

PRODUCT DATA SHEET

NEMA MW 37-C, MW 38-C or MW 73-C

Class 220 Copper - Round, Square or Rectangular Conductors - Polyester/Polyamideimide Coated Magnet Wire / Winding Wire.

APPLICATION

GP/MR-EXTRA® not only complies with the requirement of NEMA MW 35-C, MW 36-C and MW 73-C, but has been thermally upgraded to a Class 220 product. Modifying the standard GP/MR-200® product has resulted in a higher thermal class rating and improved abrasion resistance. GP/MR-EXTRA®, with its very high thermal properties and abrasion resistance, is suited for demanding applications such as high slot-fills, difficult insertions, severe winding applications, and higher temperature systems.

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

- Form Wound Coils
- Fractional and Integral HP Motors
- Hermetic Motors
- DC Motors
- Power Tools
- Automotive Alternators and Generators
- All Dry Type Transformers, Class 105 through 220
- Electronics, All Types of Coils, Class 105 through 220

ENGINEERING HIGHLIGHTS

GP/MR-EXTRA® has an improved insulation system that has been engineered to enhance adhesion, scrape abrasion, and chemical resistance with improved thermal properties. GP/MR-EXTRA® is manufactured utilizing Tris (2-hydroxyethyl) isocyanurate (THEIC) modified polyester basecoat in conjunction with a tough, thermally stable polyamideimide topcoat polymer. Changes to the THEIC polyester basecoat and to the polyamideimide topcoat provide a product with improved abrasion resistance and thermal capability.

Product Attributes:

- Excellent Unilateral Scrape Abrasion Resistance
- Very Good Repeated Scrape Abrasion Resistance
- High Moisture and Chemical Resistance
- Excellent Adhesion and Flexibility
- High Thermal Endurance and Thermoplastic Flow
- Excellent Heat Shock Resistance
- High Burnout - AC Overload Resistance
- Low Coefficient of Friction
- Excellent Resistance to Refrigerants and Replacement Refrigerants (for CFC's and HCFC's)
- Preferable Stripping Method is Mechanical

NORMAL AVAILABILITY

- Round Copper Sizes:
14 - 36 AWG, Single Build
1 - 36 AWG, Heavy Build
- Square and Rectangular

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

Typical Property Comparison of GP/MR-200® and GP/MR-EXTRA®

	<i>GP/MR-200®</i>	<i>GP/MR-EXTRA®</i>
18 AWG Heavy Build		
NEMA MW 1000	MW 35-C, MW 36-C, MW 73-C	MW 37-C, MW 38-C, MW 73-C
Temperature Index	213°C	228°C
Thermoplastic Flow	389°C	393°C
Heat Shock	300°C	300°C
Burnout Resistance	509 seconds	567 seconds
Coefficient of Friction	.02-.06	.02-.06
Unilateral Scrape-avg. (strokes)	1500 g.	2088 g.
Repeated Scrape-avg. (strokes)	150	211

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

THERMAL PROPERTIES

HEAT SHOCK RESISTANCE

GP/MR-EXTRA® magnet wire passes all UL heat shock resistance testing at 20°C above rated temperature.

TYPICAL PERFORMANCE: 300°C
REQUIRED PERFORMANCE: 240°C

THERMAL AGING

GP/MR-EXTRA® is recognized by UL as a Class 220° magnet wire with a thermal index of 228°C per ASTM D 2307.

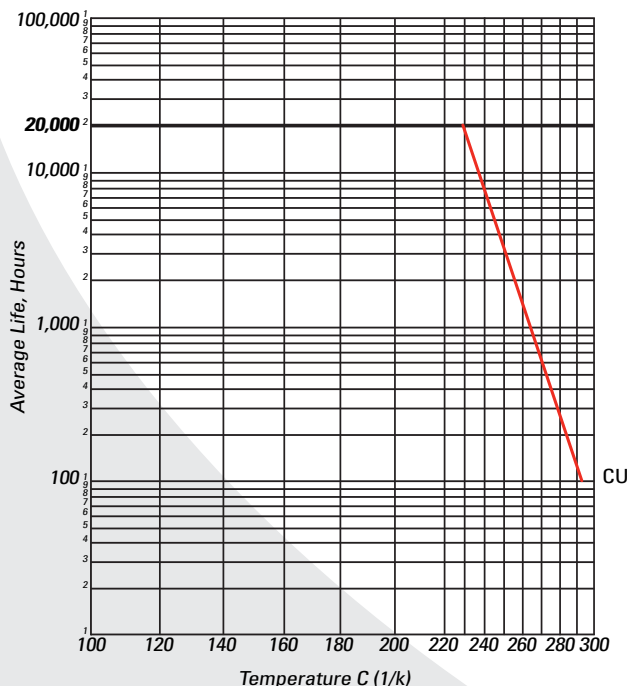
TYPICAL PERFORMANCE: 228°C
REQUIRED PERFORMANCE: 220°C†

THERMOPLASTIC FLOW

GP/MR-EXTRA® magnet wire has excellent thermoplastic flow (cut-thru) properties.

TYPICAL PERFORMANCE: 393°C
REQUIRED PERFORMANCE: 325°C†

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



PHYSICAL PROPERTIES

ABRASION RESISTANCE: REPEATED SCRAPE

TYPICAL PERFORMANCE: 211 strokes avg.*

ABRASION RESISTANCE: UNIDIRECTIONAL SCRAPE

TYPICAL PERFORMANCE: 2088 g., avg.
REQUIRED PERFORMANCE: 980 g., minimum;
1150 g., minimum avg.†

COEFFICIENT OF FRICTION

TYPICAL PERFORMANCE: 0.02 - 0.06*

ELECTRICAL PROPERTIES

CONTINUITY

TYPICAL PERFORMANCE: ≤ 1 fault/100 ft.
REQUIRED PERFORMANCE: ≤ 5 faults/100 ft.†

DIELECTRIC BREAKDOWN VOLTAGE

ROOM TEMPERATURE

TYPICAL PERFORMANCE: 15,000 volts, avg.
REQUIRED PERFORMANCE: 5,700 volts, minimum†

RATED TEMPERATURE

TYPICAL PERFORMANCE: 12,000 volts, avg.
REQUIRED PERFORMANCE: 4,275 volts, minimum†

CHEMICAL PROPERTIES

REFRIGERANT COMPATIBILITY

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

REFRIGERANT RESISTANCE (R-22)

EXTRACTION

TYPICAL PERFORMANCE: 0.02%
REQUIRED PERFORMANCE: 0.25%, maximum††

DIELECTRIC BREAKDOWN VOLTAGE

TYPICAL PERFORMANCE: 9,200 volts
REQUIRED PERFORMANCE: 5,700 volts, minimum††

SOLUBILITY

TYPICAL PERFORMANCE: Passes all NEMA Solvent Resistance Requirements†, ††

* 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 37-C.

†† Requirements of NEMA MW 1000; Section MW 73-C.

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