

Braids, Strands & Flexible Connectors



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A driving force in the market place



Since 1973 **Mettex** has been producing quality, well engineered and affordable flexible braided wire products for use throughout the electrical industries.

We are now the largest UK Company whose activities and skills are focused solely on the manufacture of flexible wire braid, strand and related added value products and services. The growth and success of **Mettex** is the direct result of our policy of continuous improvement and investment.

Mettex offers a wide range of standard continuously made lines and custom designed and built products for specific applications. We work predominantly with copper but also manufacture from a wide range of other non-ferrous and ferrous materials.

Mettex builds to order and we work closely with our customers to deliver the *right* technical solution at the *right* price and at the *right* time.

Our aim is straight forward -that is to serve you by being the best in our field and to offer the finest in value for money, quality of product and customer service.

PRODUCT OVERVIEW

Description	Typical Uses	Key Market Sectors
Sleeving Braid Screening Braid or Cable Sleeve	<ul style="list-style-type: none"> Screening of cables from electromagnetic, electrostatic and RF interference Mechanical support Protection against abrasion and corrosion EMC & EMH applications 	Defence & Aerospace Transportation Electronics & Communication Cable harness & assembly makers Component distributors
Flexible Connectors Flexible Assemblies, Earth Bonding or Ground Straps, Braided Links or Leads	<ul style="list-style-type: none"> Overcome vibration/alignment problems Interconnects for L.V. power distribution units Earth connections Battery connections Cable jointing kits 	Defence & Aerospace Transport Switchgear & control equipment Power generation Electrical equipment manufacturers
Flexible Busbars	<ul style="list-style-type: none"> Heavy-duty power interconnection Overcome vibration/alignment problems Expansion joints Variable terminating positions 	Power generation Power distribution Switchgear & control panels Marine propulsion Rail transportation
Flat and Round Braid	<ul style="list-style-type: none"> Earth connections Power interconnection Lightening protection Flexible links Overcome vibration/alignment problems 	Defence & Aerospace Rail transportation Automotive Electronics General electrical sector
Flexible Strand or Rope	<ul style="list-style-type: none"> Earth connections Power interconnection Applications involving a high level of flexing Lightening protection 	Defence & Aerospace Power generation & control Transportation Electronics General electrical sector
Stocking Braid	<ul style="list-style-type: none"> Earth continuity for MV & HV joints 	Power generation Power distribution Component suppliers & distributors Service installers Electrical component manufacturers
Knitted Mesh Tape Knitted wire tape or mesh	<ul style="list-style-type: none"> EMC/RFI shielding for cables Cable jointing Repairing armoured cable 	Rail transportation Communications Electronics Power distribution & service Electrical component manufacturers
Overbraiding Service	<ul style="list-style-type: none"> Alternative method of EMC / RFI protection Screening flexible conduit Added electrical and mechanical protection Complex multiple branch cable harnesses Screening for specialist and safety critical cables 	Defence & Aerospace Rail transportation Cable manufacturers Flexible conduit manufacturers Hose suppliers
Special Products	<ul style="list-style-type: none"> Electric motor brushes Audio speaker wire Medical equipment 	Switchgear manufacturers General electrical equipment Speaker manufacturers Motors & motion products Research & medical

Any of the above products can be configured to meet your exact technical requirements.

Customer care & pricing policy

Our internal processes are set to focus on delivering a high level of customer care and support.

The key benefits to working with **Mettex** are:

- A rapid response to enquiries
- Prototype sample service
- Immediate technical advice and assistance
- Fast turnaround

Our pricing policy is to offer value for money.

Mettex products are competitively priced with no hidden incidental costs. Simply the price we offer is what you pay.

Product diversity

Mettex manufactures a comprehensive range of flexible wire based products from a wide selection of materials.

The business falls into two primary groups. Firstly, our continuously manufactured standard lines of flat and round braid, strand and screening braid. Secondly, affordable added value products, custom-built to meet specific mechanical and electrical performance criteria.

Quality

Mettex is accredited to the globally recognised and well-respected quality standard BS EN ISO9001: 2000. In addition we also carry approvals and other related awards from international 'blue chip' companies.

