

Fibre-insulated wires

VS 240 flat

- **Winding wire for traction motors and rotating HV-machines**
- **Temperature Index 240**

General description

VS 240 is a polyimide enameled flat copper wire insulated with a reinforced, polyimide impregnated, fibre blend covering.

Application

- Traction motors
- High temperature rotating HV-machines

Conventional types

VS 240 covered enameled wires are available in the following standard grades:
VS 240 V and VS 240 P covered with a different type of mixed fibres.

Cross section: 2 to 70 mm²
Width: 2 to 12 mm
Thickness: 1 to 5 mm

The standard dimensions of the conductors (nominal dimensions), the tolerance and the overall dimension of the enameled wire, complies with the IEC standard 60317-0-2.

Standards

There are no existing IEC standards for VS 240 wires today.
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
- 60851-6 Thermal properties

Advantages

- Very high thermal resistance
- Very good dielectric properties
- Covering with high mechanical strength

Order data

The designation shall comprise:
For rectangular shape: FL
Description of the insulation: VS 240 V or P
Reel type: e.g.: DIN 500

Complete order:
2000 kg FL VS240 V 2.24x5.00mm D500

Characteristics of VS 220 flat

	unit	value	Test standard
Increase due the insulation			
For width above 2.00 mm	mm	0.20 to 0.25	
Mechanical properties			
Elongation at break thickness up to 2.5 mm	%	≥ 30	IEC60851-3 test 6
Elongation at break thickness above 2.5 mm	%	≥ 32	IEC60851-3 test 6
Springiness	°	≤ 5.5	IEC60851-3 test 7
Adherence after elongation	20 %	No loss of adhesion	IEC60851-3 test 8
Flexibility - if width up to 10 mm - edgewise bent on mandrel Ø 3 x width	visual	no cracks	IEC60851-3 test 8
Flexibility - if width above 10 mm - edgewise bent on mandrel Ø 4 x width	visual	no cracks	IEC60851-3 test 8
Flexibility - flatwise bent on mandrel Ø 3 x thickness	visual	no cracks	IEC60851-3 test 8
Electrical properties			
Break down voltage after bending	V	≥ 2400	IEC60851-5 test 13
Thermal properties			
Heat shock 30 min / 260 °C if width up to 10 mm - edgewise mandrel Ø 5 x width	visual	no cracks	IEC60851-6 test 9
Heat shock 30 min / 260 °C if width above 10 mm - edgewise mandrel Ø 6 x width	visual	no cracks	IEC60851-6 test 9
Thermal endurance	TI	240	IEC60172

Appearance

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

The product properties set forth in this data sheet are based on the results of testing of typical material produced by the company Torns Fil De Bobinage SAS. 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. Torns Fil De Bobinage SAS 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. Torns Fil De Bobinage SAS 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. Torns Fil De Bobinage SAS makes no warranties whatsoever in this data sheet, expressed or implied, including any implied warranty or fitness for a particular use or purpose. Torns Fil De Bobinage SAS shall in no event be liable for incidental, exemplary, punitive or consequential damages.