

PRODUCT DATA SHEET

NEMA MW 35, MW 36, and MW 73

Class 200 Copper (Class 220 Aluminum) - Round, Square or Rectangular Conductors
Polyester/Polyamideimide coated magnet wire / winding wire.

APPLICATION

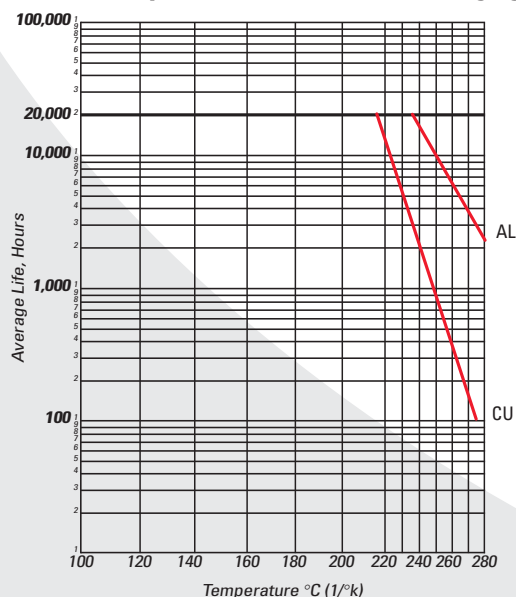
GP/MR-200® magnet wire is the standard of comparison for magnet wire performance in virtually every severe and heavy duty application. The combination of a modified polyester basecoat and an improved polyamideimide topcoat results in an insulation system with outstanding physical toughness, excellent dielectric properties, and superior chemical resistance to most common solvents and refrigerants.

Windability of GP/MR-200® magnet wire, verified by years of experience on virtually every type of winder, has always been excellent. Improvements in the topcoat have resulted in a product that is even more superior with regard to high slot fill and insertability.

GP/MR-200® magnet wire is recommended but not limited to the following applications:

- Fractional and Integral HP Motors
- Hermetic Motors
- DC Motors
- Power Tools
- Automotive Alternators and Generators
- All Dry Type Transformers, Class 105 through 200
- Electronics, All Types of Coils, Class 105 Through 200

18 AWG Heavy Build GP/MR-200® Thermal Aging



ENGINEERING HIGHLIGHTS

1. THERMAL CLASSIFICATION

GP/MR-200® magnet wire is classified as 200°C on copper conductor and 220°C on aluminum. Many high temperature applications have been limited to Class 180 due to total systems capability.

2. THERMOPLASTIC FLOW

GP/MR-200® copper magnet wire has excellent thermoplastic flow (cut-thru) properties, with typical test values near 390°C.

3. WINDABILITY

The windability of GP/MR-200® magnet wire is excellent, and has been recently improved in the areas of lubricity and scrape resistance. This has been accomplished without sacrificing other key thermal and chemical properties.

4. ELECTRICAL

GP/MR-200® magnet wire insulation exhibits high dielectric strength retention under high moisture conditions. Hydrolysis resistance is excellent.

5. CHEMICAL

As shown by property data presented elsewhere in this brochure, resistance of GP/MR-200® magnet wire to both traditional refrigerants and replacement refrigerants (for CFC's and HCFC's) is excellent. GP/MR-200® magnet wire has been the standard for hermetic applications virtually since its inception.

6. TERMINATION

Insulation piercing, hot staking and flame welding processes can all be used with copper GP/MR-200® magnet wire. Flame welding processes are not recommended for aluminum GP/MR-200® magnet wire. If the connection is to be soldered, the insulation must be removed prior to soldering. It is recommended that mechanical stripping be used to remove GP/MR-200® magnet wire insulation.

7. NORMAL AVAILABILITY

- Round Copper Sizes:
14-39 AWG, Single Build
4-39 AWG, Heavy Build
- Round Aluminum Sizes:
14-27 AWG, Single Build
2-27 AWG, Heavy Build
- Square and Rectangular

Please consult Magnet Wire Marketing for additional size (including metrics) and build information.

