Fiber-insulated wires

DAGLAS THERMEX FL ALUMINUM

- **Enameled flat Aluminum wire insulated with a glass/polyester Fiber blend**
- **Winding wire with excellent thermal and mechanical properties**
- **Temperature Index 155, 180 or 200**

Build Criteria Rectangular Wire

Bare conductor width w (mm)	Max. increase in dimensions (mm)	
	Daglas fiber covering over Grade 2 enameled Conductor	
	Single covering	Double covering
w > 3.4	0.23 to 0.32	0.35 to 0.44

General description
THERMEX®220 enameled wires of rectangular cross section are insulated with a single or double covering of glass and polyester fibers which is fused or melted with the adequate heat treatment.
DAGLAS-covered enameled wires can also be supplied with an impregnation varnish of modified polyesterimide (V180) or silicone (V SI).
DAGLAS-covered enameled wires can be supplied in a thermal-adhesive version (K) for thermal classes 180. Silicone impregnation is not available in the thermal-adhesive version.

Application
- Windings for generators (with or without Roebeling technology)
- HV motors (in stators or rotors)
- Magnetic coils

Conventional Types
Covered enameled aluminum wires THERMEX® 220 Grade 2, insulated with:

- 1 covering layer (1 x)
- 2 covering layers (2 x)
- optional: varnish impregnation
- coating varnishes: epoxy, modified polyesterimide, silicone, 'B'-Staged varnish

Thickness: 1,60 to 7,00 mm

Width: 4.25 to 18,00 mm

Cross section: 15 to 100 mm2

Ratio W/t : 1,10 to 7,00

The standard dimensions of the conductors (nominal dimensions and radius), the tolerances and the overall dimensions of the enameled wire comply with the IEC standard 60317-0-9.

Standards
DAGLAS-enameled covered flat bare aluminum wires meet the requirements of IEC-Publications
60317-0-9 Enameled rectangular aluminum wire

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
- Covering with high mechanical and bonding strength
- Great resistance to abrasion and scraping
- Good resistance to impregnating varnish solvents (for more information, consult our customer service)

Processing Instructions
Can be processed without reservation under normal working conditions. For the items with a thermal adhesive bond-coat, the storage time is limited to 1 year at room temperature and 60 % relative humidity.

Order Data
Quantity, Designation, Supply Form e.g.:

The designation shall comprise:

For flat shape:	FL
Bare	Aluminum
Enameled wire:	Thermex 220 Grade 2
Designation of the yarn covering:	2 Daglas
Nominal dimension in mm:	5.00x2.24 mm
Reel type:	e.g. VM 630

Example of complete order:

2000 kg FL Aluminum Thermex 220 G2 2 Daglas 5.00x2.24 mm VM 630

TORNS FIL DE BOBINAGE SAS

VICENTE TORNS GROUP

		Thermex 220 1 or 2DAGLAS® impregnated	Thermex 220 not 1 or 2DAGLAS® V180 (K)	Thermex 220 1 or 2DAGLAS® VSi	Test norm
Mechanical properties					
Elongation at break / Thickness up to 2.50 mm	%	≥15	≥15	≥15	IEC60851-3 test 6
Elongation at break / Thickness above 2.50 mm	%	≥15	≥15	≥15	IEC60851-3 test 6
Springiness	°	≤5,5	≤5,5	≤5,5	IEC60851-3 test 7
Adherence after Elongation	min. 15 %	no loss of adhesion	no loss of adhesion	no loss of adhesion	IEC60851-3 test 8
Flexibility if width up to 10 mm - Edgewise bent on mandrel Ø 5xwidth		no cracks	no cracks	no cracks	IEC60851-3 test 8
Flexibility if width above 10 mm - Edgewise bent on mandrel Ø 6xwidth		no cracks	no cracks	no cracks	IEC60851-3 test 8
Flexibility - Flatwise bent on mandrel Ø 8xthickn.		no cracks	no cracks	no cracks	IEC60851-3 test 8
Shear Strength (V180 K) 1.47.14	N/mm^2	-	≥ 4	-	FIM test no.
Electrical properties					
Breakdown Voltage after bending G2, 1Daglas	V	≥ 2200	≥ 2200	≥ 2200	IEC60851-5 test 13
Breakdown Voltage after bending G2, 2 Daglas	V	≥ 2400	≥ 2400	≥ 2400	IEC60851-5 test 13
Thermal properties					
Heatshock 30 min / 180 °C if width up to 10 mm – Edgewise Ø 7xwidth		no cracks	-	-	IEC60851-6 test 9
Heatshock 30 min / 180 °C if width above 10 mm – Edgewise Ø 8xwidth		no cracks	-	-	IEC60851-6 test 9
Heatshock 30 min / 200 °C if width up to 10 mm – Edgewise Ø 7xwidth		-	no cracks	no cracks	IEC60851-6 test 9
Heatshock 30 min / 200 °C if width above 10 mm – Edgewise Ø 8xwidth		-	no cracks	no cracks	IEC60851-6 test 9
Thermal Endurance	TI	155	180	200	NEMA MW 1000

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