Constant monitoring during manufacturing forms an important part of our quality policy, as does the continuous review of all processes with particular emphasis on:

- Production capability
- Reducing manufacturing times
- Identifying areas for improvement
- Supply chain management

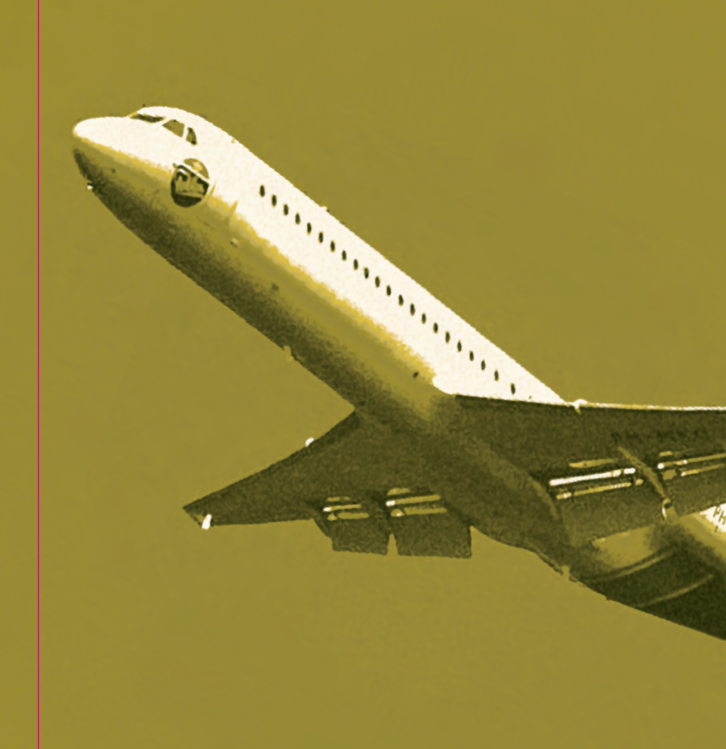
Manufacturing capability

Our manufacturing processes and capacity provide for fast turnaround from order to despatch. We meet tight deadlines and deliver within sensible, short time frames. Where appropriate Mettex deliver on a JIT or Kanban basis.

Wire and component parts such as terminals and heatshrink tubing are readily available from stock. We supply in batch sizes ranging from a few to many thousands.



Certificate No. Q5953



Sleeving Braid

The primary use of wire sleeving braid is to provide sensitive cables with an EMC screen to shield them against electromagnetic, electrostatic and radio frequency interference.

Optimum screening performance is obtained using copper wire braid that can also be used for earth continuity purposes.

Nickel-plated copper is suitable for use at elevated temperatures and for harsh environments or where abrasion is likely to be encountered, stainless steel or galvanised wire is an option.

Features

- Industry standard coverage of 90% or 95%
- Wide range - from 2mm up to 70.0mm Ø
- Excellent expansion ratios
- Normally supplied on removable PVC former
- Also available off former in flat form
- Options for bespoke requirements
- Sample packs available for prototyping
- Packed on reels
- Option to supply in pre cut lengths

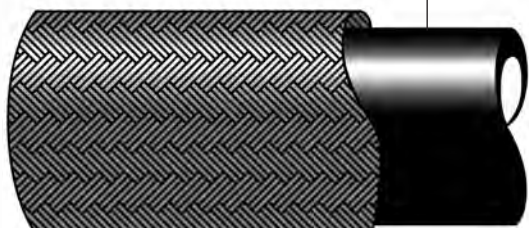
Choice of Materials

- Electro tin-plated copper
- Nickel-plated copper
- Stainless steel
- Galvanised steel
- Alternative non-ferrous & ferrous materials on request



