GP/MR-200®

Magnet Wire | Winding Wire

Product Data Sheet

NEMA	MW 35, MW 36, MW 73
Thermal Class	200°C (Copper), 220°C (Aluminum)
Conductor	Copper and Aluminum
Shape	Round, Square and Rectangular
Insulation Material	Polyester/ Polyamide-imide
Size Range	Round Copper: Single Build: 14-33 AWG; Heavy Build: 4-33 AWG, Round Aluminum: Single Build: 14-22 AWG; Heavy Build: 2-22 AWG, Square and Rectangular
Key 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

PRODUCT DESCRIPTION

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 Polyamide-imide topcoat results in an insulation system with outstanding physical toughness, excellent dielectric properties, and superior chemical resistance to most common solvents and refrigerants.

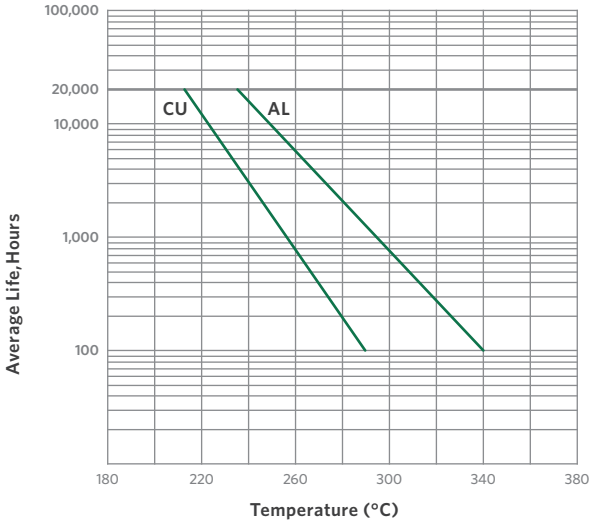
Windability of GP/MR-200® magnet wire, verified by years of experience on virtually every type of winder, has always been excellent. Improvements in the topcoat have resulted in a product that is even more superior with regard to high slot fill and insertability.

FEATURES AND BENEFITS

Thermal Classification	GP/MR-200® magnet wire is classified as Class 200°C on Copper conductor and Class 220°C on Aluminum.
Thermoplastic Flow	GP/MR-200® Copper magnet wire has excellent thermoplastic flow (cut-thru) properties, with typical test values near 390°C.
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.
Electrical	GP/MR-200® magnet wire insulation exhibits high dielectric strength retention under high moisture conditions. Hydrolysis resistance is excellent.
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.
Stripping Method	Insulation piercing, mechanical stripping, 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.
Normal Availability	• Round Copper Sizes: 14-33 AWG, Single Build 4-33 AWG, Heavy Build • Round Aluminum Sizes: 14-22 AWG, Single Build 2-22 AWG, Heavy Build • Square and Rectangular Please consult Magnet Wire Marketing for additional sizes (including metric) and build information

THERMAL ENDURANCE

18 AWG Heavy Build CU/AL



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PROPERTIES

		TEST DETAILS	TYPICAL PERFORMANCE*	REQUIRED PERFORMANCE**
THERMAL				
Heat Shock Resistance		20% Elongation, 220°C x 0.5hr	1xD, no cracks	3xD, no cracks
Thermal Endurance		20,000 hrs, per ASTM D 2307	213°C (CU), 236°C (AL)	≥ 200°C (CU), ≥ 220°C (AL)
Thermoplastic Flow		Crossing method, 5°C/minute rise rate	395°C, 2kg weight (CU only)	≥ 300°C, 2kg weight (CU only)
PHYSICAL				
Abrasion Resistance		Unidirectional Scrape	1550g (CU), 1500g (AL)	≥ 980g & ≥ 1150g avg (CU), ≥ 590g & ≥ 690g avg (AL)
		Repeated Scrape	150 strokes, 700g weight (CU)	-
Adherence and Flexibility		20% Elongation, mandrel wrap (CU), 15% Elongation, mandrel wrap (AL)	1xD, no cracks (CU), 2xD, no cracks (AL)	3xD, no cracks (CU & AL)
Coefficient of Friction		Dynamic Coefficient of Friction per MW 750	Dry Lube: .02 - .06 (CU & AL)	-
Elongation		Elongate to break	38% (CU), 25% (AL)	≥ 32% (CU), ≥ 15% (AL)
Springback		Mandrel wrap	54° (CU)	≤ 58° (CU)
ELECTRICAL				
Continuity		100 ft, graphite fiber brush	≤ 1 fault @ 1500 VDC (CU & AL)	≤ 5 fault @ 1500 VDC (CU), ≤ 10 fault @ 1500 VDC (AL)
Dielectric Breakdown Voltage	Room Temperature	Twisted pairs @ ambient	12,200 volts (CU), 10,000 volts (AL)	≥ 5,700 volts (CU & AL)
	Rated Temperature	Twisted pairs @ 200°C	10,300 volts	≥ 4,275 volts
CHEMICAL				
Solubility		Immersed in 60°C Xylene solvent x 0.5hr, needle scrape	Passes	≥ 575g (CU), ≥ 345g (AL)
		Immersed in 60°C Xylene/Butyl solvent x 0.5hr, needle scrape	Passes	≥ 575g (CU), ≥ 345g (AL)
Other Solvents		Petroleum naphtha, 3% toluene, ethanol, 5% sulfuric acid, 1% potassium hydroxide, butyl acetate, acetone for 24 hours at room temperature.	Passes	≥ 575g (CU), ≥ 345g (AL)
Refrigerant Resistance			Refrigerant	
	Extraction	≤ 85% of refrigerant critcal pressure x 6 hour, collect residue, measure percent of insulation weight loss	R22	0.15%
			R134a	0.03%
			R123	0.14%
				≤ 0.25%
	Dielectric Breakdown after Conditioning	Twisted pairs, exposed to refrigerant at 75-85% of critical pressure x 72 hours	R22	13,000 volts
			R134a	14,300 volts
			R123	14,900 volts
				≥ 5,700 volts

** Performance data is representative of 18 AWG heavy build Copper or Aluminum magnet wire where applicable.*

*** Requirements for 18 AWG heavy build per NEMA MW 35, MW 36 and MW 73.*

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