

# Continuously Transposed Cable

Magnet Wire | Winding Wire



<b>NEMA IEC</b>	<b>MW 36-C* OR MW 87-C* 60317-18* OR 60317-29*</b>
<b>Thermal Class</b>	Class 120 or 200
<b>Conductor</b>	Copper
<b>Shape</b>	Rectangular
<b>Insulation Material</b>	Multiple enamels are available to match the transformer design
<b>Key Applications</b>	Medium to Large dry or oil-filled Transformers

\* Magnet wire standards

## PRODUCT DESCRIPTION

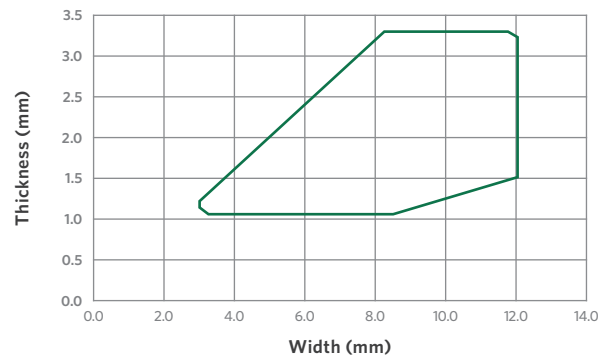
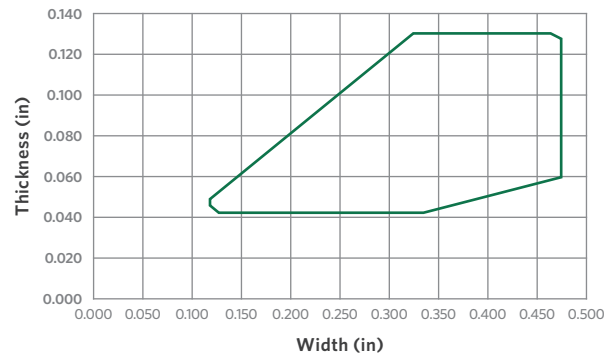
A Continuously Transposed Cable (CTC) consists of a number of rectangular, film insulated conductors made into an assembly and usually over-wrapped with layers of insulating material. The number of conductors is usually an odd number (from 5 to 49), arranged side by side in two stacks. A special tool alternately pushes the upper left and lower right wires onto the respective neighboring stack so that each wire takes on every possible position within one cycle in the continuously transposed cable. The length of the continuously transposed cable for one complete cycle depends on the smallest diameter of the transformer winding, the number and size of the single strip.

## FEATURES AND BENEFITS

<b>Manufacturing</b>	Best-in-class manufacturing environment with 60+ years of experience
<b>Vertically Integrated</b>	Vertically Integrated with Rod, Enamel and CTC Production
<b>Windability</b>	Excellent windability and simple handling as the conductor hardness and transposition pitches are built to your design
<b>High Temperature Polyvinyl Acetal</b>	The NEW high temperature Polyvinyl Acetal formulation gives the Formvar-EXTRA magnet wire a Thermal Endurance of 138°C which is clearly above NEMA MW 87 and all other Polyvinyl Acetal products currently available on the market.
<b>Cordex™</b>	Cordex™ is a transformer oil resistant polyester monofilament interwoven around a paperless CTC cable for optimum cooling, maximum power density and is suitable for epoxy application, with radial or concentric bond.
<b>Perforated Insulation Paper</b>	Patented process consists of wrapping perforated Aramide paper around the CTC cable providing excellent heat dissipation, high pressure resistance and is suitable for epoxy application, with radial or concentric bond.

## CONDUCTOR SIZE

Sizes and Proof Stress available may differ for CTC factors less than 7.  
 Sizes available may differ for Proof Stress above 34,000PSI (234N/mm<sup>2</sup>).  
 Sizes outside of the range below could be possible but need to be reviewed and approved by Engineering.





