

# Soldacon<sup>®</sup> Magnet Wire

## General description

The SOLDACON<sup>®</sup> magnet wire is manufactured by applying an enamel based on polyurethane resins, giving the wire excellent properties, such as: solderability, and low losses at high frequencies.

This product is manufactured in three insulation builds – Single, Heavy and Triple, and is offered in either Copper or Aluminum conductors.

The SOLDACON-N<sup>®</sup> magnet wire with either a copper or aluminum conductor is recommended for use in electrical equipment with a thermal class of up to 180 °C.

| UL Designation | Thermal class (°C) | NEMA MW-1000 |
|----------------|--------------------|--------------|
| SPH 180 *      | 180                | MW 82        |
| SPH 155 *      | 155                | MW 79        |
| SP 155         | 155                | MW 79        |
| SE 155         | 155                | MW 79        |
| SE 130         | 130                | MW 75        |
| S 105          | 105                | MW 2         |

## Specifications

Meets the requirements set forth in the following standards:

- NMX- J-496
- NEMA MW 1000, MW 2, MW 75, MW 79 and MW 82
- IEC-60317-4, IEC-60317-20 and IEC-60317-51
- UL recognition under file E102627

## Characteristics

- Solderability without the need to remove the insulating film
- Presents good resistance to abrasion
- Excellent dielectric strength
- Good resistance to heat shock
- Is compatible with a great number of varnishes and impregnating compounds
- Low losses at high frequencies
- Good resistance to humidity
- Good resistance to solvents

## Range of gauges

| Copper Conductors |         |               |
|-------------------|---------|---------------|
| Insulation build  | AWG     | mm            |
| Single            | 8 - 46  | 3.264 - 0.040 |
| Heavy             | 8 - 44  | 3.264 - 0.050 |
| Triple            | 14 - 40 | 1.628 - 0.080 |

| Aluminum Conductors |         |               |
|---------------------|---------|---------------|
| Insulation build    | AWG     | mm            |
| Single              | 15 - 30 | 1.450 - 0.255 |
| Heavy               | 20 - 30 | 0.812 - 0.255 |

## Principal applications:

### AUTOMOTIVE USE

- Field coils
- Starter motors
- Regulator coils
- Horn coils

### ELECTRONICS

- Different coils for radio frequencies
- Horizontal output (Fly back) transformers
- Inductors (Choke)

### SPECIAL TRANSFORMERS

- Ballasts
- Measurement coils
- Small transformers, electrical machines and controls

### LOW POWER AND FRACTIONAL MOTORS

- Open

## TYPICAL TEST VALUES FOR A SOLDACON® HEAVY 25 AWG WIRE

Typical values only, not intended to be used as a specification

| TEST                    | SPECIFICATION<br>(ANSI / NEMA MW 1000)  | TEST<br>METHOD                                       | RESULT   |
|-------------------------|---|--|--|
| <b>Electrical</b>       |   |  |  |
| Dielectric strength     | ≥ 4,740 V   | NEMA   | 9250   |
| Continuity              | ≤ 7 discontinuities per 100 feet @ 1500 V   | NEMA   | 0  |
| <b>Mechanical</b>       |   |  |  |
| Elongation              | Minimum of 28%  | NEMA   | 32%  |
| Adherence & Flexibility | 15% sudden jerk, rolling wire 10 times around mandrel 3 times the diameter of the wire, visual inspection, no cracks or visible bare copper | NEMA   | Passes   |
| Springback              | ≤ 72°   | NEMA   | 67°  |
| Unidirectional abrasion | Average of 3 readings @ 0°, 120°, and 240° with a test weight of 555 grams, ≥ 615 grams   | NEMA   | 850 g  |
| <b>Chemical</b>         |   |  |  |
| Resistance to Solvents  | Immersion for 24 hours, after heating to 125 °C<br>Naphtha<br>Toluene<br>Ethylic Alcohol<br>5% Sulfuric Acid<br>1% Potassium Hydroxide      | Not soften sufficiently to expose the bare conductor | Passes<br>Passes<br>Passes<br>Passes<br>Passes |
| Solderability           | Maximum immersion time, 6 seconds @ 390°C   | NEMA   | Passes   |
| Solubility              | 30 minutes immersion @ 60°C in Xylene after drying sample for 10 minutes @ 150°C  | NEMA   | Passes   |
| <b>Thermal</b>          |   |  |  |
| Thermal stability       | 20,000 hours @ 200 °C   | ASTM   | 155 °C   |
| Heat shock              | 20% sudden jerk, rolling wire 10 times around mandrel 3 times the diameter of the wire before heating ½ hour @ 175°C                        | NEMA   | Passes   |
| Thermoplastic flow      | ≥ 200°C   | NEMA   | 290°C  |

\* Pin Hole free under specific requirement