Removable PVC former

Outside Ø in mm



Sleeving Braid

Inside Ø in mm, tin or nickel plated copper as standard

STANDARD SLEEVING BRAID

Reference	Former O/D mm	Minimum Optical Coverage	Wire Ø mm	Usable Ø mm		Approx. Weight kg per 100m (ex-former)
				Min	Max	
MBS 3.0	3.0	90%	0.13	2.0	3.5	1.00
MBS 4.0	4.0	90%	0.13	3.0	5.0	1.45
MBS 5.0	5.0	90%	0.13	4.0	6.0	1.90
MBS 6.0	6.0	90%	0.13	5.0	7.0	2.20
MBS 10.0	10.0	90%	0.16	7.0	12.0	4.40
MBS 12.5	12.5	90%	0.16	11.0	13.0	4.80
MBS 15.0	15.0	90%	0.20	13.0	18.0	8.30
MBS 20.0	20.0	90%	0.13	17.0	23.0	10.00
MBS 25.0	25.0	90%	0.13	22.0	28.0	11.25
MBS 30.0	30.0	90%	0.16	27.0	36.0	19.30
MBS 95 3.0	3.0	95%	0.10	2.5	5.0	1.25
MBS 95 4.0	4.0	95%	0.13	3.5	7.5	2.20
MBS 95 6.0	6.0	95%	0.13	4.5	9.5	2.80
MBS 95 7.5	7.5	95%	0.13	7.0	14.0	4.40
MBS 95 10.0	10.0	95%	0.13	8.0	22.0	5.00
MBS 95 12.5	12.5	95%	0.13	11.0	24.0	7.50
MBS 95 20.0	20.0	95%	0.13	16.0	38.0	10.00
MBS 95 25.0	25.0	95%	0.13	22.0	38.0	11.25
MBS 95 30.0	30.0	95%	0.16	27.0	40.0	19.30
MBS 95 35.0	35.0	95%	0.16	30.0	50.0	20.00
MBS 95 40.0	40.0	95%	0.20	35.0	60.0	33.00
MBS 95 50.0	50.0	95%	0.30	45.0	65.0	35.00



Flexible Connectors

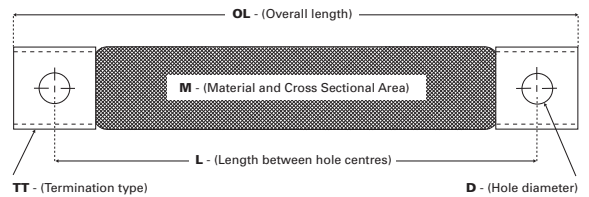
Custom made for form and fit to meet individual unique applications. Flexible connectors are made from either braid or strand and suitably terminated. When called for, flexible connectors are supplied insulated for protection and identification purposes.

Where the continuous current rating is likely to exceed 400 amps then this is generally accommodated within our Flexible Busbar range of products.

Technical assistance is available to ensure **Mettex** supplies the optimum solution for your specific application.

Features

- Complete product ready to fit
- Custom built to meet specific mechanical and electrical performance criteria
- Option to manufacture to drawing or replicate existing product
- Current ratings up to 400A
- Very wide range of terminations available to suit all requirements
- Can be supplied with solder 'water block' barrier to prevent moisture absorption
- Available with various types of insulation
- Option to fit identification markers



How to order

When ordering Connectors, please supply the following information:-

- OL – Overall length
- L – Length between hole centres
- D – Hole diameter
- M – Material and cross sectional area
- TT – Termination type

Choice of Materials

- Electro tin-plated copper
- Plain copper
- Nickel-plated copper
- Stainless steel
- Alternative non-ferrous & ferrous materials on request



Terminations

A wide range of termination types is available. This ensures that the correct mechanical bond between the conductor and the fixing down point is attained.



