

Enameled wires

Thermex 220[®] Grade 3 FL

- Enameled winding wire with excellent mechanical,
- thermal and chemical properties
- Insulation based on polyamide-imide enamel
- Special coating class Grade 3
- Temperature Index 220

General description

THERMEX[®] 220 rectangular-shaped wires are enameled 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 motors of class H ... 200
- E-drives in automotive

Conventional Types

- Rectangular copper wires:
- Thickness: 1.00 to 6.00 mm
 - Width: 2.00 to 20 mm
 - Cross-section: 2 to 80 mm²
 - Coating class: Grade 3

Standards

THERMEX[®] 220 flat wires meet the requirements of IEC 60317-58. There are no standards today for coating class Grade 3. The standard dimensions of the conductors (nominal dimension) and the tolerances comply with the standard IEC 60317-0-2.

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

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

Order Data

The designation shall comprise:

Shape of the wire:	Flat
Designation of the insulation:	Thermex 220
Coating class:	Grade 3 (G3)
Nominal dimension in mm:	2.24 x 5.00
Reel type: e.g.:	DIN 500

Example of complete order:

2000 kg FL TX 220 G3 2.24 x 5.00 mm D500

Characteristics of Thermex 220 G3

	unit	value	Test standard
Mechanical properties			
Increase due to insulation	mm	0.18 - 0.22	IEC60851-2
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	°	≤ 5.0	IEC60851-3 test 7
Adherence after elongation	20 %	No loss of adhesion	IEC60851-3 test 8
Flexibility - edgewise bent on mandrel Ø 2 x width		no cracks	IEC60851-3 test 8
Flexibility - flatwise bent on mandrel Ø 2 x thickness		no cracks	IEC60851-3 test 8
Electrical properties			
Break down voltage	V	≥ 3000	IEC60851-5 test 13
Thermal properties			
Heat shock 30 min /240 °C mandrel Ø 1 x width		no cracks	IEC60851-6 test 9
Thermal endurance	TI	220	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 Delle Fil 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. Delle Fil 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. Delle Fil 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. Delle Fil SAS makes no warranties whatsoever in this data sheet, expressed or implied, including any implied warranty or fitness for a particular use or purpose. Delle Fil SAS shall in no event be liable for incidental, exemplary, punitive or consequential damages.