Allex® Magnet Wire / Winding Wire
Product and Application 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 240˚C class, 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, can be used in many electronic devices found in aerospace, nuclear, and other such applications.

Allex® is recommended for 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. AVAILABILITY

Allex® magnet wire is normally available in round, square and rectangular sizes. Round sizes include 4 AWG through 34 AWG. Square sizes include 4 through 12. Rectangular sizes include sizes with a thickness from .051 to .258 and widths between .081 and .575 (no more than a 10:1 ratio).

Please refer additional questions on availability to Essex Magnet Wire Marketing personnel.

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

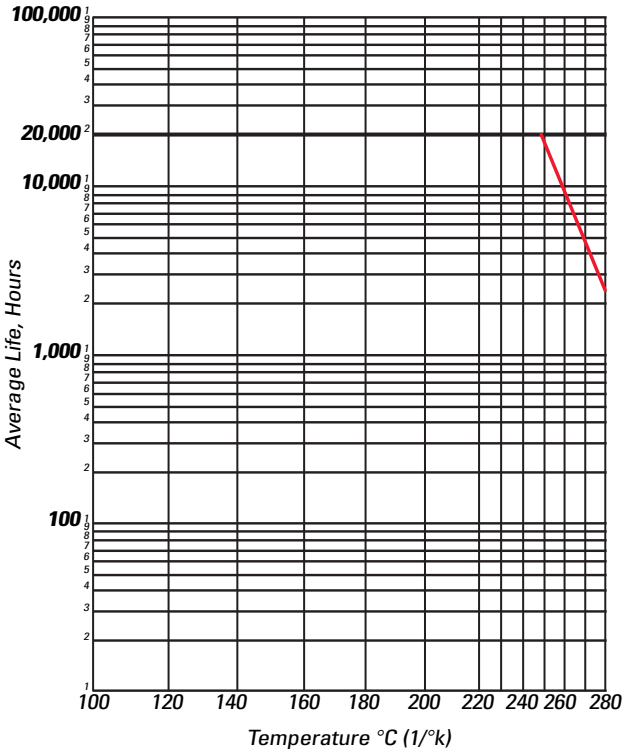
THERMAL PROPERTIES

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.

HEAT SHOCK RESISTANCE
TYPICAL PERFORMANCE: No cracks @ 300˚C
REQUIRED PERFORMANCE: 20%, 3XD, no cracks†

THERMAL STABILITY
TYPICAL PERFORMANCE: 247˚C
REQUIRED PERFORMANCE: 240˚C minimum†

Allex® Thermal Stability



Graph is representative of 18 AWG Heavy Build

PHYSICAL PROPERTIES

ABRASION RESISTANCE: UNIDIRECTIONAL
TYPICAL PERFORMANCE: 1390 g., avg
REQUIRED PERFORMANCE: 835 g. avg
710g, minimum†

ABRASION RESISTANCE: REPEATED SCRAPE
TYPICAL PERFORMANCE: 30 strokes avg.*

ADHESION AND FLEXIBILITY
TYPICAL PERFORMANCE: No cracks
REQUIRED PERFORMANCE: 20%, 3XD, no cracks†

CONDUCTOR ELONGATION
TYPICAL PERFORMANCE: 39%
REQUIRED PERFORMANCE: 32% minimum†

SPRINGBACK
TYPICAL PERFORMANCE: 46 degrees
REQUIRED PERFORMANCE: 58 degrees, maximum†

ELECTRICAL PROPERTIES

DIELECTRIC BREAKDOWN VOLTAGE
ROOM TEMPERATURE
TYPICAL PERFORMANCE: 14,600 volts, avg
REQUIRED PERFORMANCE: 5700 volts, minimum†

RATED TEMPERATURE
TYPICAL PERFORMANCE: 10,400 volts, avg
REQUIRED PERFORMANCE: 4275 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 16-C

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