DESCRIPTION	BENEFITS AND FEATURES
<p>FLAT TUBE COMPRESSED FERRULE</p> 	<ul style="list-style-type: none"> - Excellent mechanical properties: compaction creates a solid end - Compressed onto braid without altering braid dimensions - Maximum conductivity with minimum volt drop = reduced thermal resistance - Ends can be drilled, milled, machined and profiled to meet mechanical demands - Custom design configurations for individual applications
<p>CRIMP TERMINAL</p> 	<ul style="list-style-type: none"> - Economical solution for low current applications - Wide range of sizes held in stock - Varying types to meet most applications – tube, ring, sheet, bootlace - Insulated options available - Option to fit customer nominated versions
<p>SWAGED FERRULE</p> 	<ul style="list-style-type: none"> - Customised for dimensionally critical applications i.e. distribution boards - Reduced assembly costs - Excellent conductive performance - Minimal heat-rise - Varying lengths, diameters and profiles
<p>ULTRASONICALLY WELDED ENDS</p> 	<ul style="list-style-type: none"> - Low cost alternative to the swaged ferrule - No reduction in technical performance - Forms solid end throughout the whole of the material - Consistent results – ultra low rejects - Lower unit costs owing to high manufacturing productivity
<p>SOLDER DIPPED ENDS</p> 	<ul style="list-style-type: none"> - Alternative to compressed ferrules - Suitable for low current applications - Excellent electrical performance - Provides direct contact with conductor - Acts as a moisture block
<p>SPECIAL TERMINATIONS</p> 	<ul style="list-style-type: none"> - Custom designed solutions for bespoke applications - Built for optimum results - Reduces technical risk for critical applications - Modified standard options utilising stock components - High current applications e.g. 480mm² 32kA earth terminal



Features

- Complete product ready to fit
- Durable, heavy duty assembly
- Robust design for power applications
- Custom made to meet specific mechanical and electrical performance criteria
- Option to manufacture to drawing or replicate existing product
- Continuous current carrying capacity in excess of 3500 amps
- Available with various forms of insulation as appropriate
- Low resistance heavy duty terminations

Choice of Materials

- Electro tin-plated copper
- Plain copper
- Nickel-plated copper
- Alternative non-ferrous & ferrous materials on request

Flexible Busbar Assemblies

Multiple layers of flat braid are used and assembled in a parallel or stacked format to achieve the required cross sectional area or agreed current density. In certain circumstances flexible strand is a practical alternative.

Busbars can be supplied insulated either over the whole assembly or individual layers of braid.

Technical assistance is available to ensure **Mettex** supplies the optimum solution for your specific application.



Flat and Round Braid

The range of **Mettex** flat braids is extensive, from very fine single braids to heavy duty multiple braids.

The ability of individual wires to flex without work hardening is why braid is suitable where conditions of vibration or movement are likely to be present. The tight bend radius makes it ideal where alignment problems exist or where space restrictions apply.



STANDARD FLAT BRAID

Reference	Nominal CSA mm ²	Nominal Dimensions mm	Wire Ø	Current Rating amps	Nominal Weight kg per 100m
FLB 2-5-36	2.50	6 x 1.00	0.15	36	2.5
FLB 4-52	4.00	10 x 1.00	0.15	52	4.0
FLB 6-66	6.00	12 x 1.00	0.15	66	6.0
FLB 10-90	10.00	15 x 1.50	0.15	90	10.0
FLB 16-120	16.00	19 x 2.00	0.15	120	16.0
FLB 25-150	25.00	25 x 3.00	0.15	150	25.0
FLB 35-200	35.00	25 x 3.50	0.15	200	35.0
FLB 2-6-66	6.00	12 x 1.00	0.20	66	6.0
FLB 2-10-90	10.00	15 x 1.50	0.20	90	10.0
FLB 2-16-120	16.00	19 x 2.50	0.20	120	16.0
FLB 2-25-150	25.00	25 x 3.00	0.20	150	25.0
FLB 2-35-200	35.00	25 x 4.00	0.20	200	35.0
FLB 2-50-250	50.00	30 x 5.00	0.20	250	50.0
FLB 2-70-300	70.00	32 x 6.00	0.20	300	70.0
FLB 2-95-350	95.00	37 x 6.00	0.20	350	95.0
FLB 2-120-400	120.00	45 x 6.00	0.20	400	120.0
FLB 2-150-500	150.00	50 x 8.00	0.20	500	150.0
FLB 2-200-550	200.00	50 x 10.00	0.20	550	200.0

