

Enameled wires

Thermex® 240 RD

- **Enameled winding wire with outstanding thermal properties**
- **Insulation based on aromatic Polyimide**
- **Temperature Index 240**

General description

THERMEX® 240 round wires are enameled, round copper wires with an enameled insulation consisting of aromatic Polyimide which ensures outstanding mechanical, thermal and chemical properties of the insulation. These are manifested by the extremely high thermal durability and the very good resistance against the action of solvents and insulating oil.

Temperature Index is TI 240.

Application

- All type of windings with service temperatures up to 220°C
- Motors and generators for the aerospace industry
- Motors and coils used in the nuclear field and in very low temperature environment
- For all windings requiring a high degree of reliability

Conventional Types

Round enameled copper wires in coating classes Grade 1 and Grade 2.

Conductor material: copper ETP1 or Ni-plated copper

Grade 1: 0.355 ... 2.24 mm Nominal Diameter

Grade 2: 0.355 ... 2.24 mm Nominal Diameter

The individual conventional conductor dimensions (nominal dimensions), the overall diameters, their tolerances and nominal cross-section areas correspond to IEC Publication 60317-0-1.

Standards

THERMEX® 240 round wires meet the requirements of well-known industrial standards governing enameled wires with temperature index 240, such as

IEC 60317-46

NEMA MW 1000/16C

Wherever applicable, the test methods are based on IEC Publication 60851:

60851-1 General

60851-2 Determination of the dimensions

60851-3 Mechanical properties

60851-4 Chemical properties

60851-5 Electrical properties

60851-6 Thermal properties

Advantages

Due to the generally high temperature resistance and the thermal overload capacity in connection with otherwise advantageous properties, THERMEX® 240 wires are especially applicable for windings constantly exposed to high temperature conditions. The outstanding chemical resistance against cooling agents, detergents, solvents and oils made them especially suited for windings under particularly severe conditions.

Processing Instructions

THERMEX® 240 round wires can be processed without reservation under the normal working conditions.

Order Data

Quantity, Designation, Supply Form e.g.:

The designation shall comprise:

Shape of the wire:	RD for round wire
Nominal diameter in mm:	0.71
Conductor material:	Cu
Coating class:	Grade 2 (G2)
Designation of the insulation:	Thermex 240

The order shall indicate the type of reels required, e.g.:

Cylindrical reels acc. to IEC 60264-2

Conical reels acc. to IEC 60264-3

Example of complete order:

2000 kg RD TX240 G2 0.71mm A250

		Example for TX240 G1 1.00 mm	Example for TX240 G2 2.50 mm	Test standard
Mechanical properties				
Flexibility and adherence - mandrel winding test	% elongation / mandrel Ø	0 / 1xd	-	IEC60851-3 test 8
Flexibility and adherence - stretching test	%	-	32	IEC60851-3 test 8
Elongation at break	%	≥ 30	≥ 33	IEC60851-3 test 6
Springiness	°	≤ 42	≤ 5	IEC60851-3 test 7
Flexibility and adherence - peel test	Number of revolutions	> 90	> 36	IEC60851-3 test 8
Abrasion force	N	≥ 4.2	≥ 11.4	IEC60851-3 test 8
Electrical properties				
Nominal resistance at 20 °C	Uhm/m	0.02176	0.003482	IEC60851-5 test 5
Dissipation factor tg delta (1 MHz, RT)	Tg delta	< 6 x 10 ⁻³	< 6 x 10 ⁻³	IEC60851-5 test 19
Breakdown voltage at RT	V	≥ 2700	≥ 5000	IEC60851-5 test 13
Chemical properties				
Resistance to solvent - standard solvent	hardness	> H	> H	IEC60851-4 test 12
Thermal properties				
Cut-through	°C	> 450	> 450	IEC60851-6 test 10
Heat shock 30 min / 260 °C- mandrel Ø 2xd	visual	no cracks		IEC60851-6 test 9
Heat shock 30 min / 260 °C- elongation 25%	visual		no cracks	IEC60851-6 test 9
Thermal endurance	TI	240	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 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.

