

Fire Resistant Cables to BS 6387 CWZ & BS 7846

600/1000V Cu/FR/XLPE/SWA/LSOH Fire Resistant Cables to BS 7846

Fire resistant armoured cable with crosslinked insulation, and low emission of smoke sheath LSOH, Low Voltage(600/1000V).

Cable Approvals: Cable approved to BS 7846 & BS 6387 CWZ

Specifications: BS 6724, IEC 60502, BS 7846

Cable Description:

Conductor

Plain annealed copper stranded (class 2) conductor for ease of Handling.

Primary Insulation

Ceramic (Mica/Glass) fire resistant tape

Secondary Insulation

90°C cross - linked insulation

Insulation

Minimum recommended installation temperature 0°C.

Suitable for indoor and outdoor installations. For external

exposure the use of a Black sheath is recommended.

Should be installed in accordance with BS 7671/IEE

Wiring Regulations or any other appropriate national regulations. Suitable for direct

burial, trough, tray, ladder or other installations requiring a robust armoured cable.

Bedding

Extruded LSOH.

Armour

Single layer of galvanized steel wires.

Sheath

Robust LSOH black. Other colours to special order.



Bending Radius:

A minimum internal radius of bend of 6 x cable diameter is recommended during installations for cables having circular conductors and 8 x cable diameter for cables having shaped conductors.

Current Ratings:

The tabulated ratings are based upon a 30°C ambient temperature and a 90°C operating temperature. For other ambient temperatures or where cables are grouped together, the following correction factors should be applied.

Key Applications:

Essential safety circuits associated with fire detection, fire alarm, emergency lighting and particularly for power supplies to building equipment used in safety systems.



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CABLE CHARACTERISTICS:

Nominal cross sectional area	Approximate overall diameter	Insulation thickness	Approximate diameter under armour	Nominal diameter of armour wires	Approximate cable weight	Maximum conductor resistance at 20°C	Short circuit rating (1 sec) of conductor	Current rating Three phase AC Buried direct	Current rating Three phase AC Free Air	Volt drop Three phase AC
mm ²	mm	mm	mm	mm	kg/km	Ohms/km	kA	Amps	Amps	mV/A/m
Three cores										
1.5	15.1	0.6	10.2	0.9	424	12.1	0.20	23	21	27
2.5	16.7	0.7	11.6	0.9	517	7.41	0.35	35	28	16
4	17.8	0.7	12.8	0.9	606	4.61	0.57	37	37	10
6	19.1	0.7	14.0	0.9	710	3.08	0.86	46	47	6.8
10	22.6	0.7	16.7	1.25	1069	1.83	1.4	61	65	4.0
16	25.0	0.7	18.9	1.25	1349	1.15	2.2	80	84	2.5
25	29.8	0.9	22.8	1.6	2005	0.727	3.6	105	110	1.65
35	32.5	0.9	25.3	1.6	2438	0.524	5.0	125	135	1.15
50	31.7	1.0	24.4	1.6	2699	0.387	7.1	200	170	0.87
70	34.8	1.1	27.4	1.6	3433	0.268	10.0	245	215	0.60
95	41.4	1.1	32.8	2.0	4780	0.193	13.6	290	265	0.45
120	43.5	1.2	34.7	2.0	5530	0.153	17.2	330	310	0.37
150	49.7	1.4	39.7	2.5	7200	0.124	21.4	365	350	0.30
185	52.9	1.6	42.7	2.5	8459	0.0991	26.5	410	405	0.26
240	58.4	1.7	47.7	2.5	10474	0.0754	34.3	470	480	0.21
300	63.2	1.8	52.3	2.5	12576	0.0601	42.9	520	555	0.185
400	79.8	2.0	68.6	2.5	16577	0.0470	57.2	580	640	0.165
Four cores										
1.5	16.0	0.6	11.2	0.9	482	12.1	0.20	23	21	27
2.5	17.8	0.7	12.7	0.9	590	7.41	0.35	35	28	16
4	19.1	0.7	14.0	0.9	698	4.61	0.57	37	37	10
6	21.4	0.7	15.4	1.25	961	3.08	0.86	46	47	6.8
10	24.4	0.7	18.4	1.25	1262	1.83	1.4	61	65	4.0
16	27.0	0.7	20.9	1.25	1595	1.15	2.2	80	84	2.5
25	32.3	0.9	25.2	1.6	2399	0.727	3.6	105	110	1.65
35	35.2	0.9	28.0	1.6	2934	0.524	5.0	125	135	1.15
50	35.9	1.0	28.4	1.6	3403	0.387	7.1	200	170	0.87
70	41.9	1.1	33.3	2.0	4787	0.268	10.0	245	215	0.60
95	46.7	1.1	37.8	2.0	6041	0.193	13.6	290	265	0.45
120	50.9	1.2	40.9	2.5	7582	0.153	17.2	330	310	0.37
150	55.7	1.4	45.4	2.5	9027	0.124	21.4	365	350	0.30
185	62.1	1.6	51.4	2.5	10872	0.0991	26.5	410	405	0.26
240	68.9	1.7	58.1	2.5	13640	0.0754	34.3	470	480	0.21
300	75.9	1.8	64.7	2.5	16501	0.0601	42.9	520	555	0.185
400	85.2	2.0	72.0	3.15	21587	0.0470	57.2	580	640	0.165