STANDARD ROUND BRAID

Reference	Nominal CSA Ø mm ²	Nominal mm	Wire Ø mm	Current Rating amps	Nominal Weight kg per 100m
CB 05-12	0.50	1.30	0.10	12	0.5
CB 1-15	1.00	1.70	0.10	15	1.0
CB 15-24	1.50	2.10	0.15	24	1.5
CB 2-30	2.00	2.50	0.20	30	2.0
CB 3-40	3.00	3.00	0.20	40	3.0
CB 4-45	4.00	3.40	0.15	45	4.0
CB 6-60	6.00	4.20	0.20	60	6.0
CB 10-80	10.00	5.40	0.20	80	10.0
CB 16-110	16.00	7.00	0.30	110	16.0
CB 25-140	25.00	8.50	0.20	140	25.0
CB 35-180	35.00	10.50	0.30	180	35.0
CB 50-230	50.00	11.50	0.20	230	50.0
CB 70-280	70.00	14.50	0.20	280	70.0
CB 95-330	95.00	16.00	0.20	330	95.0

Features

- Wide choice of sizes
- Bespoke options
- Wire sizes from 0.051mm Ø to 0.4mm Ø
- Current ratings from <12 amps to >550 amps
- Cross sectional areas from 2.5mm² to >200mm²
- Option for extruded PVC jacket
- Packed on reels
- Option to supply in pre cut lengths

Choice of Materials

- Electro tin-plated copper
- Plain copper
- Nickel-plated copper
- Aluminium
- Stainless steel
- Alternative non-ferrous & ferrous materials on request



Flexible Strand

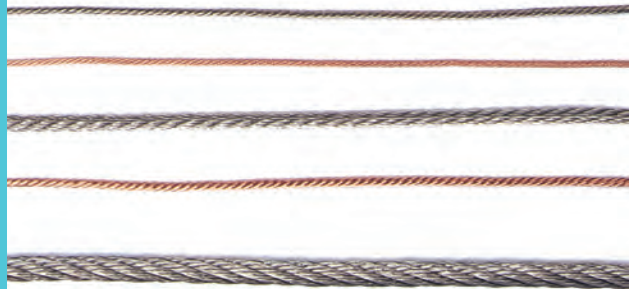
Some applications benefit from wire being stranded rather than woven into a braid. Flexible strand or rope is well suited to cope with complex flexing movements.

The ability of individual wires to flex without work hardening is why strand is suitable where vibration or movement is likely to exist. The tight bend radius makes it ideal where alignment problems exist or where space restrictions apply.



Features

- Extensive choice of sizes
- Options for bespoke products
- Current ratings from <30 amps to >470 amps
- Cross sectional areas from 2.0mm² to 150mm²
- Option for extruded PVC jacket
- Supplied on reels
- Option to supply in pre cut lengths



Choice of Materials

- Electro tin-plated copper
- Plain copper
- Nickel-plated copper
- Alternative non-ferrous & ferrous materials on request

