# Metallic Systems

## STC Conduit

## Technical Characteristics

| | |
|---|---|
| Conforms to | BSI Kitemark KM-35161<br>CE mark to the Low Voltage Directive<br>Inherent low fire hazard |
| 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 - where a high degree of EMI screen is required |
| Normal operating temperature range | Application / Min Temp / Max Temp<br>Static / **- 50°C** / **+300°C**<br>Dynamic / **- 45°C** / **+250 °C** |
| For use with - Fitting range | Adaptasteel - Type A & B |
| EMI performance | **High EMI Screen 75dB @ 100MHz** **<100dB @ 10MHz**<br>**High EMI Screen 103dB @ 1MHz** **75dB @ 100MHz** **55dB @ 1000MHz**<br>**Over braid details**<br>Galvanised steel over braided (wire OD 0.28 to 0.30mm) 32 carriers, 8 wires per carrier, Approx, 90% braid cover |
| Testing data | Click or See pages 3 & 4 |
| Type of material | Galvanised steel core - tinned copper braid |
| Image | |

**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@tnb.com - www.adaptaflex.com

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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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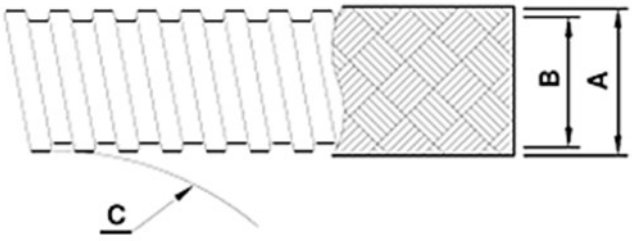
## Technical & Dimensional Data

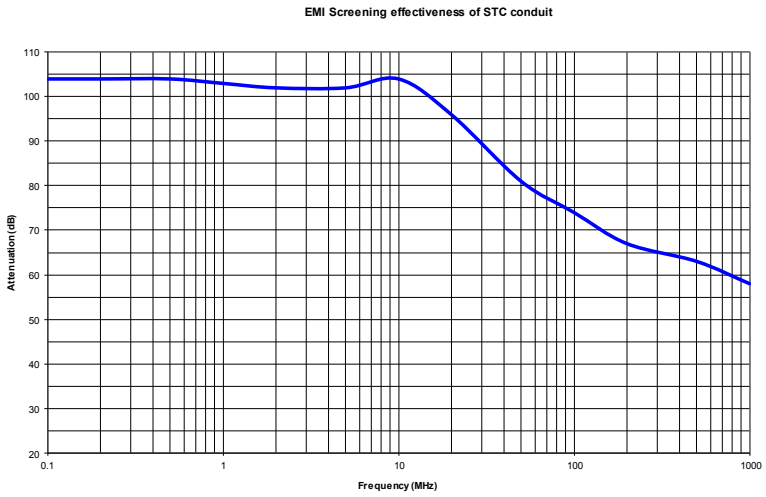
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Conduit size metric **(mm)** | 10 | 12 | 16 | 20 | 25 | 32 | 40 | 50 | 63 | 75 |
| Conduit size US trade **(inches)** | 1/4” | 5/16” | 3/8” | 1/2” | 3/4” | 1” | 1 1/4” | 1 1/2” | 2” | 2/1/2” |
| Part code | STC | STC | STC | STC | STC | STC | STC | STC | - | - |
| Coil length **(m)** | 25 | 25 | 25 | 25 | 25 | 10 | 10 | 10 | - | - |
| **A -** Outside diameter **(mm)** | 12.0 | 14.0 | 17.5 | 21.5 | 26.0 | 34.0 | 43.6 | 56.0 | - | - |
| **B -** Inside diameter **(mm)** | 6.8 | 10.3 | 13.0 | 16.9 | 21.4 | 28.1 | 37.7 | 48.4 | - | - |
| **C -** Static bend radius **(mm)** | 25 | 30 | 35 | 45 | 55 | 60 | 80 | 90 | - | - |
| Average weight **(Kg/100m)** | 10 | 11.6 | 18.2 | 23.6 | 28 | 46 | 74.9 | 93.9 | - | - |
| ***For ordering code add coil length to part code - e.g STC25/25M*** | | | | | | | | | | |




## 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




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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **STC** | SB | 4 | 4 | 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 | 2500N |
| 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 | 1600N |
| Dynamic Bend radius @ -5 °C | IEC61386-23 | 5000 cycles minimum | 160mm |

## 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 | -50°C |
| Maximum Static | | Permanent Use | 300°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 | 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 $D_S$ Max | ILFH | |
| Smoke Density | ISO - 5659-2 | $D_S$ 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 |
| | | | ILFH | |

## Fire Performance Overview

| Property | Low Fire Hazard | Enhanced Low Fire Hazard | Super Low Fire Hazard | Inherent Low Fire Hazard |
|---|---|---|---|---|
| | LFH | ELFH | SLFH | ILFH |
| **Property** | LFH | EFLH | SLFH | ILFH |
| Oxygen Index ISO4589 | 32% ≥ OI ≥ 28% | OI ≥ 32% | OI ≥ 32% | Inherent Low Fire Hazard i.e Type , S, SS , STC,SPB 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) | IEC61386 | 23 ($^0$C) | 50 (%) |

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