PRODUCT DATA SHEET

Performance data is representative of 18 AWG heavy build copper and aluminum (where applicable). **

THERMAL PROPERTIES

HEAT SHOCK RESISTANCE

TYPICAL PERFORMANCE: 20%, 1XD, no cracks
REQUIRED PERFORMANCE†: 20%, 3XD, no cracks

THERMAL STABILITY

TYPICAL PERFORMANCE: 213°C (CU), 236°C (AL)
REQUIRED PERFORMANCE†: 200°C (CU), minimum, 220°C (AL)

THERMOPLASTIC FLOW

TYPICAL PERFORMANCE: 395°C (CU only)
REQUIRED PERFORMANCE†: 300°C, minimum

PHYSICAL PROPERTIES

ABRASION RESISTANCE: REPEATED SCRAPE*

No. of strokes of .016" needle, 700 g. load.
TYPICAL PERFORMANCE: 150 avg. strokes (CU)
REQUIRED PERFORMANCE: No Requirement Established

ABRASION RESISTANCE: UNIDIRECTIONAL

TYPICAL PERFORMANCE: 1550 g. avg. (CU), 1500 g. avg. (AL)
REQUIRED PERFORMANCE†:
980 g., minimum; 1150 g., minimum avg. (CU)
590 g., minimum, 690 g., minimum avg. (AL)

ADHESION AND FLEXIBILITY

TYPICAL PERFORMANCE:
20%, 1XD, no cracks (CU), 15%, 2X, no cracks (AL)
REQUIRED PERFORMANCE†:
20%, 3XD, no cracks (CU), 15%, 3XD, no cracks (AL)

COEFFICIENT OF FRICTION*

TYPICAL PERFORMANCE: Dry Lube: .02 - .06 (CU & AL)
REQUIRED PERFORMANCE: No Requirement Established

CONDUCTOR ELONGATION

TYPICAL PERFORMANCE: 38% (CU), 25% (AL)
REQUIRED PERFORMANCE†: 32%, minimum (CU), 15% minimum (AL)

SPRINGBACK

TYPICAL PERFORMANCE: 54 degrees (CU only)
REQUIRED PERFORMANCE†: 58 degrees, maximum

* Tests not indicated as NEMA are Essex Standards.

** The values shown represent typical average results and are not intended to be used as design data or specification limits.

† Requirements of NEMA MW 1000; Section MW 35-A, MW 35-C or MW 73-C, as applicable.

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ELECTRICAL PROPERTIES

CONTINUITY

TYPICAL PERFORMANCE: ≤ 1 faults/100 ft. (CU & AL)
REQUIRED PERFORMANCE†: 5 faults/100 ft., maximum (CU),
10 faults/100 ft., maximum (AL)

DIELECTRIC BREAKDOWN VOLTAGE

ROOM TEMPERATURE
TYPICAL PERFORMANCE: 12,200 volts, avg. (CU),
10,000 volts, avg. (AL)
REQUIRED PERFORMANCE†: 5,700 volts, minimum (CU & AL)

RATED TEMPERATURE

TYPICAL PERFORMANCE: 10,300 volts, avg. (CU)
REQUIRED PERFORMANCE†: 4,275 volts, minimum (CU & AL)

CHEMICAL PROPERTIES

REFRIGERANT RESISTANCE

EXTRACTION
TYPICAL PERFORMANCE: 0.02%** (CU & AL)
REQUIRED PERFORMANCE†: 0.25%, maximum

BLISTERING

TYPICAL PERFORMANCE: Passes (CU & AL)
REQUIRED PERFORMANCE: No flaking

SOFTENING

TYPICAL PERFORMANCE: Passes (CU & AL)
REQUIRED PERFORMANCE: 575 g. scrape, minimum (CU),
375 g. scrape, minimum (AL)

DIELECTRIC BREAKDOWN AFTER R-22

TYPICAL PERFORMANCE: 9,200 volts (CU & AL)
REQUIRED PERFORMANCE†: 5,700 volts, minimum (CU & AL)

CRAZING

TYPICAL PERFORMANCE: Passes (CU & AL)
REQUIRED PERFORMANCE: No crazing at 10X magnification (CU & AL)

COMPATIBILITY - R-134a*

TYPICAL PERFORMANCE: Passes (CU)
REQUIRED PERFORMANCE: No deterioration

COMPATIBILITY - R-123*

TYPICAL PERFORMANCE: Passes (CU)
REQUIRED PERFORMANCE: No deterioration

SOLUBILITY

TYPICAL PERFORMANCE: Passes
REQUIRED PERFORMANCE†: 575 g. scrape, minimum (CU),
345 g. scrape, minimum (AL)

OTHER SOLVENTS

Petroleum naphtha, 3° toluene, ethanol, 5% sulfuric acid, 1% potassium hydroxide, butyl acetate, acetone for 24 hours at room temperature.

TYPICAL PERFORMANCE: Passes
REQUIRED PERFORMANCE: 575 g. scrape, minimum (CU),
345 g. scrape, minimum (AL)