SynFlex Elektro GmbH
Auf den Kreuzen 24
D-32825 Blomberg Germany
Telefon +49-5235-968-0
E-Mail info@synflex.de

## SynWire W 220 Flat

- Enamelled flat copper wire, thermoresistant
- Insulated with polyamide-imide
- Class 220

### Attributes

SHTherm® 220 Flat is a highly thermoresistant enamelled copper wire of heat performance class R with superior thermal, chemical and mechanical resistance. It is used for special applications requiring the following criteria:

- very high permanent thermal resistance and short-time thermal overload
- very good resistance to aggressive mediums in liquid or gas form

SHTherm® 220 Flat is ideally suited for use in special safety-relevant and electrical life support equipment. Sophisticated process technology and process setting ensure easy mouldability, good elongation and constant insulation properties of these wires.

### Application

E-Mobility, hybrid constructions

### Standards

IEC / DIN EN 60317-58

NEMA MW 84-C

### Delivery forms

Grade 1: on request

Grade 2: on request

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Typical properties of enamelled flat copper wire 5.60 x 3.55 mm, with insulation film grade 2

| **Mechanical** | Unit of measure | Set value | Actual value (typ.) |
|---|---|---|---|
| Width with varnish | mm | 5.67 - 5.82 | as set value |
| Bare wire width | mm | 5.550-5.650 | as set value |
| Thickness with varnish | mm | 3.62 - 3.77 | as set value |
| Bare wire thickness | mm | 3.500-3.600 | as set value |
| Varnish increase | µm | 120 - 170 | as set value |
| Adhesion (no cracks in film after winding) | | mandrel diameter | |
| Bend over width | | 4 x width | 3 x width |
| Bend over thickness | | 4 x thickness | 3 x thickness |
| Elongation | | 15 % with cracks < 1 x width | 32 % without cracks |
| Pencil hardness | | H | 4H - 5H |
| Elongation at break | % | ≥ 32 | ≥ 38 |

| **Thermal** | Unit of measure | Set value | Actual value (typ.) |
|---|---|---|---|
| Temperature index TI | °C | 220 | 220 |
| Heat shock at 240 °C (no cracks in varnish coat after winding) | | mandrel diameter 6 x thickness | mandrel diameter 4 x thickness |

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| **Thermal** | Unit of measure | Set value | Actual value (typ.) |
|---|---|---|---|
| Solderability | | no | no |

| **Electrical** | Unit of measure | Set value | Actual value (typ.) |
|---|---|---|---|
| Dielectrical strength at RT | kV | ≥ 2.0 (ball pit) | ≥ 3 (ball pit) |
| High voltage discontiniuties test voltage 2,5 kV | | / | ≤ 7 on 100 m |
| Electrical conductivity | MS/m | 58 - 59 | ≥ 58.5 |

| **Chemical** | Set value | Actual value (typ.) |
|---|---|---|
| Pencil hardness (storage in standard solvent ½ h / 60 °C) | min. H | 3H - 5H |
| Pencil hardness (storage in alcohol ½ h / 60 °C) | min. H | 3H - 5H |
| Resistance to commercial impregnants^(1) | / | yes |
| Resistance to commercial refrigerants^(1) | / | yes |
| Resistance to commercial dry transformer oils^(1) | / | yes |
| Resistance to commercial hydraulic oils^(1) | / | yes |

(1) Due to the variety of individual applications we cannot make any generally binding commitments regarding the compatibility. We recommend testing compatibility with the materials being used.

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