Circular conductor 1.5 - 35mm². Shaped conductor 50mm² and above.

The tabulated ratings are based upon a 40°C air temperature and 90°C operating temperature.

Installation methods for current rating in accordance with BS 7671/IEE Wiring Regulations.

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Nominal cross sectional area	Approximate overall diameter	Insulation thickness	Approximate diameter under armour	Nominal diameter of armour wires	Approximate cable weight	Maximum conductor resistance at 20°C	Short circuit rating (1 sec) of conductor	Current rating Three phase AC Buried direct	Current rating Three phase AC Free Air	Volt drop Three phase AC
mm ²	mm	mm	mm	mm	kg/km	Ohms/km	kA	Amps	Amps	mV/A/m
Two cores										
1.5	14.5	0.6	9.7	0.9	384	12.1	0.20	27	22	31
2.5	16.0	0.7	11.0	0.9	463	7.41	0.35	40	31	19
4	17.1	0.7	12.0	0.9	530	4.61	0.57	45	41	12
6	18.2	0.7	13.2	0.9	613	3.08	0.86	69	52	7.9
10	20.9	0.7	15.7	0.9	800	1.83	1.4	92	71	4.7
16	23.6	0.7	17.7	1.25	1127	1.15	2.2	115	92	2.9
25	27.3	0.9	21.1	1.25	1483	0.727	3.6	145	120	1.9
35	30.7	0.9	23.6	1.6	2002	0.524	5.0	175	150	1.35
50	33.8	1.0	26.6	1.6	2417	0.387	7.1	205	195	1.00
70	38.0	1.1	30.6	1.6	3064	0.268	10.0	250	245	0.69
95	43.2	1.1	34.7	2.0	4119	0.193	13.6	295	305	0.52
120	46.9	1.2	38.3	2.0	4876	0.153	17.2	335	355	0.42
150	50.9	1.4	42.0	2.0	5686	0.124	21.4	375	405	0.35
185	57.2	1.6	47.0	2.5	7349	0.0991	26.5	420	465	0.29
240	62.8	1.7	52.4	2.5	8883	0.0754	34.3	480	530	0.24
300	68.8	1.8	58.1	2.5	10611	0.0601	42.9	540	600	0.21
400	76.3	2.0	65.2	2.5	13038	0.0470	57.2	605	690	0.19
Five cores										
1.5	17.3	0.6	12.2	0.9	543	12.1	0.20	23	21	27
2.5	19.0	0.7	14.0	0.9	663	7.41	0.35	35	28	16
4	20.7	0.7	15.4	0.9	803	4.61	0.57	37	37	10
6	22.9	0.7	17.0	1.25	1094	3.08	0.86	46	47	6.8
10	26.5	0.7	20.3	1.25	1454	1.83	1.4	61	65	4.0
16	30.3	0.7	23.3	1.6	2067	1.15	2.2	80	84	2.5
25	35.2	0.9	27.9	1.6	2800	0.727	3.6	105	110	1.65
35	38.5	0.9	31.0	1.6	3452	0.524	5.0	125	135	1.15
50	43.7	1.0	35.3	2.0	4626	0.387	7.1	200	170	0.87
70	49.5	1.1	40.7	2.0	5987	0.268	10.0	245	215	0.60
Seven Cores										
1.5	18.4	0.6	13.4	0.9	658	12.1	0.20	23	21	31
2.5	20.5	0.7	15.4	0.9	820	7.41	0.35	35	28	19
4	22.9	0.7	17.0	1.25	1128	4.61	0.57	37	37	12
Twelve Cores										
1.5	23.5	0.6	17.6	1.25	1083	12.1	0.20	23	21	31
2.5	26.6	0.7	20.4	1.25	1361	7.41	0.35	35	28	19
4	29.6	0.7	22.8	1.6	1842	4.61	0.57	37	37	12
Nineteen Cores										
1.5	26.8	0.6	20.7	1.25	1379	12.1	0.20	23	21	31
2.5	31.3	0.7	24.3	1.6	1988	7.41	0.35	35	28	19
Twenty-seven Core										
1.5	32.2	0.6	25.1	1.6	1976	12.1	0.20	23	21	31
2.5	36.8	0.7	29.5	1.6	2579	7.41	0.35	35	28	19

