

# Metallic Systems

## SPL-EF - Low Fire Hazard - Liquid Tight



### Technical Characteristics

Conforms to CE Low Voltage Directive  
BS EN 61386-1 & 23  
EN - 45545-2

Approvals and Standards



Degree of mechanical protection High flexibility, medium fatigue life

Degree of protection IP69k - with SPL type M & C90 fitting  
IP68 - with SPL type M & C90 fitting (10 bar for 30 minutes)  
IP67 - with SPL type A, B, M & C90 fittings  
IP66 - with SPL type M & C90 fittings

UV protection Very High

Finish Black

Application Enhanced Fire Performance liquid tight conduit highly flexible with a wide temperature operating range.

Normal operating temperature range	Application	Min Temp	Max Temp
	Static	- 40°C	+105°C
	Dynamic	- 30°C	+105 °C

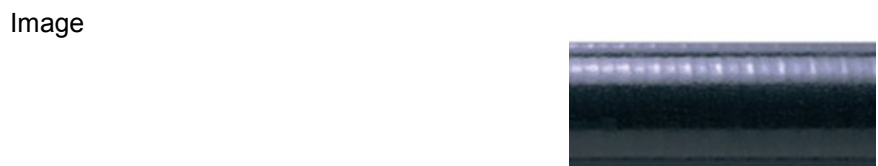
For use with - Fitting range [Adaptasteel](#) - Type [A](#) ,[B](#), [E](#), [M](#) [C90](#) & [45](#)

Fire performance	Test Standard	Performance Rating	(See Fire testing <a href="#">data</a> for fire performance overview)
	EN-45545-2	HL3 R22 & R23	
	UL94	V0	



Testing data Click or See pages [3](#) & [4](#)

Type of material Galvanised steel core - string packing with enhanced LFH thermoplastic covering



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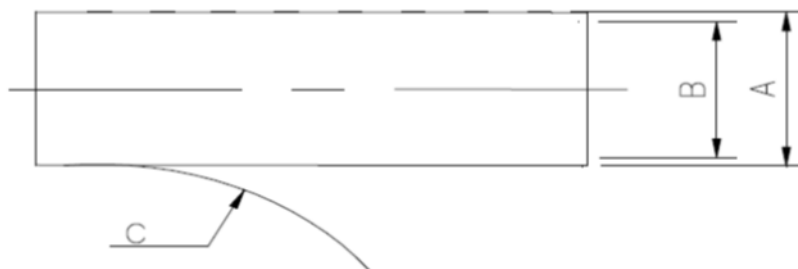
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### Technical & Dimensional Data

Conduit size metric (mm)	10	12	16	20	25	32	40	50	63	75
Conduit size US trade (inches)	1/4"	5/16"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"
Part code	-	SPL-EF	SPL-EF	SPL-EF	SPL-EF	SPL-EF	SPL-EF	SPL-EF	-	-
Coil length (m)	-	10/25	10/25/50	10/25/50	10/25/50	10/25/50	10/25	10/25	-	-
A - Outside diameter (mm)	-	14.2	17.8	21.1	26.4	33.1	41.8	47.9	-	-
B - Inside diameter (mm)	-	12.0	12.5	15.9	21.0	26.7	35.4	40.4	-	-
C - Static bend radius (mm)	-	45	50	80	110	145	180	240	-	-
Average weight (Kg/100m)	-	22.6	29.4	38.5	48.7	68.0	123.0	145.0	-	-

*For ordering code add coil length to part code - e.g SPL-EF25/25M*



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### BS EN 61386 Clarification

	Fitting	Compression	Impact	Min temp	Max temp	bending	electrical	IP solids	IP water	Corrosion	Tensile	Non-flame Propogating	Suspended load
SPL-EF	M Type	4	4	4	3	4	0	6	7	-	4	1	5

### Mechanical Properties

Test Type	Methods / Standards	Requirements	Value
Crush Strength @ 23°C	IEC61386-1	<25% crush >90% recovery	>1250N
Crush Strength @ 23 °C	AFX norm C1989	10% Crush, Instantaneous Value	1800N
Impact Strength @ 23 °C	IEC61386-1	No Cracks <20% deformation	>20J
Impact Strength @-25 °C	IEC61386-1	No Cracks. <20% deformation	>6J
Tensile Strength	IEC61386-1	With M Type Fitting	>1000N class 4
Tensile Strength	-	Ultimate pull-out of M-Type Fitting	>1450N
Dynamic Bend radius @ -25 °C	IEC61386-23	5000 cycles minimum	6 x OD

### Thermal Properties

Test Type	Methods / Standards	Requirements	Value
Minimum Temperature	IEC61386-23	Dynamic 5000 cycles	-25°C
Maximum Temperature	IEC61386-23	Dynamic 5000 cycles	105°C
Minimum Static		Permanent Use	-40°C
Maximum Static		Permanent Use	105°C

