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## SHTherm® 210

- Enamelled round cu.wire, thermo-resistant
- Insulated with theic-mod. polyesterimide
- Plus polyamide-imide overcoat
- Class 200

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### Attributes

SHTherm® 210 is a highly thermo-resistant enamelled copper wire of heat performance class H with a wide range of good and very good quality features. As it is a dual-coat wire its insulation film consists of 2 different coatings on top of one another. These ensure: a very good permanent thermal and overload resistance, excellent resistance to chemical attacks e.g. by alkalines, washing and cleaning agents, impregnating varnishes and resins, sealing compounds, thinners, solvents and refrigerants as well as their vapours, an excellent mechanical abrasion resistance and a very low coefficient of friction of the wire surface. This range of excellent features makes SHTherm® 210 an all-round wire meeting the requirements of all applications requiring above average resistance to chemical, thermal, mechanical and electrical loads which occur during processing or during operating conditions. High coating resistance to abrasion and a low coefficient of friction result in less stress and damage to the wire and maintain a higher and more constant dielectric insulating resistance of the insulation film. The consistent further developments carried out by our R&D team allow this excellent "all-round" wire to be optimised to take into account specific customer requirements (e.g. improved adhesion after ageing, workability, electrical characteristics).

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### Application

E-Mobility, control gears, electric motors, electrical tools, generators, polar windings, pump drives, refrigerators, transformers

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### Standards

IEC / DIN EN 60317-13  
NEMA MW 35-C / 73-C  
UL approved

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### Delivery forms

Grade 1: 0.15 - 4.000 mm  
Grade 2: 0.20 - 4.000 mm  
(> 4.000 mm on request)

Typical properties of enamelled round copper wire 0.500 mm, with insulation film grade 1

| Mechanical                  | Unit of measure | Set value                  | Actual value               |
|-----------------------------|-----------------|----------------------------|----------------------------|
| Outer diameter with varnish | mm              | min. 0.524 - max. 0.544    | as set value               |
| Bare wire diameter          | mm              | 0.495-0.505                | as set value               |
| Elongation and adhesion     |                 | mandrel diameter: 0.500 mm | 1 x d /10 % pre-elongation |
| Scrape resistance           | N               | ≥ 3.950                    | ≥ 7.500                    |
| Pencil hardness of varnish  |                 | H                          | 4H - 5H                    |
| Elongation at break         | %               | ≥ 28                       | ≥ 38                       |
| Coefficient of friction     | μ               | /                          | ≤ 0.140                    |

| Thermal  | Unit of measure | Set value                  | Actual value               |
|--|-----------------|----------------------------|----------------------------|
| Temperature index  | °C              | 200                        | 210                        |
| Cut through temperature (pre-heated block)                     | °C              | 320                        | ≥ 360                      |
| Dielectric loss factor (bending point)                         | (°C) (tan δ)    | /                          | ≥ 185                      |
| Heat shock at 220 °C (no cracks in varnish coat after winding) |                 | mandrel diameter: 1.120 mm | 1 x d /10 % pre-elongation |
| Solderability  |                 | no                         | no                         |

The information on this data sheet is based on the information provided by our supplier. It does not represent any specification or agreements regarding conditions or properties. The indicated values are standard values. Deviations from those values due to production and application cannot be excluded. The information on this data sheet is addressed to experts who use it at their own discretion and at their own risk. We do not guarantee results, or accept liability for the indicated specifications or for results obtained based on the specifications. Please contact us for more detailed information. Non-toxic and toxic substances are listed on the safety data sheet.  
Updated 05/18



| Electrical                                     | Unit of measure | Set value     | Actual value   |
|--|-----------------|---------------|----------------|
| Dielectric strength RT                         | kV              | ≥ 2.4 (twist) | ≥ 3 (cylinder) |
| High voltage discontinuities (testing voltage) |                 | ≤ 10 on 30 m  | ≤ 7 on 100 m   |
| Electrical conductivity                        | MS/m            | 58 - 59       | ≥ 58.5         |

| Chemical  | Set value | Actual value |
|---|-----------|--------------|
| 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 dry transformer oils (1)                    | /         | yes          |
| Resistance to 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.