

CIRCUIT INTEGRITY ENERGY CABLE

By utilisation of high performance materials, Draka has now enhanced the circuit integrity performance of this design of 600/1000V SWA armoured power cable so as to meet the most onerous requirements of BS8519:2010 - selection and installation of fire resistant power and control cable systems for life safety and fire fighting applications - (previously BS7346-6). Specification for cable systems". The new standard defines fire performance requirements of various types of fire rated cables in maintaining circuit integrity for life safety, fire fighting and property protection systems.

Fire Safety systems include automatic fire suppression facilities, fire detection and alarms, fire compartmentalisation, smoke control and ventilation, sprinkler and wet risers, ventilation and shutters, fire fighting lifts etc, and FTP120 satisfies the 120 minute requirements for all of these systems.

All these systems require secure power supplies in the event of fire and the result of emphasis on the performance of the existing generation of power cables has highlighted the need for enhanced performance.

FTP120 meets the specified requirement of the constructional standard BS7846 and in providing enhanced circuit integrity preserves the handling and installation characteristics of a wire armoured design.

The Building Regulations Approved Document B on fire safety was revised on 1st April 2007 and this now specifies fire performance in accordance with BS7346-6 (now BS8519:2010).

FTP120 can be specified with confidence in meeting the demanding performance required to support modern fire engineering systems in today's buildings.

Construction

Conductors:	Plain annealed stranded copper conductors. For sizes up to and including 35mm ² these are circular. Shaped conductors start at 50mm ² with the exception of 2 core cables where shaped conductors start at 25mm ² .
Insulation:	Mica-glass fire-resistant tapes, covered by an extruded layer of cross-linked polyethylene.
Binder:	Polyester tape.
Bedding:	An extruded layer of Zero Halogen, Low Smoke (OHLS®) compound.
Armour:	Single layer of galvanised steel wires.
Sheath:	Thermoplastic Zero Halogen, Low Smoke (OHLS®) compound.

Physical Characteristics

Voltage rating(U ₀ /U):	600/1000V.
Operating temp:	-40°C to +90°C (The cable should not be flexed when either the ambient or cable temperature is below 0°C).
Min. bending radius:	8 x overall diameter of cable.
Current Rating:	Refer to table 4E4A or 4E4B of BS7671, ERA 69-30 pt V or on pages 103-104.

Note: In the event of a fire, the increase in impedance may require consideration to the installation of larger conductor sizes, to accommodate motor starting loads and the performance of protective conductors.

Standards Achieved

Circuit integrity:	BS8491 20, 60 and 120mins
Acid gas emission:	IEC 60754, BS EN 50267.
Flame propagation:	BSEN 60332-3, BSEN 60332-1
Smoke emission:	BSEN 61034



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FTP120 Technical Data

2 Core

Nominal area of conductor mm ²	Insulation thickness mm	Nominal armour wire dia. mm	Approx. dia. under armour mm	Approx. overall diameter mm	Approx. cable weight kg/km	Max conductor resistance		Reactance @50Hz Ω/km	Impedance AC@90°C Ω/km	Max. arm. resistance at 20°C Ω/km
						DC@20°C Ω/km	AC@90°C Ω/km			
4	0.7	1.25	15.8	23.2	870	4.61	5.878	0.099	5.878	7.9
6	0.7	1.25	17.1	24.5	990	3.08	3.927	0.094	3.928	7
10	0.7	1.25	18.9	26.4	1140	1.83	2.333	0.093	2.335	6
16	0.7	1.25	20.4	27.9	1320	1.15	1.466	0.088	1.469	3.7
25	0.9	1.25	20.6	28.1	1400	0.727	0.927	0.082	0.93	3.7
35	0.9	1.6	22.3	30.5	1820	0.524	0.668	0.077	0.673	2.6
50	1	1.6	24.2	32.4	2140	0.387	0.494	0.076	0.5	2.3
70	1.1	1.6	27.3	35.7	2680	0.268	0.342	0.075	0.349	2
95	1.1	2	30.2	39.7	3530	0.193	0.247	0.074	0.258	1.4
120	1.2	2	32.8	42.6	4170	0.153	0.196	0.072	0.209	4.3
150	1.4	2	35.9	45.9	4940	0.124	0.1597	0.073	0.176	1.2
185	1.6	2.5	39.5	51	6370	0.0991	0.1284	0.073	0.148	0.82
240	1.7	2.5	43.6	55.3	7730	0.0754	0.989	0.072	0.122	0.73
300	1.8	2.5	47.6	59.5	9170	0.0601	0.0801	0.072	0.107	0.67
400	2	2.5	52.9	65.2	11190	0.047	0.0641	0.071	0.096	0.59