*The tabulated rating is as a two core cable and may be used where the number of cores carrying current does not exceed its square root of the total number of cores.

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mm ²	mm	mm	mm	mm	kg/km	Ohms/km	kA	Amps	Amps	mV/A/m
Thirty-seven Core										
1.5	35.3	0.6	28.2	1.6	2382	12.1	0.20	23	21	31
2.5	40.4	0.7	33.2	1.6	3145	7.41	0.35	35	28	19

Correction factors for Ambient temperatures									
Ambient Temperature °C	25	30	35	40	45	50	55	60	
Correction factor	1.14	1.10	1.05	1.00	0.95	0.89	0.84	0.80	

Correction factors for grouping of cables									
Installation Method		Number of circuits or multi-core cables							
		2	3	4	5	6	7	8	9
Single layer clipped to a non-metallic surface	Touching	0.85	0.79	0.75	0.73	0.72	0.72	0.71	0.70
	Spaced*	0.94	0.94	0.90	0.90	0.90	0.90	0.90	0.90
Single layer multicore on a perforated metal cable tray, vertical or horizontal	Touching	0.86	0.81	0.77	0.75	0.74	0.73	0.73	0.72
	Spaced	0.91	0.89	0.88	0.87	0.87	—	—	—

Circuit (insulation) integrity in accordance with bs 6387: 2013



BS 6387: 2013 specifies the requirements for cables required to maintain circuit integrity under fire conditions. This is the first standard to include also mechanical stress and water stress in the fire resistance test of electric cables. BS 6387 standard is still used in many countries. Being different from EN 50200: 2015, its limits is to require three different tests on three different cable samples.

The fire resistant cables are categorized by a letter symbol (e.g. A) or series of symbols (e.g. CWZ) according to the requirements for fire resistance characteristics which they meet, the test temperature selected and the duration of the test for resistance to fire alone in accordance to BS 6387 as below.

The test provides the basis for the following categories:

test	Category
(1) Resistance to fire alone: 650°C for 3 hours, 750°C for 3 hours, 950°C for 3 hours, 950°C for 20 minutes (short duration).	A B C S
(2) Resistance to fire with water: Exposed to fire @ 650°C for 15 mins then exposed to fire @ 650°C with water for another 15 mins.	W
(3) Resistance to fire with mechanical shock: Exposed to fire @ 650°C for 15 mins then exposed to fire @ 650°C with mechanical shock for 15 mins. Exposed to fire @ 750°C for 15 mins then exposed to fire @ 750°C with mechanical shock for 15 mins. Exposed to fire @ 950°C for 15 mins then exposed to fire @ 950°C with mechanical shock for 15 mins.	X Y Z