

Nano Guard EV[®] Magnet Wire

The solution for electric vehicles power trains

General description

NANO GUARD EV[®] magnet wire has been designed to be used in inverter driven motors; it also offers excellent windability characteristics, including excellent flexibility, low coefficient of friction and a high scrape resistance.

NANO GUARD EV[®] insulation increases the insulation life when used in an inverter duty environment; it also has an excellent high temperature resistance, high adherence and flexibility properties, excellent lubricity and scrape resistance.

All these properties are in addition to the excellent characteristics of POLYTERMACON/AI[®] magnet wire, which forms the basis for NANO GUARD EV[®]. It is manufactured in Heavy build insulation and is offered in copper and aluminum conductors.

The NANO GUARD EV[®] magnet wire is recommended for use in electrical equipment with a thermal class of up to 220 °C.

Specifications

UL Designation	Thermal class (°C)	NEMA MW-1000
PICK 200	200 Cu 220 Al	MW 35

Meets the requirements set forth in the following standards:

- NMX-J-482
- NEMA MW 1000, MW 35
- IEC 317-13
- Magnekon tests for Pulse Resistance and Voltage Endurance

- UL recognition under file E102627

Characteristics

- Very suitable for inverter driven motors, as well as high speed winding and hard insertion processes
- Outstanding protection against voltage stresses originated by IGBT inverters. Pulse endurance 15x that of regular inverter duty wire.
- Low coefficient of friction
- High scrape resistant 3x regular MW35.
- Excellent concentricity
- Very resistant to high temperatures
- High resistance to electrical overloads
- Very high dielectric strength
- Highly resistant to heat shock
- Highly resistant to thermoplastic flow
- Resistant to solvents

Range of gauges

Insulation build	AWG
Heavy	13 - 26

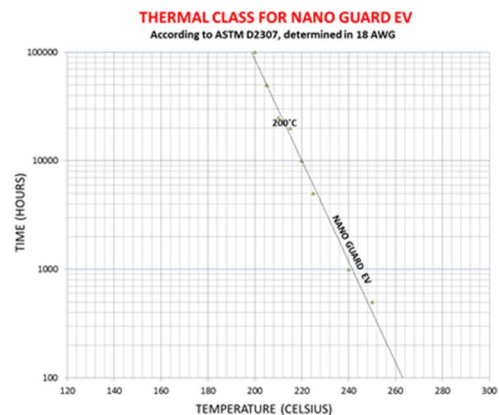
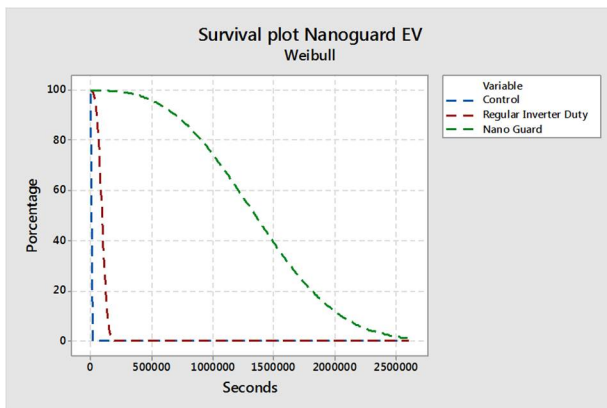
Typical applications:

NANO GUARD EV[®] magnet wire is specially intended, but not limited to, inverter driven motors, in combination with high speed winding machines and hard insertion processes.

TYPICAL TEST VALUES FOR NANO GUARD EV® HEAVY 18 AWG WIRE

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

Typical Properties 18 AWG Heavy Build		
Property	Requirement NEMA MW35	Typical
Electrical properties		
Dielectric Breakdown	Min 5,700 V	Average 12,000 V +
Electrical continuity	Max 5 faults	< 1 fault @ 1,500V
Pulse endurance	Min 80,000 (Internal)	>1,000,000 @140°C, 2kV, 50% duty cycle 20 kHz
Partial Discharge inception voltage (RT)	No requirement	980V rms @60Hz
Thermal Properties		
Heat shock	220°C	220°C No cracks
Thermoplastic flow	Min 300°C	>380°C
Thermal Index	Min 200°C	207°C
Chemical properties		
Solubility	Resistant to Xylene and 50/50 Xylene/butyl cellosolve	Passes
Varnish Compatibility	Compatibility with PDG 2500 SW, PDG 8083, K-900 and K-703.	Compatible
Mechanical Properties		
Coefficient of friction	0.14 (Internal)	<0.12
Adherence and flexibility	No cracks after elongation at 20% 3 d Mandrel	No cracks after elongation at 20%, 1 d Mandrel
Slit Peel Test	Min 45 turns (Internal)	>60 turns
Repeated scrape	Min 100 cycles (internal)	Above 300 cycles
Unilateral scrape resistance	Min Average 970 g	> 1,800 g



Product	Mean Time to Failure (s)
Control MW35	5710.61
Regular Inverter Duty	93182.7
NANO GUARD EV	1366245

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