

METRIC

Copper Alloy SM 0011

Comparable standards

ISO:	Cu-PHC
ASTM:	UNS C10300
EN:	CW 020A
JIS:	(1201)
others:	SE-Cu58 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 0011	100	58	396	17.24	0.1533
as hard	96.6	56	382	17.86	0.1588



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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
		0.070-	-120	220-265	25-	50-65
		0.100-	-120	220-265	30-	50-65
		0.200-	-120	220-265	32-	50-65
standard	semi-hard -03	0.040-0.100	110-	230-290	7-	60-75
		0.040-0.100	230-	270-330	1-	90-110
		0.040-0.100	300-	330-390	0.3-	105-125
special	annealed -60	0.040-	-120	220-260	25-	50-65
		0.090-	-120	220-260	33-	50-65
		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-

- Ranges in bold font state requirements for production

- Stated values in normal font are typical values and for information only

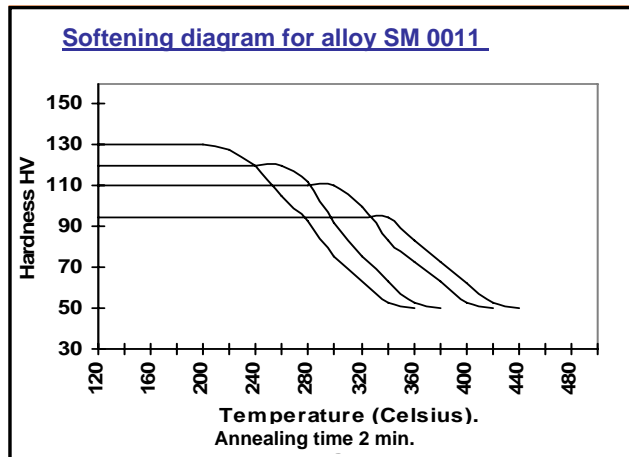


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Physical Properties

Density	kg/m ³	8930
Melting temperature	°C	1083
Specific heat	kJ/(kg °C)	0.385
Electrical conductivity		see above
Electrical resistivity		see above
Thermal conductivity		see above
Thermal expansion	-100 °C 10 ⁻⁶ °C ⁻¹	16.8 x
	20 - 300 °C 10 ⁻⁶ °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 annealing time will be 10 degrees **lower**.)



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Heat Treatment

Soft annealing	°C	<input type="text" value="285"/>
Time dependent on size and volume:	hours	<input type="text" value="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	<input type="text" value="0 x t"/>
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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.