

Non-Metallic Systems

PFS Standard weight Conduit



Technical Characteristics

Conforms to	BSI Kitemark KM-35161 Low voltage directive NFF16-101 rating I3 F1 UNI CEI11170 rating LR3/LR4 EN45545-2 rating HL2 DIN 5510-2 rating S4, SR2, ST2 FED ASTM E162 & E662
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Approvals and Standards	     
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Degree of mechanical protection	High flexibility & fatigue life
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Degree of protection	IP40 - Adapting & Jumbo IP66 - Adaptalok, ATS or Adaptaseal IP67 - Adaptalok + ALS Seal or ATS, Adaptaseal IP68 - Adaptalok + ALS Seal or ATS, Adaptaseal IP69k - Adaptalok + ALS Seal or ATS, Adaptaseal
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UV protection	Very High
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Finish	Black (BL)
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Application	Indoors / Outdoors - low temperature applications, Rail
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Normal operating temperature range	Application	Min Temp	Max Temp
	Static	- 50°C	+110°C
	Dynamic	- 45°C	+120 °C

For use with - Fitting range	Adaptalok & ATS , Adaptaseal and Adapting fittings
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Fire performance	Test Standard	Performance Rating	
	EN45545-2	HL2	Self Extinguishing & Halogen Free
	NF-F16-101	I3 / F1	
	UNI CEI 11170	LR3/LR4	
	DIN 5510-2	S4 SR2 ST2	
	UL94	V2	



Testing data	Click or See pages 3 & 4
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Type of material	Modified Polyamide (Nylon) 12 - flame retardant - heat stabilised
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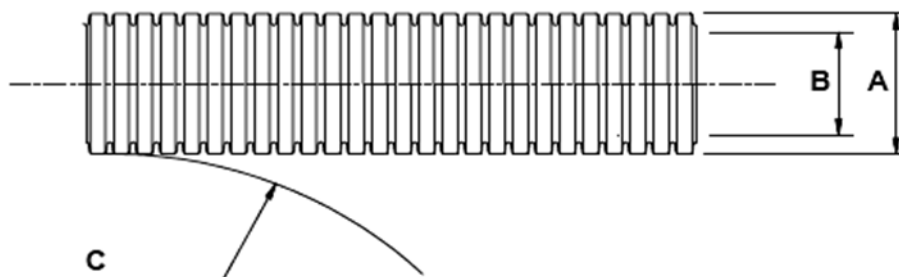
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Technical & Dimensional Data

Part No.	Conduit Size			Dimensions				Average Weight (KG/100m)
	Nominal Conduit Size	NW Conduit Size	Conduit Pitch	(A) Outside Diameter	(B) Inside Diameter	(C) Min. Bend Radius	Reel Length (m)	
PFFS10	10mm	7.5	Fine	6.2mm	10.0mm	20	50	1.8
PFFS13	13mm	10	Fine	13.0mm	9.7mm	30	50	2.6
PFFS16	16mm	13	Fine	15.8mm	11.5mm	35	50	3.5
PFCS21	21mm	17	Coarse	21.2mm	15.3mm	40	50	6.8
PFCS28	28mm	23	Coarse	28.5mm	21.5mm	50	50	12.5
PFCS34	34mm	29	Coarse	34.5mm	27.5mm	60	25	14.5
PFCS42	42mm	36	Coarse	42.5mm	35.3mm	65	25	16.3
PFCS54	54mm	48	Coarse	54.5mm	46.4mm	75	25	23.0

To order quote part number, colour & reel length, e.g PFCS21/BL/50M



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BS EN 61386 Classification

	Fitting	Compression	Impact	Min temp	Max temp	bending	electrical	IP solids	IP water	Corrosion	Tensile	Non-flame Propogating	Suspended load
PFS	ATS	2	3	5	4	4	0	6	7	-	1	1	0

Mechanical Properties

Test Type	Methods / Standards	Requirements	Value
Crush Strength	IEC61386	<25% crush >90% recovery	>125N
Tensile Strength	IEC61386-1	Pull off of fitting minimum value	>100N
Impact Strength @-45 °C	IEC61386-1	No Cracks <20% deformation min value	>2J
Impact Strength @23 °C	IEC61386-1	No Cracks. <20% deformation min value	>20J
Dynamic Bend radius @-45 °C	IEC61386-23	5000 cycles minimum	6xOD

Thermal Properties

Test Type	Methods / Standards	Requirements	Value
Minimum Temp Dynamic	IEC61386	Dynamic 5000 cycles	-45°C
Minimum Static Temp	IEC61386	Permanent Use (30,000) Hours	-50°C
Maximum Static / Dynamic Temp	IEC61386	Permanent Use (30,000) Hours	110°C
Maximum Short Term Temp	IEC61386	Static & Dynamic 3000 hours, 5000 cycles	120°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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Flammability

Test Type	Method / Standard	Requirement	Result	Unit
Oxygen Index	ISO 4589-2	% Oxygen to support combustion >34%	28.9	%
Glow Wire Rating	IEC 60695	No Ignition to Extinguish with 30s	850	°C
Flammability	UL94	Vertical (V0) or Horizontal (HB)	V2	
Flammability	IEC 61386-1	Self Extinguishing <30s	4s	Seconds
Flammability	UNI CEI 11170		LR3/LR4	-
Flammability	DIN 5510-2	Classification to DIN 54837	S4, SR2 ST2	
Ignition Rating	NF F16-101/2	Glow Wire & oxygen index	I3	-

Smoke

Test Type	Method / Standard	Requirement	Result	Unit
Fume Rating	NF F16-101	Smoke & Toxicity	F1	-
Smoke Density	BS6853	A <0.02	-	Ao
Smoke Density	ASTM E-662	Ds <200 in both modes	72/13	Ds Max

Toxicity

Test Type	Method / Standard	Requirement	Result	Unit
Halogen Free		<0.5%	Pass	Pass/Fail
Phosphorous Free		<0.5%	Pass	Pass/Fail
Sulphur Free		<0.5%	Pass	Pass/Fail
Toxicity	SMP-800C	Values below permitted maximum	Pass	Pass/Fail
Toxicity	EN45545-2	<1.2		CIT (NLP)

Fire Performance Overview

Property	Low Fire Hazard	Enhanced Low Fire Hazard	Super Low Fire Hazard	Inherent Low Fire Hazard
Property	LFH	EFLH	SLFH	ILFH
Oxygen Index ISO4589	32% ≥ OI ≥ 28%	OI ≥ 32%	OI ≥ 35%	Inherent Low Fire
BS6853 Smoke Density 3m³	0.02 ≤ A _s ≤ 0.03	0.0005 ± A _s ≤ 0.02	A _s ≤ 0.005	Hazard i.e
Zero Halogen	✓	✓	✓	Type , S, SS
Zero Phosphorus	✓	✓	✓	Metallic Conduit & Fit-
Zero Sulphur	✓	✓	✓	tings
NFF16-102	I3F2	I2F2	I2F1	
EN45545-2	HL2	HL3	HL3	

Pre Test Conditions

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