Magnet Wire Insulation Guide

THERMAL CLASS	INSULATION TYPE	MWS PRODUCT CODE	NEMA STANDARD (MW1000)	IEC STANDARD (60317)	FEDERAL SPECIFICATION
105°C	Plain Enamel	PE	**NONE**	NONE	NONE
	Formvar	F	**MW 15 (RD) MW 18 (SQ & RECT)**	60317-1 (RD) 60317-17 (SQ & RECT)	JW 1177/14 (RD) JW1177/16 (SQ & RECT)
155°C	Polyurethane - 155	P155	**MW79**	60317-20	JW 1177/ 41
	Polyurethane Nylon - 155	PN155	**MW80**	60317-21	JW 1177/ 42
	Polyurethane Bondable - 155	PB155	**MW131**	60317-35	NONE
	Polyurethane Nylon Bondable - 155	PNB155	**MW136**	NONE	NONE
180°C	Polyurethane - 180	P180	**MW82**	60317-51	NONE
	Polyurethane Nylon - 180	PN180	**MW83**	60317-55	NONE
	Polyester-imide	PT	**MW30**	60317-8	JR 1177/ 12
	Polyester-Nylon	PTN	**MW76**	60317-22	JW 1177/ 38
	Solderable Polyester	SPT	**MW77**	60317-23	JW 1177/ 39
	Solderable Polyester Nylon	SPTN	**MW78**	NONE	JW 1177/ 40
	Polyurethane Bondable - 180	PB180	**MW 132**	NONE	NONE
	Polyurethane Nylon Bondable - 180	PNB180	**MW137**	NONE	NONE
	Polyester-imide Bondable	PTB	**NONE**	60317-37	NONE
	Polyester-amide-imide Bondable	APTB	**MW102**	60317-38	NONE
	Solderable Polyester Bondable	SPTB	**NONE**	60317-36	NONE
200°C	Polyester - 200	PT200	**MW74**	60317-42	JW 1177/43
	Polyester A/I Topcoat	APT	**MW 35 (RD) MW 36 (SQ & RECT)**	60317-13 (RD) 60317-29 (SQ & RECT)	JW 1177/ 14 (RD) JW1177/ 13 (SQ & RECT)
	Polyester A/I Polyamideimide	APTIG	**MW73**	60317-13	NONE
240°C	Polyimide - ML*	ML	**MW 16 (RD) MW 20 (SQ & RECT)**	60317-46 (RD) 60317-47 (SQ & RECT)	JW 1177/ 15 (RD) JW1177/ 18 (SQ & RECT)

*Registered trademark of Industrial Summit Technology

INSULATION CHARACTERISTICS	GENERAL APPLICATIONS
Plain Enamel was one of the earliest film insulations developed for automotive ignition coils. Today it is primarily used in musical instruments for pickup coils. It is manufactured to single build dimensions and stocked in sizes 41 to 44 AWG.	Pickup coils for guitars and other instruments
Formvar was an early synthetic insulation composed of modified polyvinyl resins designed for continuous operation at 105C. It has excellent abrasion resistance and is compatible with most varnishes and impregnating compounds.	Oil filled transformers, motors, solenoids, superconducting coils or other cryogenic applications
Solderable film composed of modified polyurethane resins designed for fine wire applications with excellent resistance to moisture and most solvents.	Relays, high frequency coils and transformers, solenoids, small motors
Solderable dual film composed of modified polyurethane resins with a polyamide (nylon) overcoat that provides improved lubricity for ease of winding.	Appliance motors, relays, torroidal coils, fractional HP motors
Solderable polyurethane or polyurethane with nylon overcoat and a superimposed thermoplastic butyral film for coils requiring Class F service. Coils may be bonded by heat or with isopropyl alcohol. Generally made as Type 1 insulation build equal to heavy overall diameter.	Voice coils, helical coils, inductors, self-supporting coils
Polyurethane film designed for applications requiring high thermal resistance and low soldering temperature.	Relays, ignition coils, solenoids, small transformers
Polyurethane with polyamide (nylon) overcoat for applications requiring high thermal properties and chemical resistance. Soldering temperature is 390°C.	Relays, pulse transformers, small appliance motors
Film insulation composed of modified polyester resins with excellent chemical resistance.	Solenoids, servo motors, small appliance motors
Dual film composed of modified polyester resins with a nylon overcoat. Combines continuous 180°C operating temperature and low coefficient of friction for superior winding and insertion properties.	Motor stators, fractional HP motors
Film insulation composed of modified polyesterimide resins designed to solder at 470°C, generally made at 24 AWG and finer sizes.	High temperature relays, transformers, automotive coils
Dual film composed of modified polyesterimide resins with nylon overcoat for superior performance where winding stresses may be severe. Designed to solder at 470°C, this insulation is made mostly in heavier gauge sizes.	Transformers, automotive coils, appliance motors
Dual (Polyurethane Nylon) insulation system with superimposed thermoplastic film combining high thermal resistance, solderability, and self-bonding features.	Self-supporting coils, relays, voice coils
These are wires that combine characteristics of various class 180°C film insulations with self-bonding feature. Bonding method depends on choice of bond coat. May be made as Type 1 (heavy diameter) or Type 2 (triple diameter) construction.	Voice coils, inductors, yoke coils, small motors
A dual coat system composed of THEIC modified polyester, combined with a corona resistant shield coat of polyamideimide (A/I) overcoat designed to withstand severe voltage stresses.	Inverter duty motors, high voltage motors
Film composed of aromatic polyimide resin that features high cut through, exceptional chemical resistance, minimal outgassing and capable of continuous operation at 240°C in extremely harsh environments.	High temperature continuous duty coils, hermetically sealed relays, fractional and integral HP motors