

Non-Metallic Systems

PAH Heavyweight Conduit



Technical Characteristics

Conforms to	BSI Kitemark KM-35161 Low voltage directive London Underground (On concession) Deutsche Bahn S4, SR2, ST2 NFR 16-10/12 I3,F2 NFR 13-903 Lloyd's Register of Shipping (Type Approval) ASTM E662
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Approvals and Standards	     
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Degree of mechanical protection	Medium flexibility & fatigue life
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Degree of protection	IP40 - Adapting & Jumbo IP66 - Adaptalok, ATS or Adaptaseal IP68 - Adaptalok + ALS Seal or ATS, Adaptaseal
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UV protection	Very High
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Finish	Black (BL), Grey (GR)
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Application	Indoors / Outdoors - Rail, heavy industrial, buildings & machinery
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Normal operating temperature range	Application	Min Temp	Max Temp
	Static	- 40°C	+120°C
	Dynamic	- 5°C	+120 °C

For use with - Fitting range	Adaptalok & ATS , Adaptaseal and Adapting fittings
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Fire performance	Test Standard	Performance Rating	
	IEC 61386	Pass	Self Extinguishing & Halogen Free
	NFF16-101	I3 F3	
	LUL	Pass	
	ASTM E662	21/65 - Ds Max	
	UL94	V2	

Testing data	Click or See pages 3 & 4
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Type of material	Polyamide (Nylon) 6 - flame retardant & Heat stabilised
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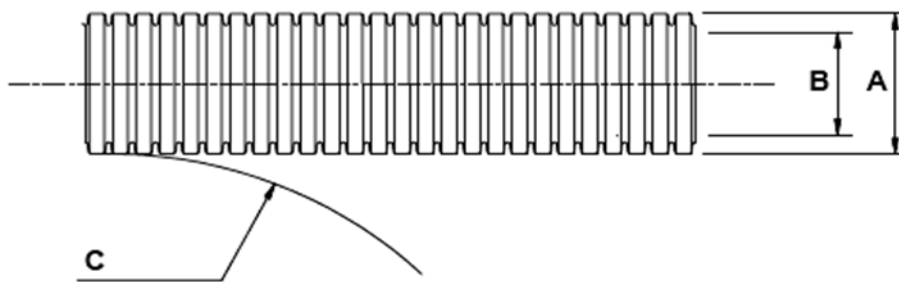
PAH Heavyweight Conduit



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)	
PAFH13	13mm	10	Fine	13.0mm	9.0mm	35	50	3.5
PAFH16	16mm	13	Fine	15.8mm	11.3mm	45	50	4.6
PACH21	21mm	17	Coarse	21.2mm	14.5mm	60	50	7.8
PACH28	28mm	23	Coarse	28.5mm	21.3mm	70	50	13.0
PACS34	34mm	29	Coarse	34.5mm	26.8mm	75	50	15.5
PACS42	42mm	36	Coarse	42.5mm	34.6mm	90	25	19.5
PACS54	54mm	48	Coarse	54.5mm	46.0mm	95	25	26.0

To order quote part number, colour & reel length, e.g PACH21/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
PA S	AL	2	4	2	4	4	0	6	6	-	2	1	0

Mechanical Properties

Test Type	Methods / Standards	Requirements	Value
Crush Strength	IEC61386	<25% crush >90% recovery	>320N
Impact Strength	IEC61386-1	No Cracks. <20% deformation min value	>6.0J
Tensile Strength	AFX norm T1987	Pull off of fitting minimum value	250N
Dynamic Bend Radius	IEC61386-23	5000 cycles minimum	80mm
Static Bend Radius	AFX norm T1985		60mm

Thermal Properties

Test Type	Methods / Standards	Requirements	Value
Minimum Temp	Dynamic IEC61386	Dynamic 5000 cycles	-5°C
Maximum Short Term Temp	IEC61386	Static & Dynamic 3000 hours, 5000 cycles	150°C
Minimum Static Temp		Permanent Use (30,000) Hours	-40°C
Maximum Static Temp		Permanent Use (30,000) Hours	120°C
Cold Bend @ - 40°C	NFR13-903	2xOD	Pass

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 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	28	%
Glow Wire Rating	IEC 60695	No Ignition to Extinguish with 30s	850	°C
Flammability	UL94	Vertical (V0) or Horizontal (HB)	V0	HB-V0
Flammability	IEC 61386-1	1Kw Burner @ 45° Vertical burn	Pass	Pass/Fail
Ignition Rating	NF F16-101	Glow Wire & oxygen index	I3	-

Smoke

Test Type	Method / Standard	Requirement	Result	Unit
Fume Rating	NF F16-101	Smoke & Toxicity	F2	-
Smoke Density	BS6853	A <0.02	0.026	Ao
Smoke Density	ASTM E-662	Ds <100 in both modes	21/65	Ds Max

Toxicity

Test Type	Method / Standard	Requirement	Result	Unit
Halogen Free	LUL	<0.5%	Pass<0.1 %	Pass/Fail
Phosphorous Free	LUL	<0.5%	Pass<0.1 %	Pass/Fail
Sulphur Free	LUL	<0.5%	Pass<0.1 %	Pass/Fail
Toxicity (Marine)	NES713 Issue 3	<10.0	5.2	-
Toxicity	BS 6853 App B.1		2.17	

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 ≥ 32%	Inherent Low Fire Hazard i.e
BS6853 Smoke Density 3m³	0.02 ≤ A _s ≤ 0.03	0.0005 ± A _s ≤ 0.02	A _s ≤ 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)	EN50086/IEC61386	23 (°C)	50 (%)