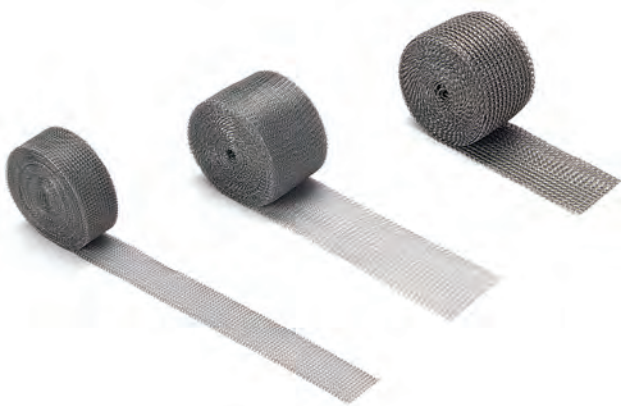
STANDARD CIRCULAR FLEXIBLE STRAND

Reference	Nominal CSA mm ²	Max Ø mm	Wire Ø mm	Current Rating amps
CF 12-02	2.00	2.10	0.122	30
CF 12-04	4.00	3.20	0.122	50
CF 12-06	6.00	4.20	0.122	60
CF 12-10	10.00	5.30	0.122	80
CF 12-16	16.00	7.00	0.122	110
CF 15-06	6.00	4.30	0.15	60
CF 15-10	10.00	5.40	0.15	80
CF 15-16	16.00	6.80	0.15	110
CF 15-25	25.00	8.20	0.15	130
CF 15-35	35.00	10.00	0.15	180
CF 15-50	50.00	11.75	0.15	230
CF 15-70	70.00	14.50	0.15	280
CF 20-06	6.00	4.40	0.20	60
CF 20-10	10.00	5.40	0.20	80
CF 20-16	16.00	6.80	0.20	110
CF 20-25	25.00	8.30	0.20	130
CF 20-35	35.00	10.10	0.20	180
CF 20-50	50.00	11.70	0.20	230
CF 20-70	70.00	14.00	0.20	280
CF 20-95	95.00	15.50	0.20	330
CF 20-120	120.00	18.0	0.20	370
CF 20-150	150.00	21.0	0.20	470

Knitted Wire Mesh Tape

Mesh tape has a number of applications but is used mainly for EMC / RFI screening of electrical power, control, data and communication cables and for earth continuity in cable joints. In addition, the springy nature of the tape lends itself to providing a mechanical cushion against adjacent surfaces.

Application is both quick and simple. The tape is wrapped around the item to be protected to give a 50% overlap that produces 4 layers of screening.



Stocking Braid

Designed specifically to maintain earth continuity on medium and high voltage jointing systems.

The braid is fastened to one end of the exposed armouring. The braids' construction allows it to be pushed back to open and form a cylinder of sufficient diameter to enable the stocking braid to slide over the joint section. Having covered the joint area, the braid is then pulled tight and fastened back over the armouring.



STANDARD STOCKING BRAID

Reference	Nominal CSA mm ²	Current Rating Amps	Wire Ø mm	Usable Ø mm	
				Min	Max
MSB 6-40	6.0	66	0.20	6	40
MSB 10-40	10.0	90	0.20	10	40
MSB 16-60	16.0	120	0.30	15	60
MSB 25-120	25.0	150	0.30	20	120
MSB 35-120	35.0	200	0.30	25	120
MSB 50-120	50.0	250	0.30	30	120
MSB 95-120	95.0	350	0.20	30	120
MSB 150-120	150.0	500	0.20	35	120

Features

- Standard sizes of 25mm and 50mm wide
- Ideal for use on complex, irregular surfaces
- Light weight and easy to apply
- 10M or 25M coils
- Option to supply in pre cut lengths

Choice of Materials

- Electro tin-plated copper
- Nickel-plated copper
- Galvanised steel
- Alternative non-ferrous & ferrous materials on request

Features

- Choice of sizes to satisfy a range of applications
- Wide range of diameters up to 220mm 'push back'
- Cross sectional areas from 6.0mm² to 150.0mm²
- High short term fault current capacity
- Continuous rating from 60 amps to 470 amps
- Option for ends to be separated and swaged
- Custom design available
- Supplied in flat form
- Option to supply in pre cut lengths

Choice of Materials

- Electro tin-plated copper
- Plain copper
- Galvanised steel
- Alternative non-ferrous & ferrous materials on request



Overbraiding

Mettex offers a comprehensive overbraiding service to cover customers free issue material.

We braid directly onto cable harnesses, flexible conduit, hose or cable to provide an outer sheath for screening or mechanical protection.