3 Core

Nominal area of conductor mm ²	Insulation thickness mm	Nominal armour wire dia. mm	Approx. dia. under armour mm	Approx. overall diameter mm	Approx. cable weight kg/km	Max conductor resistance		Reactance @50Hz Ω/km	Impedance AC@90°C Ω/km	Max. arm. resistance at 20°C Ω/km
						DC@20°C Ω/km	AC@90°C Ω/km			
4	0.7	1.25	16.8	24.3	970	4.61	5.878	0.099	5.878	7.9
6	0.7	1.25	17.9	25.4	1080	3.08	3.927	0.094	3.928	7
10	0.7	1.25	20	27.5	1270	1.83	2.333	0.093	2.335	4
16	0.7	1.25	21.7	29.1	1500	1.15	1.466	0.088	1.469	3.5
25	0.9	1.6	24.9	35	2110	0.727	0.927	0.082	0.93	2.5
35	0.9	1.6	27.3	35.5	2480	0.524	0.668	0.077	0.673	2.3
50	1	1.6	27.5	35.7	2720	0.387	0.494	0.076	0.5	2
70	1.1	1.6	31.1	39.5	3480	0.268	0.342	0.075	0.349	1.8
95	1.1	2	34.1	43.8	4630	0.193	0.247	0.074	0.258	1.3
120	1.2	2	37.2	47.1	5490	0.153	0.196	0.072	0.209	1.2
150	1.4	2.5	40.9	52.5	6900	0.124	0.1597	0.073	0.176	0.78
185	1.6	2.5	45.2	56.7	8170	0.0991	0.1284	0.073	0.148	0.71
240	1.7	2.5	49.9	61.9	10070	0.0754	0.989	0.072	0.122	0.63
300	1.8	2.5	54.7	66.8	12040	0.0601	0.0801	0.072	0.107	0.58
400	2	2.5	60.9	73.5	14790	0.047	0.0641	0.071	0.096	0.52

4 Core

Nominal area of conductor mm ²	Insulation thickness mm	Nominal armour wire dia. mm	Approx. dia. under armour mm	Approx. overall diameter mm	Approx. cable weight kg/km	Max conductor resistance		Reactance @50Hz Ω/km	Impedance AC@90°C Ω/km	Max. arm. resistance at 20°C Ω/km
						DC@20°C Ω/km	AC@90°C Ω/km			
4	0.7	1.25	18.1	25.6	1040	4.61	5.878	0.099	5.878	7.9
6	0.7	1.25	19.4	26.9	1240	3.08	3.927	0.094	3.928	7
10	0.7	1.25	21.9	29.3	1440	1.83	2.333	0.093	2.335	3.7
16	0.7	1.6	23.7	31.2	1880	1.15	1.466	0.088	1.469	3.1
25	0.9	1.6	27.3	35.5	2450	0.727	0.927	0.082	0.93	2.3
35	0.9	1.6	30.1	38.2	2930	0.524	0.668	0.077	0.673	2
50	1	1.6	30.6	39.1	3290	0.387	0.494	0.076	0.5	1.8
70	1.1	2	34.5	44.3	4540	0.268	0.342	0.075	0.349	1.2
95	1.1	2	38.5	48.5	5700	0.193	0.247	0.074	0.258	1.1
120	1.2	2.5	42	53.4	7230	0.153	0.196	0.072	0.209	0.76
150	1.4	2.5	46.5	58.1	8500	0.124	0.1597	0.073	0.176	0.68
185	1.6	2.5	51.3	63.3	10210	0.0991	0.1284	0.073	0.148	0.61
240	1.7	2.5	56.8	69.1	12680	0.0754	0.989	0.072	0.122	0.54
300	1.8	2.5	61.9	74.6	15250	0.0601	0.0801	0.072	0.107	0.49
400	2	3.15	70	84.7	19760	0.047	0.0641	0.071	0.096	0.35

Shaped conductors unless otherwise stated. * Circular conductors



FTP120 designs achieve the highest rating of 120 minutes when subjected to integrated testing involving direct impact and high pressure water spray. The details of this test are currently documented in BS 8491, as required in BS 8519:2010. 60 and 30 minute ratings also achieved.