

Polytermacon/Al[®] Magnet Wire

General description

The POLYTERMACON/Al[®] magnet wire is manufactured using a base coat of Polyesterimide resin and a top coat of Polyamideimide (AI). This wire combines the excellent dielectric and thermal characteristics of the Polyesterimide resins and the benefits offered by the chemical structure of the Polyamideimide.

Polyesterimide offers protection against overloads and crossovers, in addition to its excellent resistance to chemical agents; this makes the POLYTERMACON/Al[®] the optimum selection for motor coils used in the machinery and tool industries, in automotive applications, distribution transformers and in hermetic refrigeration motors*.

The Polyamideimide coat offers a smooth and sturdy surface with a low coefficient of friction, which makes the POLYTERMACON/Al[®] highly resistant to the damage caused by high-speed winding machines.

This product is manufactured in two insulation builds - Single and Heavy, and is offered in either Copper or Aluminum conductors.

The POLYTERMACON/Al[®] magnet wire with a copper conductor is recommended for use in electrical equipment with a thermal class of up to 200 °C. With an aluminum conductor, the thermal class is 220 °C.

Designation	Thermal class (°C)	NEMA MW-1000
PAI 200	200 Cu / 220 Al	MW 35
	200 Cu / 220 Al	MW 36
	200 Cu / 220 Al	MW 73*

Specifications

Meets the requirements set forth in the following standards:

- NMX-J-482

- NEMA MW 1000, MW 35, MW 36 and MW 73*
- IEC 60317-13
- UL recognition under file E102627

Characteristics

- Resistant to high temperatures.
- High resistance to electrical overloads.
- Great winding ease
- Resistant to R-12, R-22 and R-134 refrigerants used in refrigeration compressors*
- High resistance to abrasion.
- Very high degree of dielectric strength, even in humid conditions
- Highly resistant to heat shock
- Great resistance to thermoplastic flow
- Resistant to solvents

Range of gauges

Copper Conductors		
Insulation build	AWG	mm
Single	4 - 42	5.189 - 0.064
Heavy	4 - 42	5.189 - 0.064

Aluminum Conductors		
Insulation build	AWG	mm
Single	14 - 24	1.628 - 0.511
Heavy	14 - 28	1.628 - 0.321

Also available in Square and Rectangular shapes. Please inquire for specific details.

Principal applications:

AUTOMOTIVE

- Alternators
- Field coils
- Starter motors
- All types of small motors (windshield wipers, power windows, etc.)

ELECTRONICS

- Coils for color TV yokes.

SPECIAL TRANSFORMERS

- Ballasts and power supplies

POWER TRANSFORMERS

- In Oil*

DISTRIBUTION TRANSFORMERS

- Dry, 180 °C Class
- In Oil*

LOW POWER AND FRACTIONAL MOTORS

- Open
- Hermetic (refrigeration)*
- Starter coils

MOTORS IN GENERAL

TYPICAL TEST VALUES FOR A POLYTERMACON/AI® HEAVY 18 AWG WIRE

Typical values only, not intended to be used as a specification

TEST	SPECIFICATION (ANSI / NEMA MW 1000) MW – 35	TEST METHOD	RESULT
Electrical			
Dielectric Strength	≥ 5700 V	NEMA	12800 V
Continuity	≤ 5 discontinuities per 100 feet @ 1500 V	NEMA	0 (Zero)
Mechanical			
Elongation	Minimum of 32%	NEMA	38%
Adherence and Flexibility	20% sudden jerk, rolled 10 turns around a mandrel 3 times the diameter of the wire, visual inspection, no cracks or exposed conductor	NEMA	No cracks
Springback	≤ 58°	NEMA	54°
Unidirectional Abrasion	Average of 3 measurements @ 0°, 120° and 240°; not less than 1150 grams. ≥ 980 grams	NEMA	1492 grams
Chemical			
Resistance to Transformer Oil*	≥ 5700 V	NEMA (a)	Passes
Solubility	Immersion for 30 minutes @ 60 °C in Xylol and Xylol/Butil Cellsolve 50/50; dry samples for 10 minutes @ 150 °C	NEMA	Passes
Resistance to Solvents	Immersion for 24 hours, after heating to 125 °C Naphtha Toluene Ethylic Alcohol 5% Sulfuric Acid Perchlorethylene Xylene	Not soften sufficiently to expose the bare conductor	Passes Passes Passes Passes Passes
R-22 Refrigerant Extraction	≤ 0.25%	NEMA	0.20%
Thermal			
Thermal Stability	20000 hours @ 200 °C	ASTM	210 °C
Heat Shock	20% sudden jerk, rolled 10 turns around a mandrel 3 times the diameter of the wire, before heating for ½ hour @ 220 °C	NEMA	Passes
Thermoplastic Flow*	≥ 300 °C	NEMA	390 °C

* Under specific requirement

(a) Taken from MW 15