

### NEMA MW 79-C

**Class 155 Copper – Round Conductors – Polyurethane coated magnet wire/winding wire.**

#### APPLICATION

Soderex®/155 magnet wire finds application where the particular coil or component design may utilize the unique solder stripping property of the polyurethane resin construction.

Soderex®/155 magnet wire, with its polyurethane film modified with epoxies, polyvinyl acetal, or other resins for specific property improvements, has in the past several years become the standard Class 155 wire for a wide array of fine wire coil applications.

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

- Small motors, armatures, and fields
- Appliance controls and relays
- Automotive controls and relays
- Bobbin wound coils
- Electronic coils

#### Solderable Insulation Comparison:

	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
Solidex® (MW 77)	Poor	470°C	Higher	Highest

#### ENGINEERING HIGHLIGHTS

##### 1. THERMAL CLASSIFICATION

Soderex®/155 magnet wire is class 155 when measured in accordance with ASTM D 2307 test method. Heat shock resistance meets 175°C.

##### 2. THERMOPLASTIC FLOW

Thermoplastic flow (cut-thru) temperature of Soderex®/155 magnet wire is in the 220°C plus range; well above maximum process conditions found in most molded coil work, trickle impregnation processes and standard preheat varnish cycles specified for normal Class 155 systems.

##### 3. SOLDERABILITY

Soderex®/155 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®/155 magnet wire film are more than adequate for all but the most severe fine wire winding applications.

##### 5. ELECTRICAL

Soderex®/155 magnet wire insulation exhibits high dielectric strength retention under high humidity conditions. The low dissipation factor of Soderex®/155 magnet wire at high frequencies makes it a prime candidate for RF coil applications.

##### 6. CHEMICAL

The solvent resistance properties of Soderex®/155 are suitable for most Class 105, 130 and 155 varnishes, encapsulation materials, and treating resins.

##### 7. AVAILABILITY

Soderex®/155 magnet wire is normally available in round copper sizes 31 AWG through 47 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:** 2 seconds at 390°C  
**REQUIRED PERFORMANCE:** ≤ 5 seconds at 390°C†

#### THERMOPLASTIC FLOW

**TYPICAL PERFORMANCE:** 240°C  
**REQUIRED PERFORMANCE:** 200°C†

#### HEAT SHOCK RESISTANCE

**TYPICAL PERFORMANCE:** No cracks at 175°C  
**REQUIRED PERFORMANCE:** 20%, 3XD, no cracks†

#### THERMAL STABILITY

**TYPICAL PERFORMANCE:** 170°C  
**REQUIRED PERFORMANCE:** 155°C minimum†

### PHYSICAL PROPERTIES

#### ADHESION AND FLEXIBILITY

**TYPICAL PERFORMANCE:** 20%, 1xD, no cracks  
**REQUIRED PERFORMANCE:** 20%, 3xD, 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:** 2600 volts, minimum†

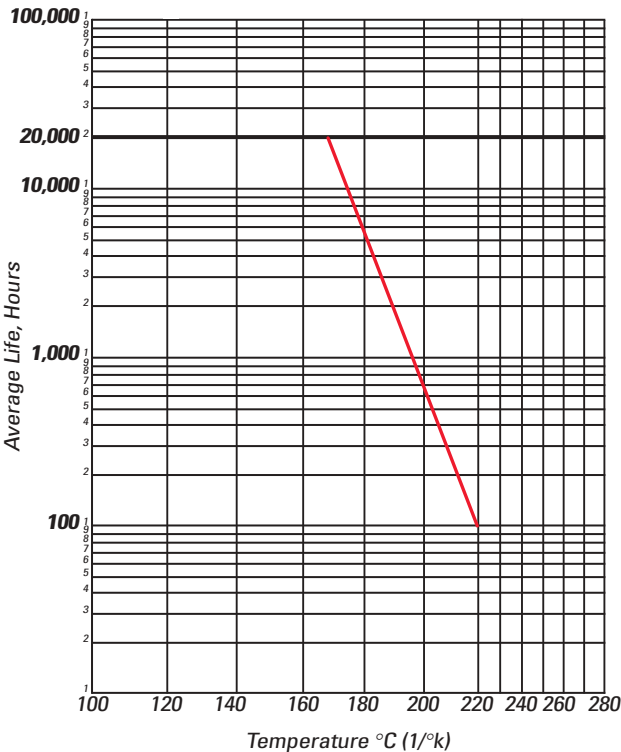
##### RATED TEMPERATURE

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

#### CONTINUITY

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

**Soderex® /155 Thermal Stability**



Graph is representative of 30 AWG Heavy Build

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

† Requirements of NEMA MW 79-C



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