GP/MR-EXTRA®

Magnet Wire | Winding Wire

Product Data Sheet

NEMA	MW 37-C, MW 38-C, MW 73-C
Thermal Class	220°C
Conductor	Copper
Shape	Round, Square, Rectangular
Insulation Material	Polyester/Polyamide-imide
Size Range	Round Single Build: 14-33 AWG Round Heavy Build: 4-33 AWG Square and Rectangular: Please consult Essex Magnet Wire Marketing for additional sizes (including metric) and build information.
Key Applications	Form Wound Coils Fractional and Integral HP Motors Hermetic Motors DC Motors Automotive Alternators and Generators All Dry Type Transformers Electronics, Power Tools

PRODUCT DESCRIPTION

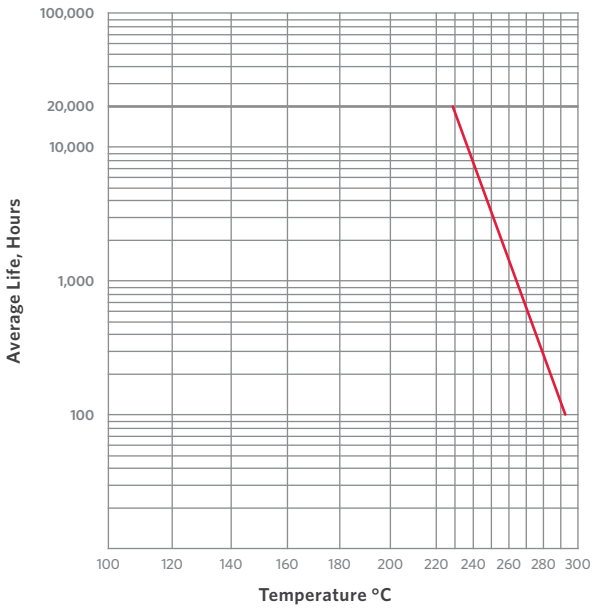
GP/MR-EXTRA® has an improved insulation system that has been engineered to enhance adhesion, scrape abrasion, and chemical resistance with improved thermal properties. GP/MR -EXTRA® is manufactured utilizing THEIC Polyester basecoat in conjunction with a tough, thermally stable Polyamide-imide topcoat polymer. Changes to the THEIC Polyester basecoat and to the Polyamide-imide topcoat provide a product with abrasion resistance and thermal capability.

FEATURES AND BENEFITS

Thermal Classification	GP/MR-EXTRA® magnet wire is classified as Class 220°C on Copper conductor.
Thermoplastic Flow	GP/MR-EXTRA® Copper magnet wire has excellent thermoplastic flow (cut-thru) properties, with typical test values near 390°C.
Windability	The windability of GP/MR-EXTRA® magnet wire is excellent, and has been improved in the areas of lubricity and scrape resistance. This has been accomplished without sacrificing other key thermal and chemical properties.
Electrical	GP/MR-EXTRA® 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-EXTRA® magnet wire to both traditional refrigerants and replacement refrigerants (for CFC's and HCFC's) is excellent. GP/ MR-EXTRA® magnet wire has been used in hermetic applications virtually since its inception.
Stripping Method	Insulation piercing, mechanical stripping, hot staking and flame welding processes can all be used with GP/MR-EXTRA® 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 • Square and Rectangular Please consult Magnet Wire Marketing for additional sizes (including metric) and build information

THERMAL ENDURANCE

18 AWG Heavy Build CU



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PROPERTIES

		TEST DETAILS		TYPICAL PERFORMANCE*	REQUIRED PERFORMANCE**
THERMAL					
Heat Shock Resistance		20% Elongation, 3xD		300°C x 0.5hr, no cracks	240°C x 0.5hr, no cracks
Thermal Endurance		20,000 hrs, per ASTM D 2307		228°C	≥ 220°C
Thermoplastic Flow		Crossing method, 5°C/minute rise rate		393°C, 2kg weight	≥ 325°C, 2kg weight
PHYSICAL					
Abrasion Resistance		Unidirectional Scrape		2088g	≥ 980g ≥ 1150g avg
		Repeated Scrape		211 strokes, 700g weight	-
Adherence and Flexibility		20% Elongation, mandrel wrap, 3xD		No cracks	No cracks
Coefficient of Friction		Dynamic Coefficient of Friction per MW 750		Dry Lube: .02 - .06	-
Elongation		Elongate to break		38%	≥ 32%
Springback		Mandrel wrap		54°	≤ 58°
ELECTRICAL					
Continuity		100 ft, graphite fiber brush		≤ 1 fault @ 1500 VDC	≤ 5 fault @ 1500 VDC
Dielectric Breakdown Voltage	Room Temperature	Twisted pairs @ ambient		15,000 volts	≥ 5,700 volts
	Rated Temperature	Twisted pairs @ 220°C		12,000 volts	≥ 4,275 volts
CHEMICAL					
Solubility		Immersed in 60°C Xylene solvent x 0.5hr, needle scrape		Passes	≥ 575g
		Immersed in 60°C Xylene/Butyl solvent x 0.5hr, needle scrape		Passes	≥ 575g
Other Solvents		Petroleum naphtha, 3% toluene, ethanol, 5% sulfuric acid, 1% potassium hydroxide, butyl acetate, acetone for 24 hours at room temperature		Passes	≥ 575g
Refrigerant Resistance			Refrigerant		
	Extraction	≤ 85% of refrigerant critcal pressure x 6 hour, collect residue, measure percent of insulation weight loss	R22	0.02%	≤ 0.25%
			R134a	0.04%	
	Dielectric Breakdown after Conditioning	Twisted pairs, exposed to refrigerant at 75-85% of critical pressure x 72 hours	R22	9,200 volts	≥ 5,700 volts
			R134a	14,900 volts	

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

*** Requirements for 18 AWG heavy build per NEMA MW 37, MW 38 and MW 73.*

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