Essex® GP/MR-200® Magnet Wire/Winding Wire
Product and Application Data Sheet

NEMA MW 35, 36 and 73
Class 200 - Copper (Class 220 - Aluminum) - Round, Square or Rectangular Conductors
Polyester/Polyamideimide coated magnet wire/winding wire.

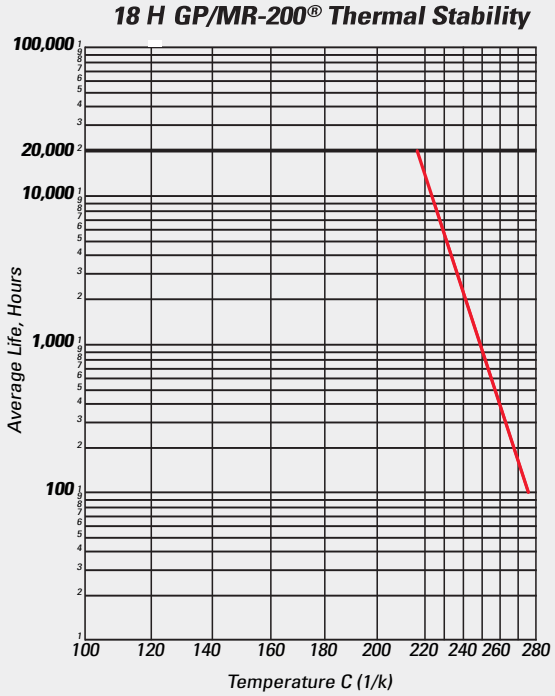
APPLICATION

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 for various end uses:

- *Rotating Machines*
  Fractional and Integral HP Motors
  Hermetic Motors
  DC Motors
  Power Tools
  Automotive Alternators and Generators
- *Transformers*
  All dry type, Class 105 through 200
  Control Type
- *Electronics*
  All types of coils, Class 105 through 200



ENGINEERING HIGHLIGHTS

1. THERMAL CLASSIFICATION

GP/MR-200® magnet wire is classified as 200°C on copper conductor and 220°C on aluminum.

2. THERMOPLASTIC FLOW

GP/MR-200® magnet wire has excellent thermoplastic flow (cut-thru) properties, with typical test values near 395°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 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:
  14 through 36 AWG, Single Build
  4 through 36 AWG, Heavy Build
- Round Aluminum:
  14 through 28 AWG, Single Build
  4 through 28 AWG, Heavy Build
- Square and Rectangular - Consult latest Essex price book for size availability.

(Other sizes and Builds by Special Arrangement)

For further information on our quality systems please visit **www.superioressex.com**.

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Performance data is representative of 18 AWG heavy build copper.

THERMAL PROPERTIES

THERMAL STABILITY - NEMA
TYPICAL PERFORMANCE: 213°C**
REQUIRED PERFORMANCE: 200°C, minimum†

THERMOPLASTIC FLOW - NEMA
TYPICAL PERFORMANCE: 395°C**
REQUIRED PERFORMANCE: 300°C, minimum†

HEAT SHOCK RESISTANCE - NEMA
TYPICAL PERFORMANCE: 20%, 1XD, no cracks**
REQUIRED PERFORMANCE: 20%, 3XD, no cracks†

PHYSICAL PROPERTIES

ADHESION AND FLEXIBILITY - NEMA
TYPICAL PERFORMANCE: 20%, 1XD, no cracks**
REQUIRED PERFORMANCE: 20%, 3XD, no cracks†

ABRASION RESISTANCE: UNIDIRECTIONAL - NEMA
TYPICAL PERFORMANCE: 1550 g, avg.**
REQUIRED PERFORMANCE: 980 g, minimum; 1150 g, minimum avg.†

ABRASION RESISTANCE: REPEATED SCRAPE*
No. of strokes of .016" needle, 700 g load.
TYPICAL PERFORMANCE: 150 avg.**
REQUIRED PERFORMANCE: No Requirement Established

COEFFICIENT OF FRICTION*
Dynamic Single Line Tester, 1000 g load at 50 ft./min.
TYPICAL PERFORMANCE: Dry Lube: .02 - .06**
REQUIRED PERFORMANCE: No Requirement Established

SPRINGBACK - NEMA
TYPICAL PERFORMANCE: 54 degrees**
REQUIRED PERFORMANCE: 58 degrees, maximum†

CONDUCTOR ELONGATION - NEMA
TYPICAL PERFORMANCE: 38%**
REQUIRED PERFORMANCE: 32%, minimum†

ELECTRICAL PROPERTIES

DIELECTRIC STRENGTH - NEMA
BREAKDOWN VOLTAGE - ROOM TEMPERATURE
TYPICAL PERFORMANCE: 12,200 volts, avg.**
REQUIRED PERFORMANCE: 5,700 volts, minimum†

BREAKDOWN VOLTAGE - RATED TEMPERATURE
TYPICAL PERFORMANCE: 10,300 volts, avg.**
REQUIRED PERFORMANCE: 4,275 volts, minimum†

CONTINUITY - NEMA
TYPICAL PERFORMANCE: ≤ 1 fault/100 ft.**
REQUIRED PERFORMANCE: 5 faults/100 ft., maximum†

CHEMICAL PROPERTIES

SOLUBILITY - NEMA
TYPICAL PERFORMANCE: Passes**
REQUIRED PERFORMANCE: 580 g scrape, minimum†

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: 580 g scrape, minimum

REFRIGERANT RESISTANCE
EXTRACTION - NEMA
TYPICAL PERFORMANCE: 0.02%**
REQUIRED PERFORMANCE: 0.25%, maximum†

BLISTERING*
TYPICAL PERFORMANCE: Passes**
REQUIRED PERFORMANCE: No flaking

SOFTENING*
TYPICAL PERFORMANCE: Passes**
REQUIRED PERFORMANCE: 580 g scrape, minimum

DIELECTRIC STRENGTH - NEMA
TYPICAL PERFORMANCE: 9,200 volts**
REQUIRED PERFORMANCE: 5,700 volts, minimum †

CRAZING*
TYPICAL PERFORMANCE: Passes**
REQUIRED PERFORMANCE: No crazing at 10X magnification

COMPATIBILITY - 134a*
TYPICAL PERFORMANCE: Passes**
REQUIRED PERFORMANCE: No deterioration

COMPATIBILITY - 123*
TYPICAL PERFORMANCE: Passes**
REQUIRED PERFORMANCE: No deterioration

* 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-C or MW 73-C, as applicable.

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