



IEC 60317 Continuously Transposed Conductor

CTC Winding Conductor

5 to 85-strand PVA / PEI+PAI enamelled Continuously Transposed Conductor (CTC) for



IEC 60317-0-2 / -12 / -29

5 to 85 Rectangular Strands

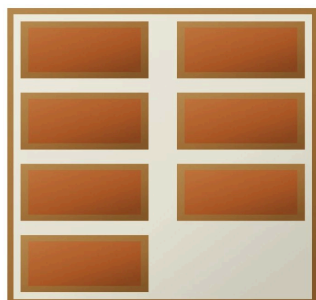
PVA / PEI+PAI + Epoxy

Application

Custom-engineered Continuously Transposed Conductor (CTC) comprising 5 to 85 rectangular oxygen-free copper strands (PVA Class 120 or PEI+PAI Class 200 enamelled, optional B-stage epoxy bondcoat) Roebel-transposed and wrapped with Kraft/TUP paper or.

Typical uses: 110 kV – 1,000 kV Grid & Generator Step-Up Transformers, HVDC Converter Transformers & Smoothing Reactors, Shunt Reactors & Phase-Shifting Transformers, Electric Arc Furnace & Traction Transformers, Large Hydro & Turbo-Generator Stator Roebel Bars

Construction



Cross-section, not to scale

- 1 Rectangular oxygen-free / silver-bearing copper strands
- 2 PVA (Class 120) or PEI+PAI (Class 200) strand enamel
- 3 Optional B-stage thermosetting epoxy bondcoat & central strip
- 4 Outer multi-layer Kraft / TUP paper or PET net wrapping

Technical data

Typical values

Strand conductivity (20 °C)	≥ 58.0–58.5 MS/m (≥ 100 % IACS annealed ETP/OHFC Cu)	Strand enamel breakdown	≥ 1,500 V to 3,000 V AC rms per strand (IEC 60317-0-2)
Transposition pitch check	100 % in-line high-frequency strand-to-strand short-circuit monitor	Eddy-current loss reduction	60 % to 85 % lower stray load loss vs parallel flat conductors
Enamel thermal class	Class 120 (PVA, IEC 60317-12) · Class 200 (PEI+PAI, IEC 60317-29)	Outer wrap thermal class	105 °C (Kraft) · 120 °C (Thermally Upgraded TUP) · 180 °C (Meta-Aramid)
Epoxy bondcoat curing cycle	+115 °C to +135 °C for 6–12 h during coil drying	Number of strands (single CTC)	5, 7, 9, 11 ... up to 85 odd strands (even counts on special order)
Individual strand thickness (a)	0.80 mm to 3.15 mm (± 0.010 mm precision rolled)	Individual strand width (b)	2.80 mm to 15.00 mm
Copper proof stress (Rp0.2)	Soft 90–130 MPa · Semi-hard 150–250 MPa · CuAg up to 280 MPa	Epoxy shear bond strength	≥ 12 MPa at 25 °C · ≥ 3.5 MPa in +100 °C transformer oil
Insulating fluid compatibility	Mineral oil (IEC 60296), natural/synthetic ester oil & SF6	Hydrolysis resistance	Zero blister or delamination in sealed oil-tube aging test
Standards	IEC 60317-0-2 · IEC 60317-12 · IEC 60317-29 · NEMA MW 1000		

Sizes

12 standard constructions

Tick the sizes you need and send this page to info@tebaoflex.com or WhatsApp +86 185 9591 3361.

Order designation	Strands × a × b mm	Enamel & Bond coat	Outer Insulation Zt	Net Cu Area mm ²	Overall H × W mm	Bare Cu Wt kg/km
HV & Regulating Winding CTC — Paper/TUP Wrapped (11 to 35 Strands) 6 sizes						
☐ CTC-11X-1.25X4.5-PVA-P10	11 × (1.25 × 4.50)	PVA 120 + Epoxy	1.0 mm TUP Paper	60.4	9.1 × 10.2	537
☐ CTC-15X-1.40X5.2-PVA-P12	15 × (1.40 × 5.20)	PVA 120 + Epoxy	1.2 mm TUP Paper	106.8	13.0 × 11.8	950
☐ CTC-19X-1.50X6.0-PVA-P15	19 × (1.50 × 6.00)	PVA 120 + Epoxy	1.5 mm TUP Paper	167.4	17.2 × 13.7	1,488
☐ CTC-23X-1.60X6.5-PVA-P16	23 × (1.60 × 6.50)	PVA 120 + Epoxy	1.6 mm TUP Paper	234.6	21.6 × 14.8	2,086
☐ CTC-29X-1.70X7.2-EI200-P18	29 × (1.70 × 7.20)	PEI+PAI 200 + Epoxy	1.8 mm TUP Paper	348.9	28.2 × 16.4	3,102
☐ CTC-35X-1.80X8.0-EI200-P20	35 × (1.80 × 8.00)	PEI+PAI 200 + Epoxy	2.0 mm TUP Paper	495.5	35.6 × 18.2	4,405
High-Current LV, Generator Step-Up (GSU) & HVDC CTC (39 to 75 Strands) 6 sizes						
☐ CTC-39X-1.90X8.5-PVA-NET	39 × (1.90 × 8.50)	PVA 120 + Epoxy	0.3 mm Open PET Net	619.5	39.8 × 17.6	5,507
☐ CTC-45X-2.00X9.0-PVA-P12	45 × (2.00 × 9.00)	PVA 120 + Epoxy	1.2 mm TUP Paper	796.5	48.8 × 19.4	7,081
☐ CTC-53X-2.00X9.5-EI200-NET	53 × (2.00 × 9.50)	PEI+PAI 200 + Epoxy	0.3 mm Glass/PET Net	991.5	56.2 × 19.6	8,814
☐ CTC-61X-2.10X10.0-PVA-P15	61 × (2.10 × 10.0)	PVA 120 + Epoxy	1.5 mm TUP Paper	1,262.1	68.5 × 21.7	11,220
☐ CTC-69X-2.20X10.5-EI200-P15	69 × (2.20 × 10.5)	PEI+PAI 200 + Epoxy	1.5 mm TUP Paper	1,573.8	80.6 × 22.7	13,991
☐ CTC-75X-2.24X11.2-EI200-NET	75 × (2.24 × 11.2)	PEI+PAI 200 + Epoxy	0.4 mm Glass/PET Net	1,858.0	87.8 × 23.1	16,518

– Custom strand counts (5 to 85), silver-bearing copper (CuAg 0.1%), controlled Rp0.2 yield strengths (100–280 MPa), and laser-perforated paper wraps are manufactured to coil specification.

Standards and approvals

- ✓ IEC 60317-0-2 / IEC 60317-12 (PVA) / IEC 60317-29 (PEI+PAI)
- ✓ IEC 60554-2 Electrical Kraft & Thermally Upgraded Paper

Certifications



Management systems: ISO 9001, ISO 14001, ISO 45001

Request a quotation

Send the size, length and destination. An application engineer replies within 2 business hours.

WhatsApp / phone

+86 185 9591 3361

Email

info@tebaoflex.com

Web

tebaoflex.com/cables/continuously-transposed-conductor-ctc-transformer-winding-cable



Typical values for this cable type, based on IEC 60317-0-2 / IEC 60317-12 / IEC 60317-27 / ASTM B272. Values for your order are confirmed in the quotation. Subject to change without notice. Jiangsu Tebaoflex Special Cable Co., Ltd., Taicang, Jiangsu, China.