Brass Alloy SM 1090

METRIC

Comparable Standards:

ISO	CuZn10
ASTM / UNS	C22000
EN	CW501L
JIS	C2200

Chemical Composition

Element	Unit	Range
Copper	%	89 - 91
Iron	%	< 0.05
Lead	%	< 0.05
Zinc		remainder

Mechanical Properties

Alloy	Temper	Yield Rp0.2 MPa	Tensile Rm MPa	Elongation A50 %	Hardness HV
SM 1090	annealed	(-170)	260-310	36-	55-85
	hard	(150-)	300-370	16-	85-115
		(260-)	350-420	4-	105-135
		(430-)	410-	-	125-

NOTES!
- Annealed tempers: Grain size requirements may differ dependent on product spec.
- There are typical values not always possible to combine as requirements
- There are also other tempers with somewhat different properties available both for the annealed to temper and rolled to temper materials

Dimensions

Nominal width	Tolerance
-50	±0.05
50 - 100	±0.075
100 - 200	±0.10
200 - 400	±0.15
400 - 600	±0.20

Nominal thickness	In steps of
0.080 - 0.250	0.005
0.250 - 0.400	0.010
0.400 - 1.000	0.050
1.000 - 2.000	0.100

- Unslitted width (full master coil width) possible (appr. 640 mm wide)
- Thickness tolerance up to 0.150 mm nominal :± 0.003 mm
- Thickness tolerance over 0.150 mm nominal : ± 2% (rounded upwords to nearest micron)

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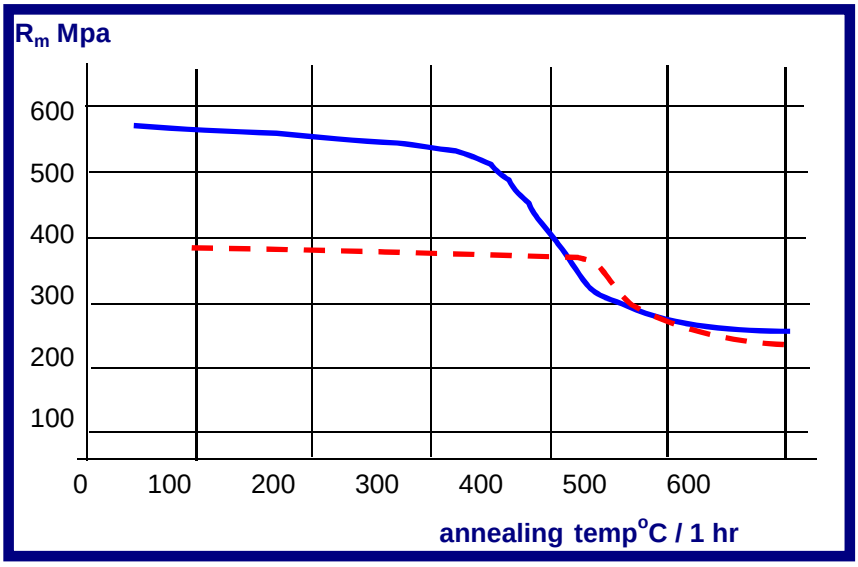
Physical Properties

Density	kg/m^3	8800
Melting temperature	^{o}C	1025 - 1045
Specific heat	kJ/(kg ^{o}C)	0.38
Electrical conductivity	MS/m	26
Electrical conductivity	**IACS %**	**44**
Electrical resistivity	nΩ meter	38
Thermal conductivity	W/(m ^{o}C)	190
Thermal expansion 20-300^{o}C	10^{-6} ^{o}C^{-1}	19x
Young's modulus E	MPa	124 000

Heat Resistance and Softening Characteristics



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Heat Treatment

Soft annealing	450 - 550	°C
Time dep. on size and volume: propose	2	hours
Stress relief annealing	250 - 300	°C

Formability

Valid for all tempers:
Both at elevated as well as room temperature
easy to form, however decreasing with increased hardness.

Below: minimum bending radius. t =gauge

		t = < 0.25 mm		t = > 0.25 mm	
Temper	Hardness	good way	bad way	good way	bad way
Soft	HV 65-125	0 x t	0 x t	0 x t	0 x t
Hard	HV 120-155	0 x t	0 x t	0 x t	0 x t
	HV 150-180	0 x t	0 x t	1 x t	1 x t
	HV 170-200	1 x t	1 x t	1 x t	3 x t

Welding

Due to the zinc content, some counter-measures to stop vaporization of zinc could be necessary. Otherwise the alloy is suitable for soldering, brazing and welding.

Surface Treatment.

Colours are gold reddish- to brownish but could easily be influenced by many types of surface treatments.

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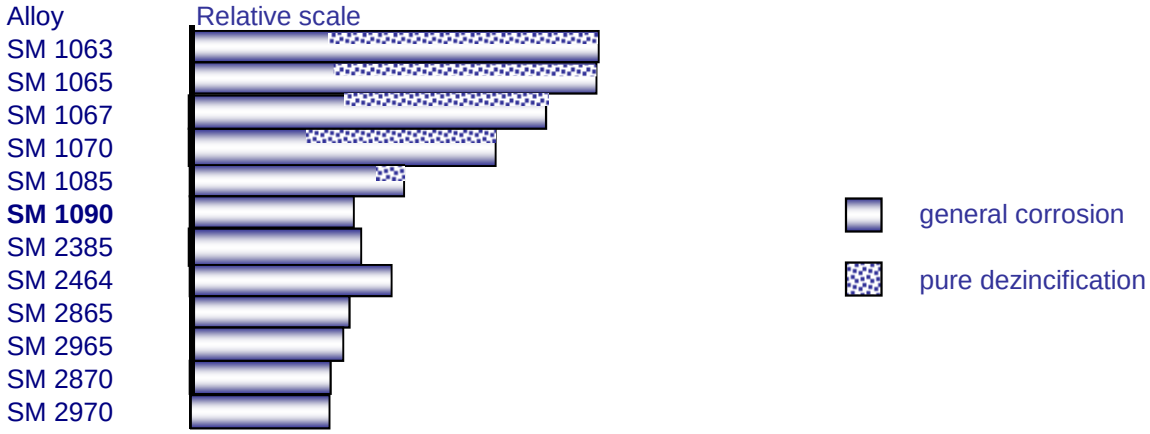
Corrosion Properties

Durable to water and organic compounds, as well as land-, see- and industrial atmospheres.

Dezincification comparison:



Due to the high copper content the risk for **stress corrosion cracking** is negligible.

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