

PRODUCT DATA SHEET

NEMA MW 16-C, MW 20-C

Class 240 Copper - Round, Square or Rectangular Conductors - Polyimide Coated Magnet Wire / Winding Wire.

APPLICATION

Allex® magnet wire consists of an aromatic polyimide film that combines not only thermal stability in the Class 240, but unmatched chemical and burnout resistances.

Allex® is used in encapsulated windings and hermetically sealed components because of the excellent chemical resistance and low weight loss characteristics at elevated temperatures.

Allex® is resistant to unusual environments such as radiation and can be used in many electronic devices found in aerospace, nuclear, and other such applications.

Allex® is recommended but not limited to the following high temperature and critical environment applications:

- Aerospace
- Nuclear
- Medical
- Locomotive Traction Motors
- Fractional motors in all temperatures up to 240°C
- Integral motors in all temperatures up to 240°C
- Hermetic and DC motors
- Extreme overload power tools
- All dry type transformers up to Class 240

ENGINEERING HIGHLIGHTS

1. THERMAL CLASSIFICATION

Allex® is a Class 240 magnet wire when measured in accordance with the ASTM D 2307 test method. Heat shock resistance exceeds 300°C.

2. THERMOPLASTIC FLOW

The thermoplastic flow or cut-through temperature of Allex® is in the 500°C plus range; well above the maximum process conditions found in molded coil work, trickle impregnation processes and standard preheat varnish cycles specified for systems rated up to Class 240.

3. WINDABILITY

Allex® is recommended for more forgiving winding processes where abrasion resistance is not critical.

4. ELECTRICAL

Allex® magnet wire insulation exhibits high dielectric strength retention under high moisture conditions. Hydrolysis resistance is excellent. Allex® is not recommended for inverter-duty motor applications.

5. CHEMICAL

Allex® is unsurpassed in chemical resistance.

6. NORMAL AVAILABILITY

- Round Copper Sizes:
 - 4 - 35 AWG, Single Build
 - 4 - 35 AWG, Heavy Build
- Rectangular Copper Sizes:
 - Thickness: .060 - .258
 - Width: .081 - .575
 - (No more than a 10:1 ratio)

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: 300°C, no cracks
REQUIRED PERFORMANCE: 280°C, no cracks†

THERMAL STABILITY

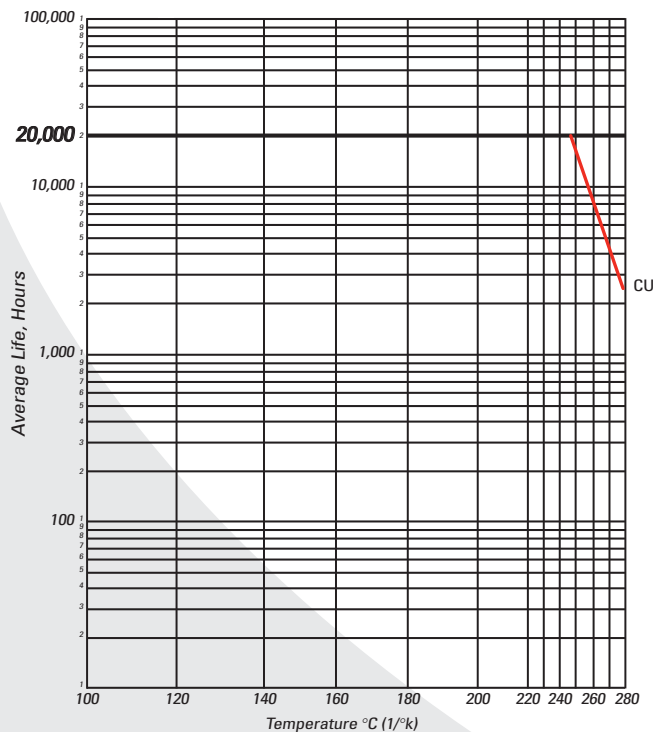
TYPICAL PERFORMANCE: 247°C
REQUIRED PERFORMANCE: 240°C minimum†

THERMOPLASTIC FLOW

TYPICAL PERFORMANCE: 500°C +
REQUIRED PERFORMANCE: 450°C †

Note: Test equipment used for this test has a maximum limit of 500°C. Samples normally do not fail this test.

18 AWG Heavy Build Copper Alex® Thermal Stability



PHYSICAL PROPERTIES

ABRASION RESISTANCE - REPEATED SCRAPE

TYPICAL PERFORMANCE: 30 strokes avg.*

ABRASION RESISTANCE - UNIDIRECTIONAL

TYPICAL PERFORMANCE: 1390 g., avg
REQUIRED PERFORMANCE: 710 g., minimum;
835 g., minimum avg.

ADHESION AND FLEXIBILITY

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

CONDUCTOR ELONGATION

TYPICAL PERFORMANCE: 39%
REQUIRED PERFORMANCE: 32%, minimum†

SPRINGBACK

COPPER: TYPICAL PERFORMANCE: 46°
REQUIRED PERFORMANCE: 58°, maximum†

ELECTRICAL PROPERTIES

CONTINUITY

TYPICAL PERFORMANCE: ≤1 fault/100 ft.
REQUIRED PERFORMANCE: ≤ 5 faults/100 ft. max.†

DIELECTRIC BREAKDOWN VOLTAGE

ROOM TEMPERATURE
TYPICAL PERFORMANCE: 14,600 volts, avg.
REQUIRED PERFORMANCE: 5,700 volts, minimum†

RATED TEMPERATURE

TYPICAL PERFORMANCE: 10,400 volts, avg.
REQUIRED PERFORMANCE: 4,275 volts, minimum†

* 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 1000; section MW 16-C.

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