Copper Alloy SM 0502

CuproBraze®

METRIC

CuCr0.2 Proprietry alloy - not in EN-/UNI-/JIS-standards

High temperature resistant deoxidized copper with cromium
for the fin material in *Cu* proBraze heat-exchangers.
NOTE!
Not suitable for soft solder applications due to a need for high temperature exposure.

Dimensions

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

Nominal thickness mm	Tolerance
0.032 - 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

- * **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

Standard temper minimum values for the strip as well as ***typical values after brazing process*** at customer in the table below.

Alloy	Temper	Electrical conductivity		Thermal conductivity	Resistivity
		IACS % min.	MS /meter min.	W / (m °C) min.	nΩ meter max.
SM 0502					
before brazing	-47B -79B	60	34.8	240	28.73
after brazing	-47B -79B	***90***	***52.2***	***355***	***19.16***

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Mechanical Properties

Alloy	Temper	Dimension Gauge mm	Yield $R_{p0,2}$ MPa	Tensile R_m MPa	Elongation A_{50} %	Hardness HV
	Before brazing					
SM 0502	**-47B**	**0.032-0.23**	300-	**330-410**	1-	110-130
	-79B	**0.040-0.060**	100-	**255-315**	**10-**	65-85
	-79B	**0.061-0.28**	100-	**255-315**	**20-**	65-85
	After brazing					
	-47B		*260*	***330***	***10-***	***100***
	-79B		*160*	***300***	***25-***	***80***

Physical Properties

Density	kg/m^3	8900
Melting temperature	^oC	1083
Specific heat	$kJ/(kg\ ^oC)$	0.385
Electrical conductivity		see above
Electrical resistivity		see above
Thermal conductivity		see above
Thermal expansion -100 ^0C	$10^{-6}\ ^oC^{-1}$	16.8 x
20 - 300 ^0C	$10^{-6}\ ^oC^{-1}$	17.7 x
Young's modulus E	MPa	118 000

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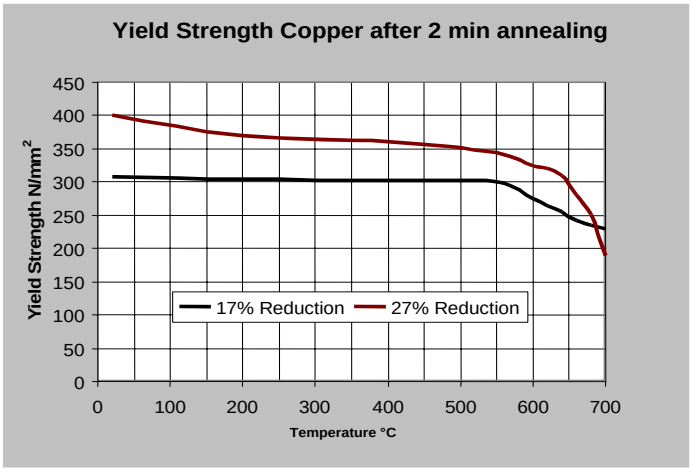
Heat Resistance and Softening Properties



Yield strength after 2 minutes exposure to different temperatures

Heat Treatment and Brazing

This high temperature resistant alloy is specially suitable for furnace brazing operations and used as fin material in the CuproBraze® at-exchangers.

Brazing with OKC600	°C	650
Time dependent on size and volume:	minutes	<15

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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 alloys are suitable for soldering, brazing and welding

NOTE! CuproBraze®
Due to the lower conductivity than standard coppers this alloy is not to recommended for soft soldered heat-transfer applications.
Only after the exposure to > 600 ^{o}C in the brazing cycle it will finally show the high conductivity properties.

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.

***Cu* proBraze Alliance** www.cuprobraze.com

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