Formvar
Magnet Wire | Winding Wire

NEMA

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**FEATURES AND BENEFITS**

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

**Thermoplastic Flow**
263°C (CU)

**Solderability**
N/A

**Heat Shock**
Formvar easily passes 175°C heat shock.

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

**Electrical**
Formvar magnet wire insulation exhibits high dielectric strength.

**Chemical**
Formvar is unsurpassed in its resistance to Mineral and Ester oil. It is the best magnet wire coating available for these applications.

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

**Normal Availability**
Round Copper: Single Build: 8-23 AWG; Heavy Build: 4-23 AWG, Round Aluminum: Single Build: 8-22 AWG; Heavy Build: 4-22 AWG, Aluminum or Copper Square and Rectangular Please consult Magnet Wire Marketing for additional size (including metric) and build information

**THERMAL ENDURANCE**

18 AWG Heavy Build CU

![Thermal Endurance Graph]
### Properties

#### Test Details | Typical Performance* | Required Performance**
---|---|---
#### THERMAL

**Heat Shock Resistance**
- 20% Elongation, mandrel wrap, 175°C x 0.5hr (CU), 15% Elongation, mandrel wrap, 175°C x 0.5hr (AL)
- 2xD, no cracks (CU & AL)
- 3xD, no cracks (CU & AL)

**Thermal Endurance**
- 20,000 hrs, per ASTM D 2307
- 113°C (CU), 125°C (AL)
- ≥ 105°C (CU & AL)

**Thermoplastic Flow**
- Crossing method, 5°C/minute rise rate
- 263°C, 2kg weight (CU)
- ≥ 180°C, 2kg weight (CU)

#### PHYSICAL

**Abrasion Resistance**
- Unidirectional Scrape: 1890g (CU), 1200g (AL)
- Repeated Scrape: -
- ≥ 1150g avg (CU), ≥ 690g avg (AL)

**Adherence and Flexibility**
- 20% Elongation, mandrel wrap (CU), 15% Elongation, mandrel wrap (AL)
- 1xD, no cracks (CU & AL)
- 3xD, no cracks (CU & AL)

**Elongation**
- Elongate to break
- 38% (CU), 23% (AL)
- ≥ 32% (CU), ≥ 15% (AL)

**Springback**
- Mandrel wrap
- 49° (CU)
- ≤ 58° (CU)

#### ELECTRICAL

**Continuity**
- 100 ft, graphite fiber brush
- ≤ 1 fault @ 1500 VDC (CU & AL)
- ≤ 5 faults @ 1500VDC (CU), ≤ 10 faults @ 1500VDC (AL)

**Dielectric Breakdown Voltage**
- Room Temperature
  - Twisted pairs @ ambient: 11,300 volts (CU & AL)
  - ≥ 5,700 volts (CU & AL)
- Rated Temperature
  - Twisted pairs @ 105°C: 8,900 volts (CU & AL)
  - ≥ 4,275 volts (CU & AL)

#### CHEMICAL

**Solubility**
- Immersed in 60°C Xylene solvent x 0.5hr, needle scrape
- Passes
- No exposed bare conductor

**Transformer Oil Resistance (Mineral and Ester oil)**
- 15% Elongation, 3xD mandrel wrap, 150°C for 4 weeks
- Passes
- No cracks
- Twisted pairs, 150°C for 4 weeks
- 10,500 volts (CU & AL)
- ≥ 5,700 volts (CU & AL)

**Toluene/Ethanol Compatibility**
- Immersed in boiling 30/70 toluene/ethanol x 5 minutes
- Passes
- No swelling or blistering

* Performance data is representative of 18 AWG heavy build Copper or Aluminum magnet wire where applicable.

** Requirements for 18 AWG heavy build Copper or Aluminum magnet wire where applicable per NEMA MW 15.