

Enamelled wires

VT THERM 220° FL Copper

- **Enameled winding wire with excellent mechanical, thermal and chemical properties**
- **Insulation based polyamide-imide**
- **Temperature Index 220**

General description

VT THERM 220° rectangular-shaped copper wires are insulated with an excellent thermal base insulation based on polyamide-imide. The polyamide-imide coating ensures outstanding mechanical and chemical properties of the insulation.

Application

Windings in highly stressed AC and DC electrical machines

Conventional Types

Rectangular copper wires:

- Thickness: 1,25 to 5,00 mm
- Width: 3,80 to 12,50 mm
- Cross-section: 6,00 to 70,00 mm²
- Coating class: Grade 1 and Grade 2

Dimensions outside of this range on request

The standard dimensions of the conductors (nominal dimension) and the tolerances comply with the standard IEC 60317-58.

Standards

VT THERM 220° rectangular-shaped copper wires meet the requirements of **IEC 60317- 58**.

The test methods are based on IEC Publication 60851

60851-1 General

60851-2 Definition of dimensions

60851-3 Mechanical properties

60851-4 Chemical properties

60851-5 Electrical properties

The product properties set forth in this data sheet are based on the results of testing of typical material produced by the company VT GROUP. Some variation in product properties is typical. Comments or suggestions relating to any subject other than product properties are offered only to call the end-user's or other person's attention to considerations which may be relevant in the independent determination of the use and/or manner of use of product. VT Group does not claim or warrant that the use of its product will have the results described in this data sheet or that the information provided is complete, accurate or useful. The user should test the product to determine its properties and its suitability for the intended use. VT GROUP expressly disclaims any liability for any damage, harm, injury, cost or expense to any person resulting directly or indirectly from that person's reliance on any information contained in this data sheet. Nothing contained in this data sheet constitutes representation or warranty as to any matter whatsoever. VT GROUP makes no warranties whatsoever in this data sheet, expressed or implied, including any implied warranty or fitness for a particular use or purpose. VT GROUP shall in no event be liable for incidental, exemplary, punitive or consequential damages.

60851-6 Thermal properties

Advantages

Because of their high thermal stability and their good mechanical and thermal properties VT THERM 220 rectangular wires are particularly suitable for coils subjected to constantly high temperatures and mechanical stresses.

Thermal index is 220 IEC 60172.

Appearance

Slight color variations are raw material or process-related and have no influence on the technical properties of the wire.

	Unit	Value	Test norm
Thermal properties			
Heat shock 30min / 240°C Mandrel bending flatwise on 6xthickness		No cracks	IEC 60851-6
Mechanical properties			
Insulation increase Grade 1	mm	0,06 – 0,11	IEC 60851-2
Insulation increase Grade 2	mm	0,12 – 0,17	IEC 60851-2
Elongation at fracture thickness up to and including 2.5 mm	%	Min.30	IEC 60851-3
Elongation at fracture thickness above 2.5 mm	%	Min.32	IEC 60851-3
Springiness	degree	Max.5	IEC 60851-3
Flexibility and adherence (size up to and including 10mm width) Mandrel bending edgewise on mandrel Ø 4 x width		No crack	IEC 60851-3
Flexibility and adherence (size over 10mm with) Mandrel bending edgewise on mandrel Ø 5 x width		No crack	IEC 60851-3
Flexibility and adherence Mandrel bending flatwise bent on mandrel Ø 4 x thickness		No crack	IEC 60851-3
Adherence after elongation 15%		Loss of adherence less than 1xwidth	IEC 60851-3
Electrical properties			
Breakdown Voltage Grade 1 (room temperature)	V	≥ 1000	IEC 60851-5
Breakdown Voltage Grade 2 (room temperature)	V	≥ 2000	IEC 60851-5

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