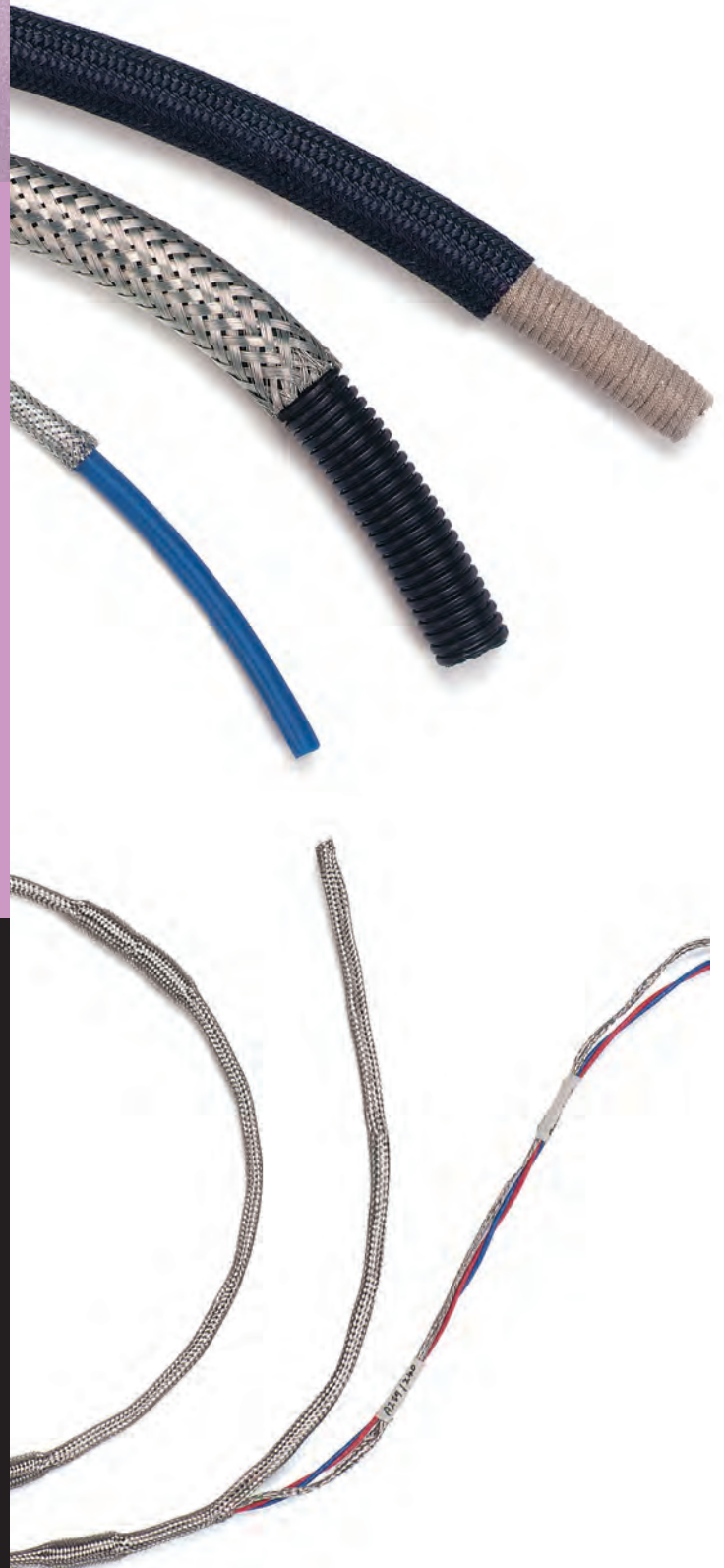
The degree of screening coverage will relate to a given application but 95% optical coverage or better is typical.

Features

- 'Added value' service
- Overbraiding up to 70mm Ø
- Protection for bunched cables or flexible conduit
- Custom manufactured
- Cost effective solution for screening/mechanical protection

Choice of Materials

- Electro tin-plated copper
- Plain copper
- Nickel-plated copper
- Stainless steel
- Galvanised steel
- Alternative non-ferrous & ferrous materials on request
- P.T.F.E. and synthetic materials



