

# PRODUCT DATA SHEET

## NEMA MW 82-C

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

### APPLICATION

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

Soderex®/180 consists of a solder-strippable modified polyurethane film insulation.

Soderex®/180 is recommended but not limited to the following applications:

- Encapsulated and molded coils
- Appliance controls and relays
- Automotive controls, ignition coils and relays
- Bobbin wound coils
- Specialty power transformers
- Solenoids
- Linear motors
- RF Coils

### SOLDERABLE INSULATION COMPARISON:

	Salt Water Pinhole Test	Soldering Temperature	Glass Transition Temperature	Thermo-plastic Flow
<b>Soderex®/155 (MW 79)</b>	OK	390°C	Lower	Lower
<b>Soderex®/180 (MW 82)</b>	Better	390°C	Highest	Higher
<b>Solidex® (MW 77)</b>	Poor	470°C	Higher	Highest

### ENGINEERING HIGHLIGHTS

#### 1. THERMAL CLASSIFICATION

Soderex®/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 Soderex®/180 magnet wire is in the 225°C plus range; well above the 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

Soderex®/180 magnet wire solder strips readily and much more easily than MW 77 type products. It solders consistently at temperatures as low as 390°C.

#### 4. WINDABILITY

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

#### 5. ELECTRICAL

Soderex®/180 magnet wire insulation exhibits high dielectric strength retention under high humidity conditions. The low dissipation factor of Soderex®/180 magnet wire at high frequencies makes it a prime candidate for RF coil applications.

#### 6. CHEMICAL

The solvent resistant properties of Soderex®/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. NORMAL AVAILABILITY

- Round Copper Sizes:  
25-46 AWG, Single Build  
25-46 AWG, Heavy Build

Please consult Magnet Wire Marketing for additional size (including metric) and build information.

# PRODUCT DATA SHEET

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

### THERMAL PROPERTIES

#### HEAT SHOCK RESISTANCE

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

#### SOLDERABILITY

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

#### THERMAL STABILITY

**TYPICAL PERFORMANCE:** 193°C  
**REQUIRED PERFORMANCE:** 180°C minimum†

#### THERMOPLASTIC FLOW

**TYPICAL PERFORMANCE:** 260°C  
**REQUIRED PERFORMANCE:** 225°C†

### 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

#### CONTINUITY

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

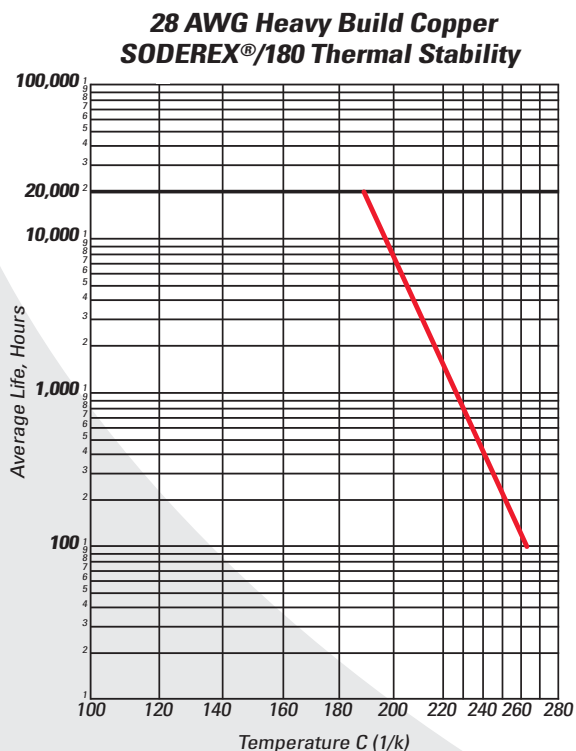
#### DIELECTRIC BREAKDOWN VOLTAGE

##### ROOM TEMPERATURE

**TYPICAL PERFORMANCE:** 6400 volts, avg.  
**REQUIRED PERFORMANCE:** 2600 volts, minimum†

##### RATED TEMPERATURE

**TYPICAL PERFORMANCE:** 4900 volts, avg.  
**REQUIRED PERFORMANCE:** 1950 volts, minimum†



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

† Requirements of NEMA MW 1000; Section MW 82-C.

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