1.5	4.0	1.79	1.03
19 x 1.5	4.63	2.07	1.20
27 x 1.5	7.20	3.22	1.86
37 x 1.5	8.03	3.59	2.07
7 x 2.5	2.46	1.10	0.635
12 x 2.5	4.63	2.07	1.20
19 x 2.5	7.20	3.22	1.86
27 x 2.5	8.63	3.86	2.23
37 x 2.5	9.66	4.32	2.49
7 x 4.0	4.0	1.79	1.03
12 x 4.0	7.0	3.13	1.81
19 x 4.0	8.23	3.68	2.12
27 x 4.0	9.88	4.42	2.55
37 x 4.0	41.2	6.35	3.67

N.B: The above ratings assume an adiabatic temperature rise and are based on an armour temperature of 80°C at start of short-circuit and 200°C at end of short-circuit.