

# PRODUCT DATA SHEET

## NEMA MW 77-C

Class 180 - Copper - Round Conductors - Solderable polyester-imide coated magnet wire / winding wire.

### APPLICATION

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

Solidex® magnet wire consists of a solder-strippable modified polyester-imide insulation.

Solidex® 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.

Solidex® is recommended but not limited to the following applications:

- Automotive controls and relays
- ABS coils
- Ignition coils
- Solenoid and actuator coils
- Encapsulated and molded coils
- Appliance controls, coils and relays
- Small motors
- Small transformers

### 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

Solidex® is Class 180 when measured in accordance with ASTM D 2307 test method. Heat shock resistance meets 200°C.

#### 2. THERMOPLASTIC FLOW

Thermoplastic flow (cut-thru) temperature of Solidex® 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

Solidex® magnet wire may be readily stripped by dipping the coil lead in solder at a temperature as low as 470°C per NEMA requirements; our typical performance is 455°C at 5 seconds. Higher temperatures may be used, however, to facilitate production process speeds.

#### 4. WINDABILITY

The flexibility and adhesion properties of Solidex® are suitable for all but the most severe winding applications.

#### 5. ELECTRICAL

Solidex® magnet wire insulation exhibits good break-down values.

#### 6. CHEMICAL

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

#### 7. NORMAL AVAILABILITY

- Round Copper Sizes:  
14-46 AWG, Single Build  
14-46 AWG, Heavy Build

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

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

## THERMAL PROPERTIES

### HEAT SHOCK RESISTANCE

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

### SOLDERABILITY

**TYPICAL PERFORMANCE:** 5 second @ 455°C (851°F)  
**REQUIRED PERFORMANCE:** ≤ 6 seconds @ 470°C†

### THERMAL STABILITY

**TYPICAL PERFORMANCE:** 209°C  
**REQUIRED PERFORMANCE:** 180°C minimum†

### THERMOPLASTIC FLOW

**TYPICAL PERFORMANCE:** 290°C  
**REQUIRED PERFORMANCE:** 225°C†

## 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

### CONTINUITY

**TYPICAL PERFORMANCE:** ≤ 1 fault/100 feet at 1500V DC  
**REQUIRED PERFORMANCE:** ≤ 5 faults/100 feet at 1500V DC†

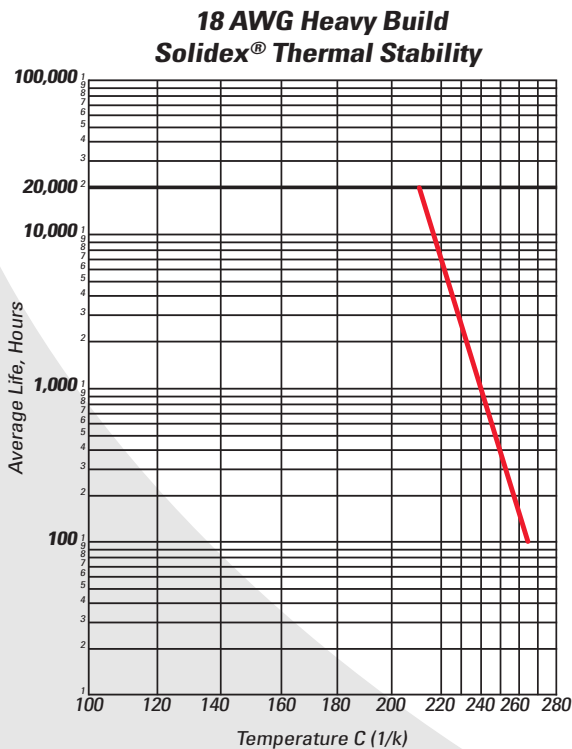
### DIELECTRIC BREAKDOWN VOLTAGE

#### ROOM TEMPERATURE

**TYPICAL PERFORMANCE:** 12,200 volts, avg.  
**REQUIRED PERFORMANCE:** 5700 volts, minimum†

#### RATED TEMPERATURE

**TYPICAL PERFORMANCE:** 9250 volts, avg.  
**REQUIRED PERFORMANCE:** 4275 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 77-C.

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