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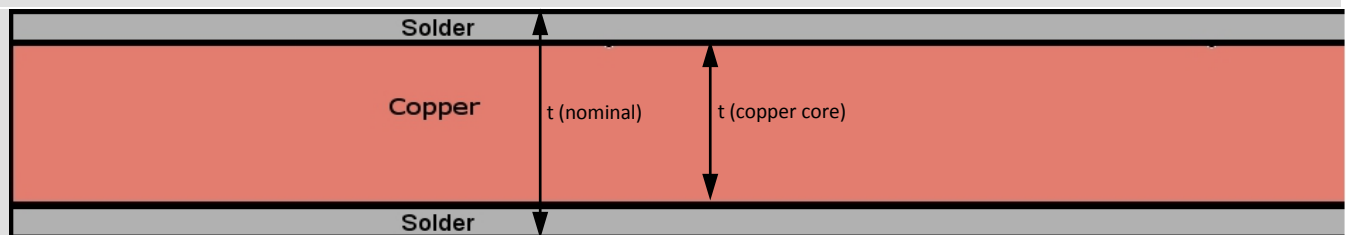
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Solder Coated Ribbon

Solder coated ribbon is a composite material consisting of a copper conductor with tin solder on both sides. Material is produced by roll-cladding.

composition of material:



Schematic cross-section of solar ribbon

copper core layer <i>80 or 74 % of nominal thickness</i>	ETP-Cu acc. to DIN EN 1976; 99.9% Cu incl. Ag; approximately
top and bottom solder layer <i>10 or 13 % of nominal thickness</i>	Sn-solder alloy; <i>different types or layer ratio available on request:</i> <ul style="list-style-type: none"> - SnAg3Cu0,5 - SnAg3,5 - Sn62Pb36Ag2 - Sn60Pb39,1Sb0,9
layer ratio <i>(Solder /Cu/Solder)</i>	standard: 13/74/13 in thickness percentage
application	Interconnecting strings for solar cells / modules.

physical properties <small>(design values only, will not be certified)</small>	metric units						
	density <i>depending on solder alloy and layer ratio; "mixed" density of solder and copper</i>	Solder	SnAg3Cu0,5	SnAg3,5	SnPb36Ag2	SnPb39,1Sb0,9	
		Layer	13%	8,517 g/cm ³	8,519 g/cm ³	8,888 g/cm ³	8,903g/cm ³
			10%	8,610 g/cm ³	8,612 g/cm ³	8,895 g/cm ³	8,907 g/cm ³
	electrical conductivity of copper core	100 % IACS					

mechanical properties	Yield strength Rp0,2 [MPa]	Tensile strength Rm [MPa]	Elongation A [%]
	Max. 115	200-250	Min. 15

dimensional properties	Camber according to DIN EN 1652 or on agreement	
solder quality	Reflow Quality	-> Only Sn62Pb36Ag2
	Oven annealed	-> All solder types
recommendations for processing	- Do not remove protective wrapping until use	
manufacturing program of strip	thickness of strip [mm]	0.1 – 0.25 mm (<i>nominal value including solder</i>)
	width of strip [mm]	1.0 – 5.0 mm (<i>Standard 2.0 mm and 2.4 mm</i>)
	thickness tolerance	±10 % on total thickness; thickness of each layer as determined by volume ratio shall not deviate by more than +/-10% from nominal
	width tolerance	+/- 0.05 mm
	preferred spool types [mm]	HKV 200; HKV 160; HKV 125 <i>others on request</i>
	slitting edges	Edges remain untinned due to slitting process

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