## PROPERTIES

### CONDUCTOR BONDING

<b>Standard Construction</b>	<ul style="list-style-type: none"> <li>Copper ETP C11040</li> </ul>
<b>Optional Construction</b>	<ul style="list-style-type: none"> <li>Oxygen Free Copper C10100</li> <li>Silver alloyed OFC Copper can also be supplied for higher metal temper applications</li> </ul>

### METAL TEMPER

- Proof Stress (Rp 0.2) Soft 11,000 to 15,000PSI (76 to 103N/mm<sup>2</sup>)
- Proof Stress (Rp 0.2) Mechanical Hardened 15,000 to 34,000PSI (103 to 234N/mm<sup>2</sup>)
- Proof Stress (Rp 0.2) Silver bearing 34,000 to 42,000PSI (234 to 290N/mm<sup>2</sup>)

### STRAND COUNT

<b>Quantity of Single Conductors</b>	5 to 49
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### CABLE SIZE

<b>Cable Width (Axial)</b>	0.275 to 1.00in (7.0 to 25.4mm)
<b>Cable Height (Radial)</b>	0.130 to 2.50in (3.3 to 63.5mm)
<b>Cable Aspect Ratio (Height to Width)</b>	1:3 to 8:1
<b>InterColumn Paper</b>	Yes
<b>Transposing Factor</b>	6 to 15
<b>Minimum transposing Pitch Length</b>	1.5in (38.1mm)

### ENAMEL

<b>Standard Construction</b>	High Temperature Polyvinyl Acetal (Formvar-EXTRA with a Thermal Endurance of 138°C thus exceeding NEMA MW 87 or IEC 60317-18)
<b>Optional Construction</b>	<ul style="list-style-type: none"> <li>Polyvinyl Acetal (Formvar rated for 120°C in compliance with NEMA MW 87 or IEC 60317-18)</li> <li>Polyester-Imide/Polyamide-Imide (Rated for 200°C in compliance with MW 36 or IEC 60317-29)</li> </ul>

### ENAMEL BUILD

<b>Standard Construction</b>	Heavy Build per NEMA MW 1000
<b>Optional Construction</b>	<ul style="list-style-type: none"> <li>Single or Quad per NEMA MW 1000 or,</li> <li>IEC 60317-0-2 Grade 1 &amp; 2 or,</li> <li>Built to customer specifications</li> </ul>

### CONDUCTOR BONDING

<b>Standard Construction</b>	Concentric bond Epoxy
<b>Optional Construction</b>	<ul style="list-style-type: none"> <li>Radial bond Epoxy</li> <li>Radial or Concentric B-Stage Epoxy</li> </ul>

### OUTER COVERING - PAPERLESS CTC\*

<b>Lap</b>	<ul style="list-style-type: none"> <li>Cordex™ and Netting use 2 tapes wrapped in opposing directions with a 1in (25.4mm) gap</li> <li>Patented Perforated Aramid paper is butt lap with a 0.0312in (0.80mm) gap</li> </ul>
<b>Material - Build</b>	<ul style="list-style-type: none"> <li>Cordex™ - 0.028in (0.71mm)</li> <li>Netting - 0.011in (0.28mm)</li> <li>Patented Perforated Aramid paper - 0.010in (0.25mm)</li> </ul>

### OUTER COVERING - PAPER WRAPPED CTC\*

<b>Build</b>	0.004 to 0.120in (0.10 to 3.05mm)
<b>Lap</b>	Tapes are normally applied with a butt lap having a 30% overlap. The top two tapes are normally applied with a butt intercalated lap of 50%.
<b>Material</b>	<ul style="list-style-type: none"> <li>Crepe paper</li> <li>Thermally upgraded Crepe paper</li> <li>Mixed Crepe papers</li> <li>Aramid paper</li> <li>Epoxy and B-Stage Epoxy bond coated papers</li> </ul>

\* Thickness and material to customer specifications