

NEMA MW 83-C

Class 180 Copper - Round Conductors - Polyurethane/Polyamide coated magnet wire/winding wire.

APPLICATION

SODERON®/180 magnet wire is designed for applications requiring both high thermal resistance and low soldering temperatures.

SODERON®/180 magnet wire consists of a solder-strippable modified polyurethane film insulation over-coated with nylon.

Care must be exercised in the application of SODERON®/180 magnet wire since this material does not exhibit overload resistance properties of most non-solderable Class 105, 130, 155 and 180 resin systems. SODERON®/180 is recommended for various end uses such as:

- Bobbin wound and paper section coils
- Encapsulated and molded coils
- Small motor, armatures and field coils
- Automotive coils
- Toroidal coils
- Specialty power transformers

Solderable Insulation Comparison:

	Salt Water Pinhole Test	Soldering Temperature	Glass Transition Temperature	Thermo-plastic Flow
Soderon®/155 (MW-80)	OK	390°C	Lower	Lower
Soderon®/180 (MW-83)	Better	390°C	Highest	Higher
Solidon® (MW-78)	Poor	470°C	Higher	Highest

ENGINEERING HIGHLIGHTS

1. THERMAL CLASSIFICATION

SODERON®/180 magnet wire is Class 180 when measured in accordance with the ASTM-D2307 test procedure. Heat shock resistance exceeds 200°C.

2. THERMOPLASTIC FLOW

Thermoplastic flow or cut-through temperature of SODERON®/180 magnet wire is in the 225°C plus range; well above maximum process conditions found in molded coil work, trickle impregnation processes and standard pre-heat varnish cycles specified for normal Class 130, 155 and 180 systems.

3. SOLDERABILITY

SODERON®/180 magnet wire solder strips readily and much more easily than MW-78 type products. It solders consistently at temperatures as low as 390°C.

4. WINDABILITY

Flexibility and adhesion properties of the SODERON®/180 magnet wire film are more than adequate for all but the most severe fine wire winding applications.

5. ELECTRICAL

SODERON®/180 magnet wire insulation exhibits high dielectric strength retention under high humidity conditions.

6. CHEMICAL

The solvent resistant properties of SODERON®/180 are suitable for most classes 105, 130, 155 and 180 varnishes, encapsulants, and treating resins. It has improved salt water resistance compared to other solderable wires.

7. AVAILABILITY

SODERON®/180 magnet wire is normally available in round copper sizes 25 through 46 AWG, single and heavy builds. Please refer additional questions regarding build and size availability to the Essex Marketing Department.



Performance data is representative of 36 AWG heavy build copper. **

THERMAL PROPERTIES

SOLDERABILITY

TYPICAL PERFORMANCE: 1 second @ 390°C
REQUIRED PERFORMANCE: ≤5 seconds @ 390°C†

THERMOPLASTIC FLOW

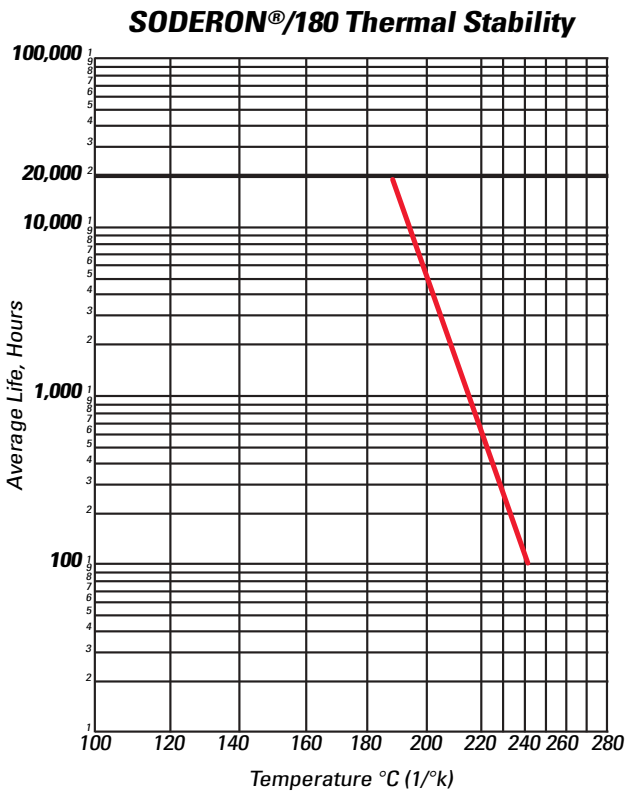
TYPICAL PERFORMANCE: 259°C
REQUIRED PERFORMANCE: Median>225°C†

HEAT SHOCK RESISTANCE

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

THERMAL STABILITY

TYPICAL PERFORMANCE: 189°C
REQUIRED PERFORMANCE: 180°C minimum†



Thermal stability based on 28 AWG heavy build copper.

PHYSICAL PROPERTIES

ADHESION AND FLEXIBILITY

TYPICAL PERFORMANCE: No cracks
REQUIRED PERFORMANCE: 20%, 1XD, no cracks†

CONDUCTOR ELONGATION

TYPICAL PERFORMANCE: 26%
REQUIRED PERFORMANCE: 20% minimum†

ELECTRICAL PROPERTIES

DIELECTRIC BREAKDOWN VOLTAGE

ROOM TEMPERATURE

TYPICAL PERFORMANCE: 6400 volts, avg.
REQUIRED PERFORMANCE: 2340 volts, minimum†

RATED TEMPERATURE

TYPICAL PERFORMANCE: 4900 volts, avg.
REQUIRED PERFORMANCE: 1755 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 83-C



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