

UltraShield® Plus

Magnet Wire | Winding Wire



NEMA	MW 36-C
Thermal Class	Class 200
Conductor	Copper
Shape	Rectangular, Square
Insulation Material	Polyester/Polyamide-imide
Size Range	Square: 1-14 AWG, Heavy Build Rectangular: Consult Essex Furukawa Marketing/Sales for availability
Key Applications	Inverter Duty Drive Motors Rotating Machines Hermetic Motors DC Motors Power Tools Automotive Alternators and Generators Transformers, All Dry Types through Class 200 Electronics, All Types of Coils through Class 200

PRODUCT DESCRIPTION

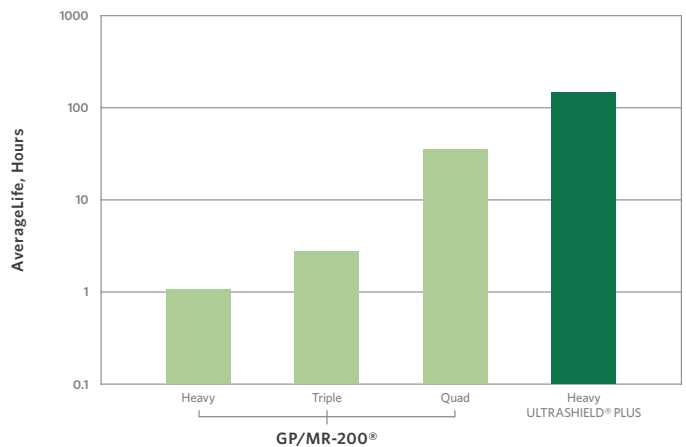
UltraShield® Plus magnet wire, which is specifically designed for use in motors that may be subjected to higher voltage spikes present in inverter duty applications, exhibits excellent resistance to partial discharges and abrasion. The combination of the modified Polyester basecoat and Polyamide-imide topcoat provides an insulation system with outstanding toughness and excellent dielectric properties. UltraShield® Plus magnet wire has improved voltage endurance and thermal properties, compared to standard NEMA MW 36-C magnet wire, while retaining superior chemical resistance to common solvents and refrigerants. UltraShield® Plus conforms to all of the requirements of NEMA MW 36-C.

FEATURES AND BENEFITS

Thermal Classification	UltraShield® Plus magnet wire is UL listed at Class 200, and is recommended for NEMA MW 36-C wire applications.
Thermoplastic Flow	405°C
Windability	UltraShield® Plus magnet wire has been extensively wound in various motor applications and has been highly commended for its superior windability performance.
Electrical	Testing with sinusoidal and with inverter wave shapes shows that UltraShield® Plus magnet wire lasts many times longer than standard NEMA MW 36-C insulation. While no standards for this type of testing have been universally accepted, our testing shows dramatic improvement in insulation life, especially under severe duty applications at higher temperatures.
Chemical	UltraShield® Plus magnet wire has been tested for resistance to R-22 refrigerant and the results show it to be compatible for hermetic systems. Successful results are also seen with samples tested for 24 hours at room temperature in a wide variety of other solvents such as petroleum naphtha, toluene, ethanol, 5% sulfuric acid, 1% potassium hydroxide, butyl acetate, and acetone.
Stripping Method	Insulation piercing, mechanical stripping, and flame welding processes can all be used successfully with UltraShield® Plus magnet wire. If the connection is to be soldered, it is recommended that mechanical stripping be used to remove the insulation prior to soldering.
Normal Availability	<ul style="list-style-type: none"> Square Copper Sizes: 1 - 14 AWG, Heavy Build Please consult Magnet Wire Marketing for additional size (including metric) and build information.

INVERTER LIFE TESTING

150°C, 575V Inverter with 18AWG Twisted Pairs





PROPERTIES

	TEST DETAILS	TYPICAL PERFORMANCE*	REQUIRED PERFORMANCE**
THERMAL			
Heat Shock Resistance	15% Elongation, 220°C x 0.5hr	No cracks	No cracks
Thermal Endurance***	20,000 hrs, per ASTM D 2307	215°C	≥ 200°C
Thermoplastic Flow	2kg ball point probe method, 5°C/minute rise rate	405°C	≥ 300°C
PHYSICAL			
Abrasion Resistance***	Unidirectional Scrape	2,100g	≥ 1,150g avg
	Repeated Scrape	496 strokes, 700g weight	-
Adherence and Flexibility	30% Elongation	No topcoat or basecoat cracks	No cracks
Elongation	Elongate to break	44%	≥ 32%
Springback	Mandrel wrap	48°	≤ 58°
	Deflection	≤ 4°	≤ 5°
ELECTRICAL			
Continuity***	100 ft, graphite fiber brush	≤ 1 fault @ 1,500 VDC	≤ 5 fault @ 1,500 VDC
Dielectric Breakdown Voltage	10% elongation, flat & edge bend, shotbox method	6,000 volts	≥ 1,500 volts (3 of 4 values), ≥ 500 volts (4th value)
Dielectric Breakdown Voltage at Rated Temperature***	Twisted pairs @ 200°C	10,900 volts	≥ 4,275 volts
CHEMICAL			
Solubility***	Immersed in 60°C solvent x 0.5hr, 575g needle scrape	Passes	No exposed bare conductor
Refrigerant Resistance***	Weight loss after refrigerant exposure	0.02%	≤ 0.25%
	Dielectric breakdown voltage after refrigerant exposure	11,600 volts	≥ 5,700 volts

* Performance data is representative of 0.102" x 0.204" or 18 AWG heavy build copper magnet wire where applicable. ** Requirements for 0.102" x 0.204" or 18 AWG heavy build per NEMA MW 35-C, MW 36-C or MW 73-C where applicable. *** No NEMA test published for rectangular/square magnet wire so performance data shown is representative of 18 AWG.

THERMAL ENDURANCE

18 AWG Heavy Build

