

Metallic Systems

SB Conduit

Technical Characteristics

Conforms to	BSI Kitemark KM-35161 Low voltage directive Inherent low fire hazard Enhanced EMI screen		
Approvals and Standards	  		
Degree of mechanical protection	High flexibility & fatigue life		
Degree of protection	IP40 - with TSB type A & B fittings		
UV protection	Very High		
Finish	Braid material colour		
Application	Indoors / Outdoors - standard EMI screen - very high abrasion resistance		
Normal operating temperature range	Application	Min Temp	Max Temp
	Static	- 50°C	+300°C
	Dynamic	- 45°C	+250 °C
For use with - Fitting range	Type A & B		
EMI performance	Standard EMI Screen 62dB @ 100MHz <100dB @ 1MHz <100dB @ 10MHz Standard EMI Screen 74dB @ 1MHz 62dB @ 100MHz 34dB @ 1000MHz <u>Over braid details</u> Galvanised steel over braided (wire OD 0.28 to 0.30mm) 32 carriers, 7 wires per carrier, Max O/D 22.0mm Approx, 90% braid cover 		
Testing data	See pages 3 & 4		
Type of material	Galvanised steel core - Galvanised steel over braid		

Image

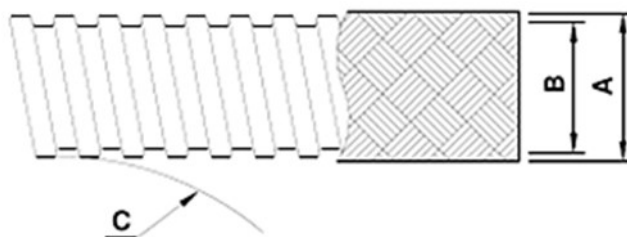


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Technical & Dimensional Data

Conduit size metric (mm)	10	12	16	20	25	32	40	50	63	75
Conduit size US trade (inches)	1/4"	5/16"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"
Part code	TSB	TSB	TSB	TSB	TSB	TSB	TSB	TSB	TSB	TSB
Coil length (m)	25	25	25	25	25	10	10	10	10	10
A - Outside diameter (mm)	10	14.0	17.5	21.5	26.0	34.0	43.6	56.0	63.5	78.0
B - Inside diameter (mm)	6.8	10.3	13.0	16.9	21.4	28.1	37.7	48.4	57.5	70.0
C - Static bend radius (mm)	25	30	35	45	55	60	80	90	115	150
Average weight (KG/100m)	10	11.6	18.2	23.6	28	46.92	74.9	93.9	-	152.5
For ordering code add coil length to part code - e.g TSSB/25M										

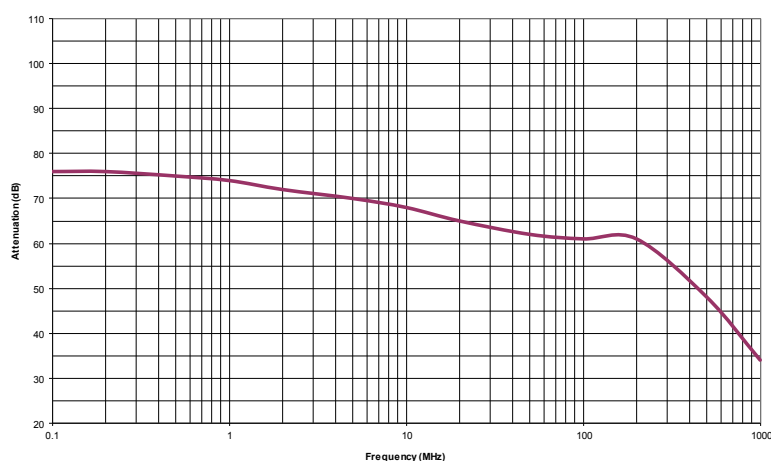


EMI Screen System

The graph below shows the results of STC20 screened conduit with its appropriate fittings tested to by ERA technology to IEC60096/2:93 (Radio frequency cables part 1).

Tests Measured attenuation in decibels (dB) over the frequency range covered by EMC directive 0.1 to 100MHz

EMI Screening effectiveness of SB conduits



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

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

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

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BS EN 61386 Clarification

	Fitting	Compression	Impact	Min temp	Max temp	bending	electrical	IP solids	IP water	Corrosion	Tensile	Non-flame Propagating	Suspended load
TSB	TSB	4	5	5	6	4	1	4	0	1	4	1	5

Mechanical Properties

Test Type	Methods / Standards	Requirements	Value
Crush Strength @ 23°C	IEC61386-1	<25% crush >90% recovery	>1250N
Crush Strength @ 23 °C	AFX norm C1989	10% Crush, Instantaneous Value	2200N
Impact Strength @ 23 °C	IEC61386-1	No Cracks <20% deformation	>20J
Impact Strength @ -45 °C	IEC61386-1	No Cracks. <20% deformation	>6J
Tensile Strength	IEC61386-1	With SB Type Fitting	>1000N class 4
Tensile Strength	AFX norm T1987	Ultimate pull-out of SB-Type Fitting	1450N
Dynamic Bend radius @ -45 °C	IEC61386-23	5000 cycles minimum	50mm

Thermal Properties

Test Type	Methods / Standards	Requirements	Value
Minimum Temperature	IEC61386-23	Dynamic 5000 cycles	-45°C
Maximum Temperature	IEC61386-23	Dynamic 5000 cycles	250°C
Minimum Static		Permanent Use	-45°C
Maximum Static		Permanent Use	250°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	ILFH	%
Glow Wire Rating	IEC 60695	No Ignition to Extinguish with 30s	ILFH	°C
Flammability	UL94	Vertical (V0, V2) or Horizontal (HB)	ILFH	
Flammability	IEC 61386-1	1Kw Burner @ 45°	ILFH	Pass/Fail
FTI	ISO 4589-3		ILFH	

Smoke

Test Type	Method / Standard	Requirement	Result	Unit
Smoke Density	ATS1000	In flaming mode <100 @ 4 mins	ILFH	
Smoke Density	ATS1000	In non flaming mode <100 @ 4 mins	ILFH	
Smoke Density	BS6853	A <0.02	ILFH	
Smoke Density	ASTM E-662	Flaming mode Ds Max	ILFH	
Smoke Density	ISO - 5659-2	Ds Max	ILFH	

Toxicity

Test Type	Method / Standard	Requirement	Result	Unit
Halogen Free	LUL	<0.5%	ILFH	Yes/No
Phosphorous Free	LUL	<0.5%	ILFH	Yes/No
Sulphur Free	LUL	<0.5%	ILFH	Yes/No
NFX 70-100	NFX70 - 100 1 / 2	CIT _{NLP}	ILFH	N/A

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	✓	✓	✓	STC,SPB
NFF16-102	✓	✓	✓	Metallic Conduit & Fit-
EN45545-2	I3F2	I2F2	I2F1	tings
	HL2	HL3	HL3	

Pre Test Conditions

Duration	Standard	Temperature	Relative Humidity
168 (Hours)	EN50086/IEC61386	23 (°C)	50 (%)