METRIC

Copper Alloy SM 0013

Comparable standards

ISO:	Cu-HCP
ASTM:	UNS C10300
EN:	CW 021A
JIS:	(1201)
others:	SE-Cu57
	Cu -OFXLP

Deoxidized copper with low oxygen content and low remaining **Phosphorus =0.001-0.006%**

Dimensions

Nominal width mm	Tolerance
5 - 100	± 0.075
100 - 200	± 0.10
200 - 324	± 0.15

Nominal thickness mm	Tolerance
0.035 - 0.050 *	± 0.002
0.050 - 0.100	± 0.003
0.100 - 0.150	± 0.005
0.150 - 0.200	± 0.007
0.200 - 0.300	± 0.010
0.300 - 0.400	± 0.012
0.400 - 0.500	± 0.015

- * **Thickness below 34 µm** micrometer in step of 1µm and **only after approval from the mill.**
- Thickness from 34µm and up to 50µm in step of 2µm, in 50µm and up to 150µm, in 5µm.

Conductivity Properties

Guaranteed minimum values below.

Alloy	Electrical conductivity		Thermal conductivity	Resistivity	Mass resistivity
	IACS % min.	MS /meter min.	W / (m °C) min.	nanoΩ m max.	Ω gram / m^2 max.
SM 0013	**98.3**	**57**	**390**	**17.54**	**0.1559**
as hard	**94.8**	**55**	**370**	**18.18**	**0.1616**

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Mechanical Properties

Condition	Temper	Dimension Gauge min. mm	Yield $R_{p0,2}$ MPa	Tensile R_m MPa	Elongation A_{50} %	Hardness HV
standard	**annealed -02**	**0.040-**	-120	**220-265**	**20-**	**50-65**
	-02	**0.070-**	-120	**220-265**	**25-**	**50-65**
	-02	**0.100-**	-120	**220-265**	**30-**	**50-65**
	-02	**0.200-**	-120	**220-265**	**32-**	**50-65**
standard	**semi-hard -03**	**0.040-0.100**	110-	**230-290**	7-	**60-75**
	-05	**0.040-0.100**	230-	**270-330**	1-	**90-110**
	-07	**0.040-0.100**	300-	**330-390**	0.3-	**105-125**
special	annealed -60	0.040-	-120	220-260	25-	50-65
	-60	0.090-	-120	220-260	33-	50-65
	-60	0.200-	-120	220-260	38-	50-65
	semi-hard -62	0.100-	180-	240-300	8-	65-95
	semi-hard -63	0.100-	250-	290-360	4-	90-110
	hard -64	0.100-	320-	360-	2-	110-
RF-cable	**annealed-60Z**	**0.20-**	**-120**	**220-260**	**33-**	50-65

- Ranges in bold font state requirements for production
- Stated values in normal font are typical values and for information only

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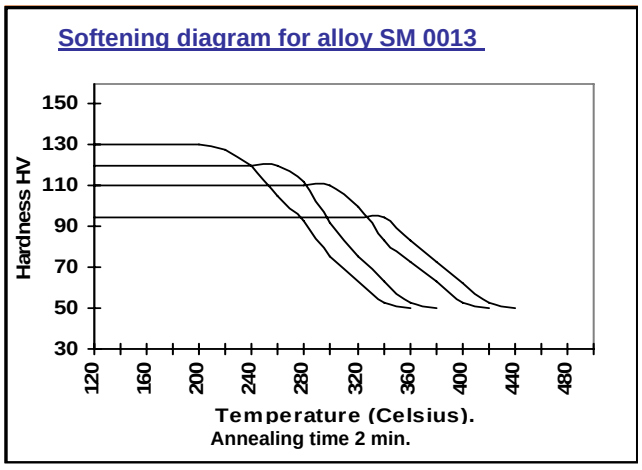
Physical Properties

Density	kg/m^3	8930
Melting temperature	^{o}C	1083
Specific heat	kJ/(kg ^{o}C)	0.385
Electrical conductivity		see above
Electrical resistivity		see above
Thermal conductivity		see above
Thermal expansion -100 ^{0}C	10^{-6} ^{o}C^{-1}	16.8 x
20 - 300 ^{0}C	10^{-6} ^{o}C^{-1}	17.7 x
Young's modulus E	MPa	120 000

Heat Resistance and Softening Properties



(Temperatures at 1 min annealing time will be 10 degrees **higher**.
Temperatures at 4 min anneling time will be 10 degrees **lower**.)

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Heat Treatment

Soft annealing	°C	285
Time dependent on size and volume:	hours	2

Formability

Both at elevated as well as room temperature
easy to form, however decreasing with increased hardness.

Soft annealed any direction

min. bending radius	t = gauge	0 x t

Welding

The alloy are suitable for soldering, brazing and welding.

Corrosion Properties

Very good corrosion properties in general, but sensitive
to staining without proper inhibitor treatment.
Not durable to oxidizing acids, halogen gases and hydrogen sulfide.

During normal conditions not sensitive to **stress corrosion cracking.**

Surface Treatment.

Colour is reddish but could easily be influenced by many types
of surface treatments.

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subject to change without notice