

Non-Metallic Systems

PFH Heavyweight Conduit

Technical Characteristics

Conforms to	BSI Kitemark KM-35161 CE Mark to the Low voltage directive NFF16-101 rating I3 F1 UNI CEI11170 rating LR3/LR4 EN45545-2 Rating (R23/R24) HL2		
Approvals and Standards	   		
Degree of mechanical protection	High flexibility & fatigue life		
Degree of protection	IP40 - Adapting & Jumbo IP65 - N/A IP66 - Adaptalok, ATS or Adaptaseal IP67 - Adaptalok + ALS Seal or ATS, Adaptaseal IP68 - Adaptalok + ALS Seal or ATS, Adaptaseal IP69k - N/A		
UV protection	Very High		
Finish	Black (BL)		
Application	Indoors / Outdoors - low temperature applications, Rail		
Normal operating temperature range	Application	Min Temp	Max Temp
	Static	- 40°C	+120°C
	Dynamic	- 45°C	+120 °C
For use with - Fitting range	Adaptalok & ATS , Adaptaseal and Adapting fittings		
Fire performance	Test Standard	Performance Rating	Self Extinguishing & Halogen Free 
	EN45545-2	(R23/R24) HL2	
	NFF16-101 /2	I3 / F1	
	UNI CEI 11170	LR3/LR4	
	LUL	Pass <0.1%	
	UL94	V2	
Testing data	See pages 3 & 4		
Type of material	Modified Polyamide (Nylon) 12 - flame retardant - heat stabilised		

Image

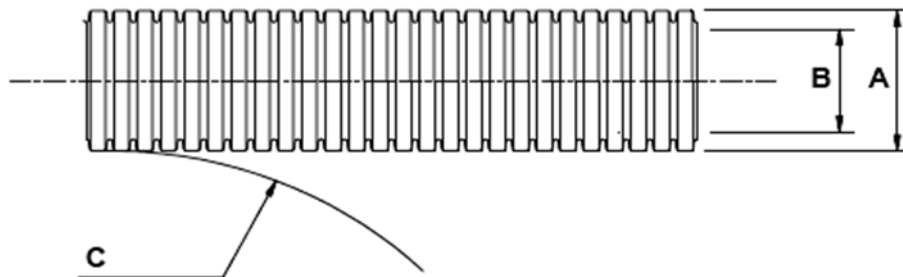


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Technical & Dimensional Data

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)	
PFFH13	13mm	10	Fine	13.0mm	9.7mm	40	50	3.2
PFFH16	16mm	13	Fine	15.8mm	11.5mm	45	50	4.3
PFCH21	21mm	17	Coarse	21.2mm	15.3mm	50	50	6.8
PFCH28	28mm	23	Coarse	28.5mm	21.5mm	60	50	9.4
PFCH34	34mm	29	Coarse	34.5mm	27.5mm	70	25	12.2
PFCH42	42mm	36	Coarse	42.5mm	35.3mm	75	25	16.3
PFCH54	54mm	48	Coarse	54.5mm	46.4mm	85	25	20.3
To order quote part number, colour & reel length, e.g PFCH21/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 Propagating	Suspended load
PFH	ATS	2	3	5	4	4	0	6	7	-	2	1	0

Mechanical Properties

Test Type	Methods / Standards	Requirements	Value
Crush Strength	IEC61386	<25% crush >90% recovery	>320N
Tensile Strength	IEC61386-1	Pull off of fitting minimum value	>250N
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 @-5 °C	IEC61386-23	5000 cycles minimum	8xOD

Thermal Properties

Test Type	Methods / Standards	Requirements	Value
Minimum Temp	Dynamic IEC61386	Dynamic 5000 cycles	-45°C
Maximum Short Term Temp	IEC61386	Static & Dynamic 3000 hours, 5000 cycles	120°C
Minimum Static / Dynamic Temp	IEC61386	Permanent Use (30,000) Hours	-50°C
Maximum Static / Dynamic Temp	IEC61386	Permanent Use (30,000) Hours	105°C

Chemical Resistance Chart

Key:

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 TTS 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	HB/V0
Flammability	IEC 61386-1	Self Extinguishing <30s	4s	Seconds
Flammability	UNI CEI 11170		LR3/LR4	-
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 <100 in both modes	-	Ds Max

Toxicity

Test Type	Method / Standard	Requirement	Result	Unit
Halogen Free	LUL	<0.5%	Pass	Pass/Fail
Phosphorous Free	LUL	<0.5%	Pass	Pass/Fail
Sulphur Free	LUL	<0.5%	Pass	Pass/Fail
Toxicity	NES713 Issue 3	<10.0	-	-
Toxicity	TS45545-2	R23 - HL3 <0.75 HL2 <0.9 HL1 <1.2	0.78 (HL2)	CIT (NLP)

Fire Performance Overview

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

Pre Test Conditions

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