Conductive Thread  
2/14/08

EMF Clothing
Conductive Thread
[LE-1226]

Our Price: $61.95 by cones
66 Yarn 22+3ply 110 PET.
Resistance: <100K Ohm/10cm
Yields about 27700 meters per Kg.
Supplied 150g per cone.

LESS EMF
http://www.lessemf.com/specials.html
CONDUCTIVE THREAD
"Small Spool"

Silver Plated Nylon thread, 117/17 2ply. Handles like ordinary thread but is highly conductive. Use it to sew conductive fabrics, or make a grid or conductive path on non-conductive fabrics

Conductive thread is also a creative way to stitch electronics to clothing. This thread can carry modest current for power and signals.

This fine thread can be used in standard sewing machines. Resistance is about 150 Ohms per foot, and increases to about 250 Ohms when stretched which is a very unique property! Spool contains 1 oz of thread.

Conductive Thread, small spool (Cat. #A264) … $16.95 per spool

LAME LIFESAVER
http://members.shaw.ca/ubik/thread/thread.html
Go here also for info on how to use thread; limitations; advantages.

This thread is sufficiently conductive to be able to substitute amply for lost conductivity in dead spots of any size, although patching may still be more cost-effective for large areas of completely dead fabric where the entire area requires treatment. It can be used in a number of ways, either hand- or machine-sewn, to repair individual dead spots or to augment sagging conductivity across an entire lamé.

The thread is quite durable. My own lamé was mostly dead, so I treated the entire front face with parallel lines of thread about 0.5 cm apart. Well over a year has passed - over 500 hours of use and abuse - and there's no sign of failure. Resistance measured at the start of this period was around 0.2 ohms across the full face of a lamé, and it's still there.
In appearance, the thread is a dark gold colour, darker than most lamés, due to the presence of a micron thick layer of natural silver on each of the 100+ component strands. Contrast this to normal lamé fabric, where the density of metallic elements is quite sparse.

The thread is much stronger than domestic poly/cotton thread, and somewhat thicker. There's little risk of accidental snapping or cutting from burrs on blades and, as it's not reliant on a single filament, I would expect little loss of conductivity from abrasion.

Because of the thickness of the thread, it presents some small challenges when machine sewing. The next page will detail my experiences and the techniques that have worked for us.

SPARK FUN

(1) Conductive Thread - 234/34 4ply
14 Ohms per foot, hand sewing (thicker, lower resistance)
SKU#: DEV-08549

Price: $16.95

10-99: $15.26 each (10% off)
100 or more: $13.56 each (20% off)

Description: Conductive thread is a creative way to connect various electronics onto clothing. This thread can carry current for power and signals. While not as conductive as traces on a printed circuit board (PCB), this thread makes wearable clothing 'wearable'!

This is a thicker thread with a lower resistance that can be used with hand sewing. Resistance is about 14 Ohms per foot. Spool contains 2.5oz of thread, about 670 yards.

(2) Conductive Thread - 117/17 2ply
82 Ohms per foot, sewing machine, higher resistance.
SKU#: DEV-08544
Price: $16.95

10-99: $15.26 each (10% off)
100 or more: $13.56 each (20% off)

Description: Conductive thread is a creative way to connect various electronics onto clothing. This thread can carry current for power and signals. While not as conductive as traces on a printed circuit board (PCB), this thread makes wearable clothing 'wearable'!
This is a finer thread that can be used in standard sewing machines. Resistance is about 82 Ohms per foot. Spool contains 1 oz of thread, about 1200 yards.

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Despina's donation,
From Alex's site: http://e-sa.org/wearables

Which brings me to the main problem: conductive thread. I ordered conductive thread from LessEMF. They were prompt which was great as the thread was here in ample time. However, the resistance is way to high on the thread to be useful, about 950 ohms per 10 cm. Ouch. The thread Despina donated is about 3.3 ohms per 10 cm. So that miscalculation brought my construction process to a halt. On the bright side, I did some testing with the button hole sewing feature of the PC420. It works beautifully with the Lilypad. Once I get some thread I should be able to make a tight circuit.

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Soft Sensing
http://itp.nyu.edu/physcomp/sensors/Reports/SoftSensing