

Non-Metallic Systems

PK - Very High Specification Conduit



Technical Characteristics

Conforms to	BSI Kitemark KM-35161 CE mark to the Low voltage directive London Underground Category Extensive and Grouped NFF16-101 rating I2, F1 BS6853 rating 1a
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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	IP66 - Peek - Type A IP67 - Peek - Type A
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UV protection	Very High
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Finish	Black (BL)
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Application	Indoors / Outdoors - in the Nuclear Industry, or extreme temperature and underground environments, where high performance and extremely low smoke and toxicity is required.
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Normal operating temperature range	Application	Min Temp	Max Temp
	Static	- 60°C	+260°C
	Dynamic	- 45°C	+260°C

For use with - Fitting range	Peek - PK Type A
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Fire performance	Test Standard	Performance Rating	
	ISO 4589-2	40%	Self Extinguishing & Halogen Free
	NFF16-101	I2, F1	
	LUL	Extensive & Grouped	
	BS6853	Class 1a	
	UL94	V0	



Testing data	Click or See pages 3 & 4
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Type of material	Polyetherketone - Super low fire hazard
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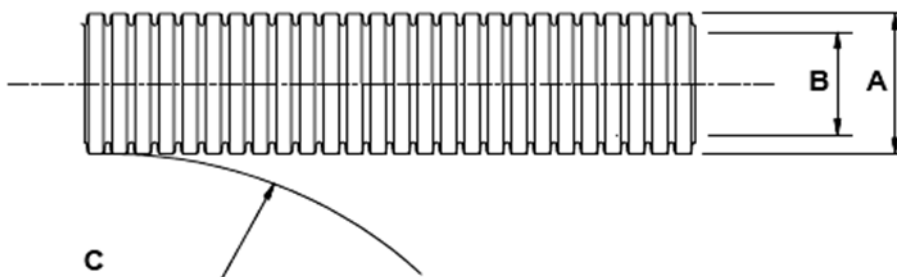
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Technical & Dimensional Data

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)	
PKFS13	13mm	10	Fine	13.2mm	10.0mm	35mm	25, 50	2.5
PKFS16	16mm	13	Fine	16.3mm	11.7mm	45mm	25, 50	3.0
PKFS21	21mm	17	Fine	21.2mm	16.6mm	60mm	25, 50	4.5
PKCS28	28mm	23	Coarse	28.4mm	21.7mm	65mm	25, 50	6.0
PKCS34	34mm	29	Coarse	34.3mm	27.7mm	80mm	25, 50	12.0

To order quote part number, colour & reel length, e.g. PKFS21/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
PK	PK	2	4	5	6	4	2	6	7	-	1	1	0

Mechanical Properties

Test Type	Methods / Standards	Requirements	Value
Crush Strength	IEC61386-1	<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	>6.0J
Static Bend Radius		21mm size	60mm
Dynamic Bend radius @-45 °C	IEC61386-23	5000 cycles minimum	4xOD

Thermal Properties

Test Type	Methods / Standards	Requirements	Value
Minimum Temperature		Permanent Use (30,000) Hours	-60°C
Maximum Temperature		Permanent Use (30,000) Hours	-260°C
Maximum Short Term Temp		Peak (3000 hours)	300°C
Cold Bend @-40°C		Mandrel Diameter	3xOD
Heat Load Test @250°C	IEC61386-1	Weight @ crush classification 48hrs	Pass

Chemical Resistance Chart

Key:	Green	Yellow	Red	Black
Suitable :	● Astm No.1	● Diesel oil	● Methyl Bromide	● Sulphur Dioxide (Gas)
Limited Suitability :	● Astm No.2	● Diethylamine	● MEK	● Sulphuric Acid (10%)
Unsuitable :	● Astm No.3	● Ethanol	● Nitric Acid (10%)	● Sulphuric Acid (70%)
Not Tested :	● 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
Flammability	ISO 4589-2	% Oxygen to support combustion $\geq 34\%$	40	%
Glow Wire Rating	IEC 60695	No Ignition to Extinguish within 2s	960	$^{\circ}\text{C}$
Flammability	UL94	Burning Classification	V0	Rating
Flammability	IEC 61386-1	Self Extinguishing <30s	0s	Seconds
Flammability	NF F16-101	Glow Wire & oxygen index	I2	Rating
Flammability	ISO-4589-3	Flammability temperature index $\geq 300^{\circ}\text{C}$	360	$^{\circ}\text{C}$





Smoke

Test Type	Method / Standard	Requirement	Result	Unit
Fume Rating	NF F16-101	Smoke & Toxicity	F1	-
Smoke Density	BS6853 Annex D	$A_o < 0.02$	0.00148	A_o
Smoke Density	ASTM E-662	$D_s < 100$ in both modes	10	$D_s \text{ Max}$

Toxicity

Test Type	Method / Standard	Requirement	Result	Unit
Halogen Free	LUL	$< 0.5\%$	$< 0.1\%$	Yes/No
Phosphorous Free	LUL	$< 0.5\%$	$< 0.1\%$	Yes/No
Sulphur Free	LUL	$< 0.5\%$	$< 0.1\%$	Yes/No
Toxicity	NES713 Issue 3	< 10.0	0.22	

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	$32\% \geq OI \geq 28\%$	$OI \geq 32\%$	$OI \geq 32\%$	Inherent Low Fire Hazard i.e
BS6853 Smoke Density $3m^3$	$0.02 \leq A_o \leq 0.03$	$0.0005 \pm A_o \leq 0.02$	$A_o \leq 0.005$	Hazard i.e
Zero Halogen	✓	✓	✓	Type , S, SS
Zero Phosphorus	✓	✓	✓	Metallic Conduit &
Zero Sulphur	✓	✓	✓	Fittings
NFF16-101	I3F2	I2F2	I2F1	
EN45545-2	HL2	HL3	HL3	

Pre Test Conditions

Duration	Standard	Temperature	Relative Humidity
168 (Hours)	BS EN IEC 61386-1	23 ($^{\circ}\text{C}$)	50 (%)

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