Non-Metallic Systems

PFTC Tinned Copper Braided 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
Approvals and Standards	
Degree of mechanical protection	Very High flexibility & fatigue life
Degree of protection	IP66 - Hi Spec Fittings IP67 - Hi-Spec Fittings
UV protection	Very High
Finish	Tin
Application	Indoors / Outdoors - low temperature applications, High impact areas, Rail

Normal operating temperature range

Application	Min Temp	Max Temp
Static	**- 50°C**	**+110°C**
Dynamic	**- 45°C**	**+120 °C**

For use with - Fitting range: Hi - Spec Type A & B

Fire performance

Test Standard	Performance Rating	
EN45545-2	(R22/R23) HL2	Self Extinguishing & Halogen Free
NFF16-101 /2	I3 / F1	
UNI CEI 11170	LR3/LR4	
DIN 5510-2	S4 SR2 ST2	
UL94 (material)	V2	

Testing data: Click or See pages 3 & 4

Type of material: Modified Polyamide (Nylon) 12 - flame retarded - heat stabilised
Tinned Copper overbraid

Image

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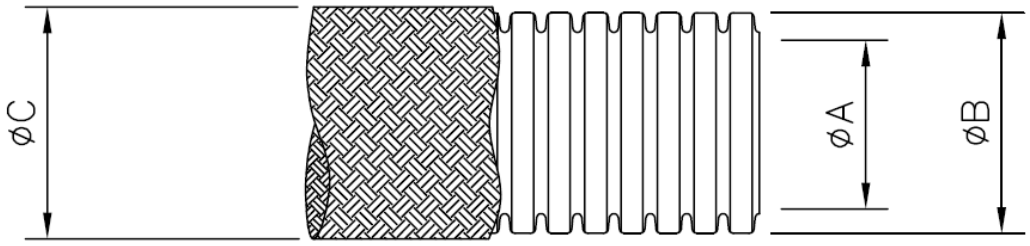
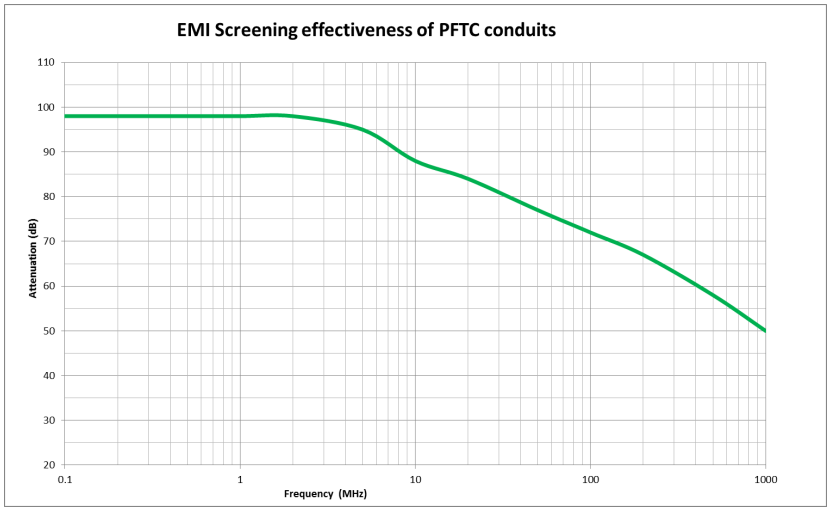
Technical & Dimensional Data

	Conduit Size			Dimensions				
Part No.	**Nominal Conduit Size**	**NW Conduit Size**	**Conduit Pitch**	**(A) Outside Diameter**	**(B) Inside Diameter**	**(C) Min. Bend Radius**	**Reel Length (m)**	**Average Weight (KG/100m)**
PFFSTC16	16mm	13	Fine	17.2mm	11.2mm	35	50	3.8
PFFSTC21	21mm	17	Fine	23.6mm	16.5mm	45	50	6.0
PFCSTC28	28mm	23	Coarse	30.0mm	21.5mm	55	50	12.5
PFCSTC34	34mm	29	Coarse	36.0mm	27.5mm	70	50	14.5
PFCSTC42	42mm	36	Coarse	43.5mm	35.2mm	85	25	16.3
PFCSTC54	54mm	48	Coarse	56.5mm	46.2mm	110	25	23.0
To order quote part number, colour & reel length, e.g PFFSTC21/BL/50M								



EMI Screen System

The graph below shows the results of PFFSTC21 screened conduit, with its appropriate fittings, tested by ERA technology, to IEC60096/2:93 (radio frequency cables part 1).Tests measured attenuation in decibels (dB) over the frequency range covered by the EMC directive, 0.1 to 1000MHz.



For Applications where electromagnetic interference is of particular concern, Adaptaflex have classified suitable conduit systems by means of symbols.

These are related in an ascending scale of performance as outlined in this explanation.

Symbol	Screen level	Explanation
STANDARD	**40db @ 100MHz Standard EMI Screen**	**Standard EMI Screen** (Products featuring a Stainless Steel overbraid)
ENHANCED	**60db @ 100MHz Enhanced EMI Screen**	**Enhanced EMI Screen** (Products featuring a Galvanised Steel overbraid)
HIGH	**75db @ 100MHz High EMI Screen**	**High EMI Screen** (Products featuring a tinned copper overbraid)

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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
PFTC	PBF/ PBC	2	3	5	4	4	0	6	7	-	3	1	0

Mechanical Properties

Test Type	Methods / Standards	Requirements	Value
Crush Strength	IEC 61386	<25% crush >90% recovery	>320N
Tensile Strength	IEC 61386-1	Pull off of fitting minimum value	>500N
Impact Strength @-45 °C	IEC 61386-1	No Cracks <20% deformation min value	>2J
Impact Strength @23 °C	IEC 61386-1	No Cracks. <20% deformation min value	>20J
Dynamic Bend radius @-45 °C	IEC 61386-23	5000 cycles minimum	6xOD

Thermal Properties

Test Type	Methods / Standards	Requirements	Value
Minimum Temp Dynamic	IEC 61386	Dynamic 5000 cycles	-45°C
Minimum Static Temp	IEC 61386	Permanent Use (30,000) Hours	-50°C
Maximum Static / Dynamic Temp	IEC 61386	Permanent Use (30,000) Hours	105°C
Maximum Short Term Temp	IEC 61386	Static & Dynamic 3000 hours, 5000 cycles	120°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 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	HB/V0
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	ISO 5669-2	R22 - HL2 <300	240	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	LUL	<0.5%	Pass	Pass/Fail
Phosphorous Free	LUL	<0.5%	Pass	Pass/Fail
Sulphur Free	LUL	<0.5%	Pass	Pass/Fail
Toxicity	DIN5510-2	FED <1.0	0.878/0.371	30 / 15 min
Toxicity	EN 45545-2	R22 HL2 <0.9 (R22)	0.34	CIT (NLP)

Fire Performance Overview

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

Pre Test Conditions

Duration	Standard	Temperature	Relative Humidity
168 (Hours)	EN50086/IEC61386	23 (^{0}C)	50 (%)

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