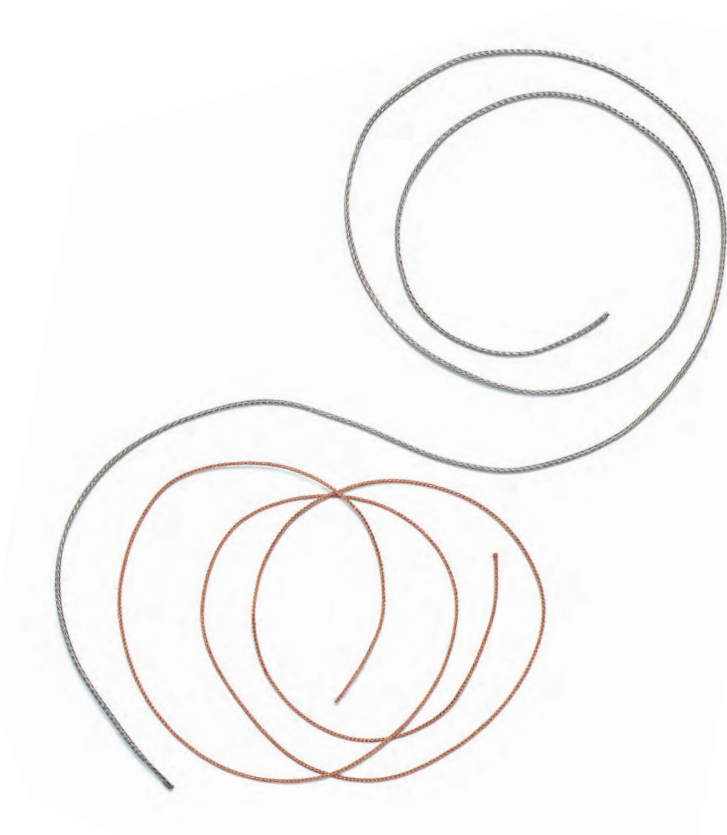
Braided Strand & Fine Braid

Braided Strand

Produced by overbraiding flexible copper strand. The outer braid prevents the strand from distorting when flexed and the tight bunching ensures maximum flexibility.

Fine Braid

A special product manufactured from fine wire (0.071mm Ø) offers a high level of flexibility coupled with mechanical integrity and suitable for use where high vibration is likely to be encountered.



Features

- Cross sectional areas from 1.00 mm² to 70.0mm²
- Current ratings from 3 to 300A
- Fine wire flexible product: Class 5 or 6 conductors
- Economical production of small quantities

Choice of Materials

- Electro tin-plated copper
- Plain copper
- Alternative non-ferrous & ferrous materials on request

Material Standards

The different wires listed under each **Mettex** product are the standard materials held in stock and normally used in the manufacture of those particular groups. For specialised applications, **Mettex** manufactures using materials such as aluminium, beryllium, phosphor bronze, brass & nickel alloys, silver plated copper and other high performance copper alloys.

Material standards will be appropriate for the task or according to customer requirements. Most products are made from tinned or plain copper wires conforming to BS EN 13602:2002. Nickel-plated copper wire is generally to ASTM B355, Stainless Steel wire is 304 or 316 Grade and Aluminium conforms to EN573-3. Wires diameters vary between 0.051mm and 0.4mm according to the degree of flexibility required.

Options exist to conduct pull off and volt drop tests - typically Def Stan 59-71 / BSG 178, BS4759. We can also provide resistance and heat rise figures to verify the efficacy of our products.

Definitions

Cross Sectional Area

This is the sum of the cross sectional area of one wire end multiplied by the total number of wires in mm².

Flexibility

Generally, the smaller the wire diameter, the greater the degree of flexibility but each application can be influenced by a number of external factors such as vibration, frequency and pattern, shock loading, other cables present and method of tying down. Flexibility can be split into three categories:

Category	Wire ø mm
Highly Flexible	0.051 – 0.071
Very Flexible	0.10 – 0.16
Flexible	0.20 – 0.30

Temperature Ratings

Current ratings are given as a guide only and are approximate values based on a 56°C rise above an ambient temperature of 20°C for bare conductors suspended horizontally in free, still air.

GENERAL NOTE

The information contained in this brochure is subject to change without prior notice and is supplied in good faith. It is believed to be correct but it is a condition upon the persons reading it to satisfy themselves by their own determination as to the suitability of the product(s) for their purpose prior to use. **Mettex** make no representations or warranties either expressed or implied with respect to the information or the product to which the information refers.

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