NEMA MW 81-C

Class 220 Copper - Round, Square and Rectangular Conductor - Polyamideimide coated

APPLICATION

Amide-Imide magnet wire is manufactured utilizing a tough, thermally stable polyamideimide polymer. This improved insulation is unsurpassed in scrape and abrasion resistance. Combined with its very high thermal properties, this product is suited for demanding applications such as high slot-fills, difficult insertions, severe winding applications, and high temperature systems.

Amide-Imide insulations have long been used as the "topcoat" protective layer on our popular GP/MR-200® product. Amide-Imide (AI), used as a "solecoat" insulation, is an engineering extension of this "industry standard".

ENGINEERING HIGHLIGHTS

This improved single insulation system has been engineered to enhance adhesion, scrape abrasion and chemical resistance with improved thermal properties resulting in a measured thermal index of 233°C. Amide-Imide is manufactured to the NEMA MW 1000 MW 81-C standard.

PRODUCT ATTRIBUTES

- Unsurpassed Abrasion Resistance
- High Moisture and Chemical Resistance
- Single Polymer Construction
- Excellent Adhesion and Flexibility
- High Thermal Endurance and Thermoplastic Flow
- Heat Shock Resistant
- High Burnout and AC Overload Resistance
- Low Coefficient of Friction

Typical Property Comparison of 18 AWG Heavy GP/MR-200, Amide-Imide and Allex

	GP/MR-200	Amide-Imide	Allex
NEMA MW 1000	MW 35-C	MW 81-C	MW 16-C
Temperature Index	213°C	230°C	240°C
Thermoplastic Flow	389°C	399°C	>500°C
Heat Shock	300°C	300°C	300°C
Burnout Resistance	509 sec.	715 sec.	931 sec.
Coefficient of Friction	0.02-0.06	0.02-0.06	.107-.109
Unilateral Scrape-avg.	1500 g.	1840 g.	1390 g.
Repeated Scrape-avg.	150	790	30

THERMAL PROPERTIES

THERMOPLASTIC FLOW

Amide-Imide magnet wire has excellent thermoplastic flow (cut-thru) properties.

Required Performance†	Typical Performance
350°C	**399°C**

HEAT SHOCK RESISTANCE

Amide-Imide magnet wire passes all heat shock resistance testing at 20°C above rated temperature.

AVAILABILITY

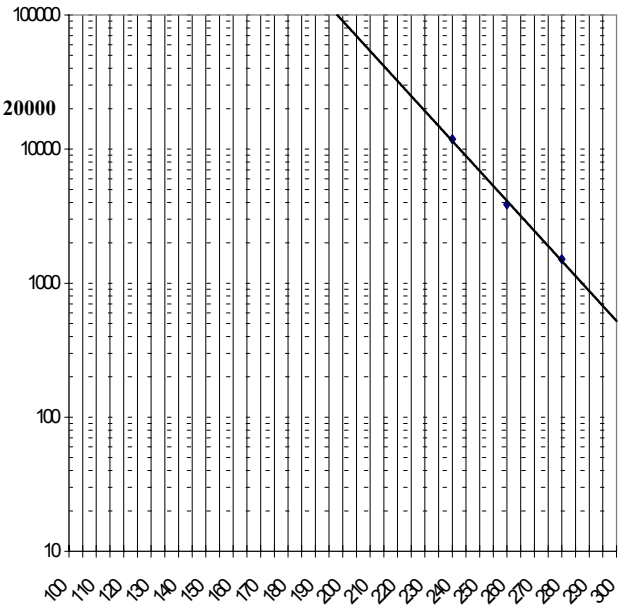
Amide-Imide magnet wire is normally available in round copper sizes 4 through 46 AWG, single and heavy builds. It is also available in square and rectangular sizes.

THERMAL CLASS 220°C

Amide-Imide magnet wire is listed with UL and has a thermal index of 233°C per ASTM D 2307.

Required Performance†	Typical Performance
220°C	**233°C**

Thermal Stability per ASTM-D-2307



Performance data is representative of 18 AWG heavy build copper.**

PHYSICAL PROPERTIES

ABRASION RESISTANCE

NEMA Unilateral Scrape

Required Performance†	Typical Performance
1150 grams min. avg.	1840 grams avg.

Repeated Scrape Test

Required Performance	Typical Performance
No Requirement Established	790 strokes avg.

COEFFICIENT OF FRICTION

Required Performance	Typical Performance
No Requirement Established	0.02 - 0.06

ELECTRICAL PROPERTIES

Dielectric Breakdown

Required Performance†	Typical Performance
5,700 v - Room Temp.	15,000 volts
4,275 v - Rated Temp.	12,000 volts

ELECTRICAL PROPERTIES - continued

Continuity

Required Performance†	Typical Performance
≤ 5 faults/100 ft.	< 1 faults/100 ft.

CHEMICAL PROPERTIES

Solubility - Passes solubility testing in xylene, and 50/50 xylene/butyl Cellosolve.†
Passing test results are also seen with samples tested for 24 hours at room temperature in a wide variety of other solvents such as petroleum naphtha, 3° toluene, ethanol, 5% sulfuric acid, 1% potassium hydroxide, butyl acetate, and acetone.

Refrigerant Resistance – samples pass the following R-22 refrigerant tests:

- Extraction – 6 hrs. reflux cycling in R-22, residue (weight as a total % of film).
- Blistering – R-22 conditioned specimens transferred to a 125°C oven for 10 minutes.
- Softening – 16 hour immersion in liquid R-22 at room temperature, scrape with .016"needle.
- Dielectric Strength – retention of dielectric strength after R-22 conditioning for 72 hours.
- Crazing – Specimens annealed after 8% elongation immersed one hour in liquid R-22 and 10 minutes in boiling R–113.

Refrigerant Compatibility – Passes exposure to both R-134a and R-123 refrigerants.

**The values shown represent typical average results and are not intended to be used as design data or specification limits.
† Requirements of NEMA MW 81-C