

NEMA MW 15-C/A and MW 18-C/A

Class 105° Copper and Aluminum - Round, Square and Rectangular Conductor - Polyvinyl Acetal coated magnet /winding wire.

APPLICATION

Formvar is a synthetic film insulation containing polyvinyl acetal and phenolic resins. It has been in general use in the electrical industry as a Class 105°C wire for over fifty years. Typical applications include:

- Oil filled transformers
- Motors
- Random wound coils
- Solenoids

ENGINEERING HIGHLIGHTS

1. THERMAL CLASSIFICATION

Formvar magnet wire is a Class 105°C material when measured in accordance with the ASTM D 2307 test procedure.

2. HEAT SHOCK

Formvar easily passes 175°C heat shock.

3. WINDABILITY

Flexibility and adhesion properties of Formvar magnet wire film, because of its unique construction, excel in wire winding and roll flattening applications.

4. ELECTRICAL

Formvar magnet wire insulation exhibits high dielectric strength.

5. CHEMICAL

Formvar is unsurpassed in its resistance to mineral oils. It is the best magnet wire coating available for these applications.

6. TERMINATION

Formvar magnet wire is a non-solderable product and must be mechanically stripped before soldering, or terminated by means of insulation piercing terminals.

7. NORMAL AVAILABILITY

- Round sizes:
 - 14-23 AWG Single Build
 - 4-23 AWG Heavy Build
- Square/Rectangular:
 - Heavy Build (see the latest price sheet for size range).

THERMAL PROPERTIES

THERMOPLASTIC FLOW

COPPER: TYPICAL PERFORMANCE: 263°C

REQUIRED PERFORMANCE: 180°C, minimum†

HEAT SHOCK RESISTANCE

COPPER: TYPICAL PERFORMANCE: 20%, 2xD, no cracks

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

ALUMINUM: TYPICAL PERFORMANCE: 15%, 2xD, no cracks

REQUIRED PERFORMANCE: 15%, 3xD, no cracks†

THERMAL STABILITY

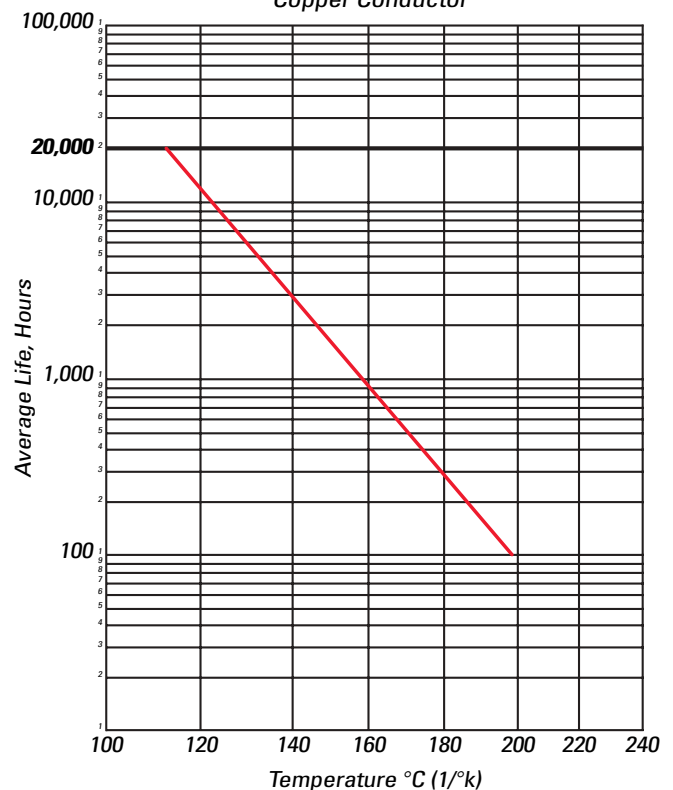
COPPER: TYPICAL PERFORMANCE: 113°C

REQUIRED PERFORMANCE: 105°C, minimum†

ALUMINUM: TYPICAL PERFORMANCE: 125°C

REQUIRED PERFORMANCE: 105°C, minimum†

Formvar Thermal Stability
Copper Conductor



Please refer additional questions on availability to SUPERIOR ESSEX® magnet wire marketing personnel.



