

NEMA MW 78-C

Class 180 Copper – Round Conductors – Modified Solderable Polyester-imide/polyamide coated magnet wire/winding wire

APPLICATION

Solidon® magnet wire is designed for applications requiring both solderability and high thermal resistance.

Solidon® magnet wire is a solder-strippable insulation consisting of a modified Polyester-imide basecoat and a Polyamide topcoat. The polyamide (nylon) topcoat is good where winding stresses may be somewhat more severe.

Solidon® magnet wire has excellent overload resistance for a solderable film and possesses high thermoplastic flow (cut-through) resistance. Additionally, this construction has good scrape abrasion resistance and is resistant to most common varnish solvents and potting compounds. Solidon® is recommended for various end uses such as:

- Encapsulated and molded coils
- Appliance controls and relays
- Automotive controls and relays
- Solenoid and Actuator coils
- Specialty power transformers

Solderable Insulation Comparison Table*:

	Salt Water Pinhole Test	Soldering Temperature	Glass Transition Temperature	Thermoplastic Flow
Soderex®/155 (MW 79)	OK	390°C	Lower	Lower
Soderex®/180 (MW 82)	Better	390°C	Highest	Higher
Solidon® (MW 78)	Poor	470°C	Higher	Highest

ENGINEERING HIGHLIGHTS

1. THERMAL CLASSIFICATION

Solidon® is class 180 when measured in accordance with ASTM D 2307 test method. Heat shock resistance exceeds 250°C.

2. THERMOPLASTIC FLOW

Thermoplastic flow (cut-through) temperature of Solidon® magnet wire is well above normal process conditions found in most molded coil work, trickle impregnation processes and standard preheat varnish cycles specified for normal Class 130, 155 and 180 systems.

3. SOLDERABILITY

Solidon® magnet wire may be readily stripped by dipping the coil lead in solder at a temperature as low as 470°C. Higher temperatures may be used, however, to facilitate production process speeds.

4. WINDABILITY

The flexibility and adhesion properties of Solidon® are more than adequate for all but the most severe fine wire winding applications.

5. ELECTRICAL

Solidon® magnet wire insulation exhibits high dielectric strength .

6. CHEMICAL

The solvent resistance property of Solidon® is suitable for most Class 105, 130, 155 and 180 varnishes, encapsulants and treating resins.

7. AVAILABILITY

Solidon® magnet wire is normally available in round copper sizes 14 AWG through 46 AWG, single and heavy builds. Please refer additional questions on availability to Essex Magnet Wire Marketing personnel.



Performance data is representative of 18 AWG heavy build copper. **

THERMAL PROPERTIES

SOLDERABILITY

TYPICAL PERFORMANCE: 6 seconds at 455°C (851°F)
REQUIRED PERFORMANCE: ≤ 8 seconds at 470°C†

THERMOPLASTIC FLOW

TYPICAL PERFORMANCE: 265°C
REQUIRED PERFORMANCE: 200°C†

HEAT SHOCK RESISTANCE

TYPICAL PERFORMANCE: No cracks at 250°C
REQUIRED PERFORMANCE: 20%, 3XD, 200°C, no cracks†

THERMAL STABILITY

TYPICAL PERFORMANCE: 180°C
REQUIRED PERFORMANCE: 180°C minimum†

PHYSICAL PROPERTIES

ADHESION AND FLEXIBILITY

TYPICAL PERFORMANCE: 20%, 1xD, no cracks
REQUIRED PERFORMANCE: 20%, 3xD, no cracks†

CONDUCTOR ELONGATION

TYPICAL PERFORMANCE: 38%
REQUIRED PERFORMANCE: 32% minimum†

ELECTRICAL PROPERTIES

DIELECTRIC BREAKDOWN VOLTAGE

ROOM TEMPERATURE

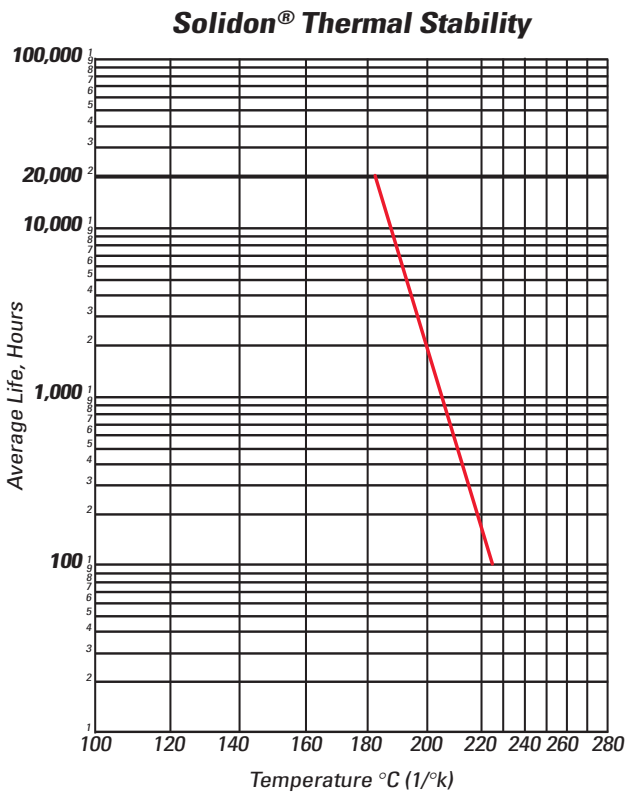
TYPICAL PERFORMANCE: 11,500 volts, avg.
REQUIRED PERFORMANCE: 5700 volts, minimum†

RATED TEMPERATURE

TYPICAL PERFORMANCE: 8750 volts, avg.
REQUIRED PERFORMANCE: 4275 volts, minimum†

CONTINUITY

TYPICAL PERFORMANCE: ≤ 1 fault/100 feet
REQUIRED PERFORMANCE: ≤ 5 faults/100 feet†



* Tests not indicated as NEMA are Essex standards.

** The values shown represent typical average results and are not intended to be used as design data or specification limits.

† Requirements of NEMA MW 77-C.