

Magnet Wire Insulation Guide

Thermal Class	Insulation Type	NEMA Standard (MW1000)	Federal Specification (JW1177)	Insulation Characteristics
105C	Plain Enamel	NONE	NONE	Plain Enamel, known as oleoresinous enamel, was one of the first film insulations developed more than 75 years ago and is still in use today in a variety of electronic components. Plain Enamel wires are manufactured to single-build dimensional standards. Available in 40-44 AWG.
	Formvar	MW 15 (RD), MW 18 (SQ/RECT)	JW1177/4 (RD), JW1177/16 (SQ/RECT)	Formvar Enamel is made from vinyl acetal resins produced as a smooth uniform film. Formvar has excellent mechanical properties such as abrasion resistance and flexibility.
	Polyurethane Bondable Formvar Bondable Polyurethane Nylon Bondable	MW 3 MW 19 MW 29	JW1177/44 JW1177/6 JW1177/30	Bondable magnet wire is insulated copper wire with a superimposed film of thermoplastic bonding material. The bonding material is activated by heat or a solvent making it possible to wind coils in tight and unusual shapes since the wire may be bonded turn-to-turn as it is being wound.
155C	Polyurethane-155	MW 79	JW1177/41	Polyurethane-155 is a 155°C thermal class solder strippable insulation produced primarily 30 AWG and finer with quick soldering characteristics at 390C
	Polyurethane Nylon-155	MW 80	JW1177/42	Polyurethane Nylon-155 is similar to the 155°C Polyurethane with an additional Nylon overcoat to improve the abrasion resistance and heat shock characteristics for coil and motor windings
180C	Polyurethane-180	MW 82	NONE	Polyurethane-180 combines the thermal properties of a class 180°C insulation, while offering low temperature solderability at 390 C.
	Polyurethane Nylon-180	MW 83	NONE	Polyurethane Nylon-180 offers excellent abrasion resistance for ferrite core coils and transformers, while exhibiting high temperature thermal stress and low temperature solderability at 430C
	Polyester-imide	MW 30	JW1177/12	Polyester-imide magnet wire is insulated with a Class H modified polyester resin. It has excellent thermal endurance, solvent resistance and exhibits a low coefficient of friction to improve windability.
	Polyester Nylon	MW 76	JW1177/38	Polyester Nylon is a film insulation with a modified polyester basecoat and a nylon topcoat. Typical of a dual coat construction, advantage is taken of the high thermal properties of the polyester and the mechanical properties of the nylon.
	Solderable Polyester	MW 77	JW1177/39	Solderable Polyester magnet wire is an ester-imide insulated wire which solders at 470°C.
	Solderable Polyester Nylon	MW 78	JW1177/40	Solderable Polyester-Nylon magnet wire is a two-part insulation system in which ester-imide basecoat is overcoated with nylon. This wire solders at 455C.
	Polyester-imide Bondable	NONE	NONE	Self-bonding polyester actually describes a number of possible constructions of polyester base insulation with a thermoplastic bond coat. The bond coat is heat or solvent activated.
	Polyester-amide-imide Bondable Solderable Polyester Bondable	NONE NONE	NONE NONE	
200C	Glass Fibers	MW 44 (RD), MW 43 (SQ/RECT)	JW1177/21 (RD)	Both glass and Dacron glass are a served filament on the magnet wire conductor. They are available as unvarnished or varnished with organic or silicone varnishes. The fibers may be served over bare conductor or over film constructions. The glass is a continuous filament glass yarn and the Dacron glass is a combination of glass and polyester fibers. Glass offers high resistance to overload burnout and Dacron offers excellent abrasion resistance and flexibility.
	Dacron Glass (DDG)	MW 45 (RD), MW 46 (SQ/RECT)	JW1177/20 (RD), JW1177/25(SQ/RECT)	
	Polyester-200	MW 74	JW1177/43	Polyester-200 is a modified theic-polyesterimide one-part system. It has high temperature thermal properties and good chemical resistance.
	Polyester-Amide-Imide	MW 35 (RD), MW 36 (SQ/RECT)	JW1177/14(RD), JW1177/13(SQ/RECT)	Polyester-amide-imide magnet wire is a two-part insulation consisting of a modified polyester basecoat with a superimposed amide-imide outer coating. The wire exhibits exceptional windability, heat shock resistance and ability to withstand overloads. Excellent chemical resistance to most solvents and insulating varnishes.
	Polytetrafluoroethylene (Teflon)	NONE	NONE	Teflon has high heat resistance and excellent resistance to most solvents, acids and corrosive chemicals and a high dielectric constant.
240C	Polyimide-ML	MW 16 (RD), MW 20 (SQ/RECT)	JW1177/15(RD), JW1177/18(SQ/RECT)	ML is a film insulation made of polyimide resins. It is a Class 240°C thermal rated insulation with exceptional resistance to chemical solvents and burnout. The wire ability to withstand excessive overloads extends the use of the magnet wire in extreme conditions. MS is unaffected by prolonged exposure to varnish solvents.

NOTE: For reference only. Wire manufacturer specifications may vary.