Quality Systems Registered to ISO 9001, ISO 9002, QS-9000, Cert#QSR-QS-002

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

PHYSICAL PROPERTIES

ABRASION RESISTANCE - UNIDIRECTIONAL

COPPER: TYPICAL PERFORMANCE: 1890 g., avg.
REQUIRED PERFORMANCE: 1150 g., minimum avg.†

ALUMINUM: TYPICAL PERFORMANCE: 1200 g., avg.
REQUIRED PERFORMANCE: 690 g., minimum avg.†

ADHESION AND FLEXIBILITY

COPPER: TYPICAL PERFORMANCE: 20%, 1xD, no cracks
REQUIRED PERFORMANCE: 20%, 3xD, no cracks†

ALUMINUM: TYPICAL PERFORMANCE: 15%, 1xD, no cracks
REQUIRED PERFORMANCE: 15%, 3xD, no cracks†

CONDUCTOR ELONGATION

COPPER: TYPICAL PERFORMANCE: 38%
REQUIRED PERFORMANCE: 32%, minimum†

ALUMINUM: TYPICAL PERFORMANCE: 23%
REQUIRED PERFORMANCE: 15%, minimum†

COEFFICIENT OF FRICTION

COPPER AND ALUMINUM: TYPICAL PERFORMANCE: Oil: 0.14-0.17*

SPRINGBACK

COPPER: TYPICAL PERFORMANCE: 49°
REQUIRED PERFORMANCE: 58°, maximum†

ELECTRICAL PROPERTIES

DIELECTRIC BREAKDOWN VOLTAGE

ROOM TEMPERATURE

COPPER: TYPICAL PERFORMANCE: 11,300 volts, avg.
REQUIRED PERFORMANCE: 5,700 volts, minimum†

ALUMINUM: TYPICAL PERFORMANCE: 11,400 volts, avg.
REQUIRED PERFORMANCE: 5,700 volts, minimum†

ELECTRICAL PROPERTIES (cont'd)

DIELECTRIC BREAKDOWN VOLTAGE (cont'd)

RATED TEMPERATURE

COPPER: TYPICAL PERFORMANCE: 9,200 volts, avg.
REQUIRED PERFORMANCE: 4,275 volts, minimum†

ALUMINUM: TYPICAL PERFORMANCE: 8,600 volts, avg.
REQUIRED PERFORMANCE: 4,275 volts, minimum†

CONTINUITY

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

ALUMINUM: TYPICAL PERFORMANCE: ≤ 1 fault/100 ft.
REQUIRED PERFORMANCE: 10 faults/100 ft. max.†

CHEMICAL PROPERTIES

COMPLETENESS OF CURE

COPPER AND ALUMINUM: TYPICAL PERFORMANCE: Passes
REQUIRED PERFORMANCE: No swelling or blisters†

TRANSFORMER OIL RESISTANCE

DIELECTRIC BREAKDOWN VOLTAGE

COPPER AND ALUMINUM: TYPICAL PERFORMANCE: 10,500 volts
REQUIRED PERFORMANCE: 5,700 volts†

FLEXIBILITY

COPPER AND ALUMINUM: TYPICAL PERFORMANCE: Passes
REQUIRED PERFORMANCE: 20% Elongation, 3X wrap -
No cracks†

SOLVENT RESISTANCE

COPPER AND ALUMINUM: TYPICAL PERFORMANCE: Passes all
NEMA Solvent Resistance Requirements†

CRAZE HEAL

COPPER AND ALUMINUM: TYPICAL PERFORMANCE: Passes
REQUIRED PERFORMANCE: No crazing*

* 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 15 and MW 18, as applicable.



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