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

SHTherm® 210

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

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).

Application

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

Standards

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

Delivery forms

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

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Updated 05/18

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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

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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.

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