

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 SB 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 | Adaptasteel - Type A & B |
|------------------------------|--|

| | | | |
|--|---|---------------------------------|--|
| EMI performance | Standard EMI Screen 62dB @ 100MHz | <100dB @ 1MHz <100dB @ 10MHz | |
| | Standard EMI Screen 74dB @ 1MHz | 62dB @ 100MHz 34dB @ 1000MHz | |
| Over braid details 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 | Click or See pages 3 & 4 |
|--------------|--|

| | |
|------------------|---|
| Type of material | Galvanised steel core - Galvanised steel over braid |
|------------------|---|



Metallic Systems

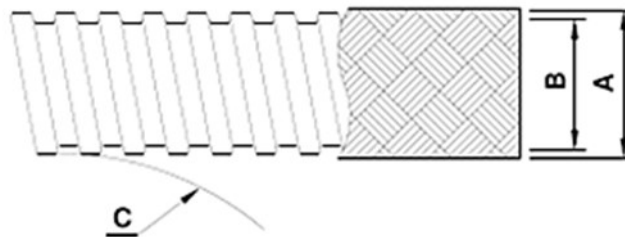
SB Conduit



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 | SB | SB | SB | SB | SB | SB | SB | SB | SB | SB |
| 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 SSB/25M

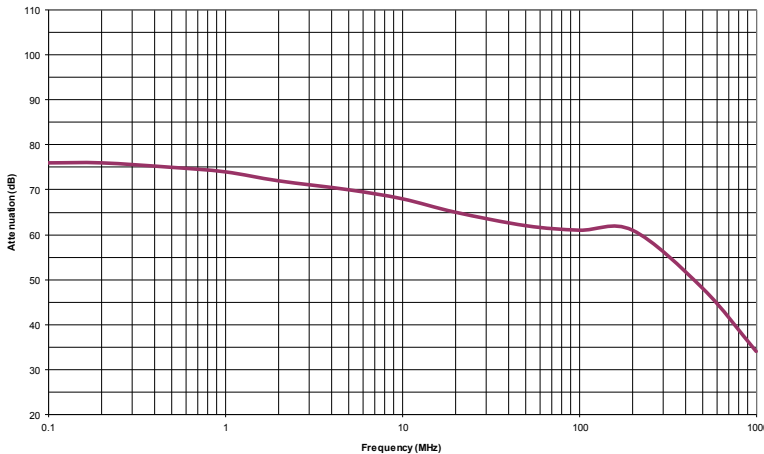


EMI Screen System

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, 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 |
|--------|---|---|
| | 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) |

Metallic Systems

SB Conduit



BS EN 61386 Clarification

| | Fitting | Compression | Impact | Min temp | Max temp | bending | electrical | IP solids | IP water | Corrosion | Tensile | Non-flame Propogating | Suspended load |
|-----------|---------|-------------|--------|----------|----------|---------|------------|-----------|----------|-----------|---------|-----------------------|----------------|
| SB | SB | 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 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.

Cable Management Products Ltd.

CMG House - Station Road - Coleshill - B46 1HT - United Kingdom

Tel: +44(0)1675 468 222 - Fax: +44(0)1675 464 930

Technical Support e-mail: cmg.conduitsystems@abb.com - www.adaptaflex.co.uk

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

Pre Test Conditions

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

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