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## SHTherm® 220 Flat

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

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### 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.

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### Application

E-Mobility, hybrid constructions

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### Standards

IEC / DIN EN 60317-58

NEMA MW 84-C

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### Delivery forms

Grade 1: on request

Grade 2: on request

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

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 06/18



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 discontinuities 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
Pencil hardness (storage in standard solvent ½ h / 60 °C)	3H - 5H	
Pencil hardness (storage in alcohol ½ h / 60 °C)	3H - 5H	
Resistance to commercial impregnants^(1)	yes	

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Chemical	Set value	Actual value (typ.)
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.