### Chemical Resistance Chart

Key:	Green	Yellow	Red	Black
Suitable :	●			
Limited Suitability :		●		
Unsuitable :			●	
Not Tested :				●

● Astm No.1	● Diesel oil	● Methyl Bromide	● Sulphur Dioxide (Gas)
● Astm No.2	● Diethylamine	● MEK	● Sulphuric Acid (10%)
● Astm No.3	● Ethanol	● Nitric Acid (10%)	● Sulphuric Acid (70%)
● Acetic Acid (10%)	● Ether	● Nitric Acid (70%)	● Toluene
● Acetone	● Ethylamine	● Oxalic Acid	● Transformer Oil
● Aluminium Chloride	● Ethylene Glycol	● Ozone (Gas)	● 1,1,1-Trichloroethane
● Aniline	● Ethyl Ethanoate	● Paraffin oil	● Trichloroethylene
● Benzaldehyde	● Freon 32	● Petrol	● Turpentine
● Benzene	● Hydrochloric Acid (10%)	● Phenol	● Vegetable Oil
● Carbon tetrachloride	● Hydrochloric Acid (36%)	● Sea Water	● Vinyl Acetate
● Chlorine water	● Hydrogen Peroxide (35%)	● Silver Nitrate	● Water
● Chloroform	● Hydrogen Peroxide (87%)	● Skydrol	● White Spirit
● Citric Acid	● Lactic Acid	● Sodium Chloride	● Zinc Chloride
● Copper Sulphate	● Lubricating oil	● Sodium Hydroxide (10%)	
● Cresol	● Methanol	● Sodium Hydroxide (60%)	

The information above is given as a guide only and is based on published technical data and experience. The chemical resistance of the above products is dependant on factors such as chemical exposure, concentration of the chemical and temperature. The above chemicals are valid for a temperature of 23°C. Use of the above table is at the users own discretion and risk. Those using it must satisfy themselves that their application presents no health and safety risks. The end user should assess compatibility with their application and contact Thomas & Betts for further information.

ADHERENCE TO THE CURRENT WIRING REGULATIONS BS7671 OR NEC WIRING REGULATIONS (FOR USA) IS STRONGLY ADVISED.

MINIMUM BEND RADIUS FOR FLEXING IS DEPENDANT UPON MINIMUM TEMPERATURE, BENDING FREQUENCY AND CHEMICAL ENVIRONMENT.

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The Company's policy is one of continuous improvement and reserves the right to change specifications at any time without prior notice.

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### Flammability

Test Type	Method / Standard	Requirement	Result	Unit
Oxygen Index	ISO 4589-2	% Oxygen to support combustion	43.9	%
Glow Wire Rating	IEC 60695	No Ignition to Extinguish with 30s	-	°C
Flammability	UL94	Vertical (V0, V2) or Horizontal (HB)	V0	
Flammability	IEC 61386-1	1Kw Burner @ 45°	Pass	Pass/Fail





### Smoke

Test Type	Method / Standard	Requirement	Result	Unit
Smoke Density	BS6853	-	-	-
Smoke Density	ASTM E-662	Non Flaming mode Ds Max	161.3	-
Smoke Density	ISO - 5659-2	Ds Max	24	Dimensionless

### Toxicity

Test Type	Method / Standard	Requirement	Result	Unit
Halogen Free	IEC 607542	<0.5%	Yes	Yes/No
Phosphorous Free	-	<0.5%	Yes	Yes/No
Sulphur Free	-	<0.5%	Yes	Yes/No
NFX 70-100	NFX70 - 100 1 / 2	CIT <sub>NLP</sub>	4.95	Dimensionless
BS 6853 A	Annex B.1	R Range	0.36	Dimensionless

### Fire Performance Overview

Property	Low Fire Hazard	Enhanced Low Fire Hazard	Super Low Fire Hazard	Inherent Low Fire Hazard
				
<b>Property</b>	LFH	EFLH	SLFH	ILFH
Oxygen Index ISO4589	32% ≥ OI ≥ 28%	OI ≥ 32%	OI ≥ 32%	Inherent Low Fire Hazard i.e
BS6853 Smoke Density 3m³	0.02 ≤ A <sub>s</sub> ≤ 0.03	0.0005 ± A <sub>s</sub> ≤ 0.02	A <sub>s</sub> ≤ 0.005	Type , S, SS
Zero Halogen	✓	✓	✓	Metallic Conduit & Fittings
Zero Phosphorus	✓	✓	✓	
Zero Sulphur	✓	✓	✓	
NFF16-102	I3F2	I2F2	I2F1	
EN45545-2	HL2	HL3	HL3	

### Pre Test Conditions

Duration	Standard	Temperature	Relative Humidity
168 (Hours)	IEC61386-1	23 (°C)	50 (%)

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