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UNS	**C52100**	EN	**CW453K**	DIN	**2.1030 - CuSn8**

General Characteristics

Universal bronze used in mechanics, microtechnics, for connectors, cocks, taps and fittings.
Its electrical conductivity at 20°C is 13% IACS.
The corrosion resistance depends critically on fabrication processes, contamination, and the environment. ésistance à la corrosion dépend sensiblement des paramètres de fabrication, des impuretés présentes et de l'environnement.
Contact us for more information.

Machinability	-
Quench hardening	no
Polishing	-
Magnetic	no
Age hardening	no
Welding	
MIG,TIG,WIG	yes
Arc	yes
Resistance	yes
Autogenous	no
Laser	yes

Chemical composition (ASTM) [wt.%]

Cu	**Sn**	**P**	**Pb**	**Fe**	**Zn**
90.5-92.8	7.0 - 9.0	0.03-0.35	< 0.05	0.1	0.2

Physical properties

Density ρ [kg·m^{-3}]	**Electrical resistivity** ρ [µΩ·m]	**Specific heat** C_p [J·kg^{-1}·K^{-1}]	**Thermal conductivity** λ [W·m^{-1}·K^{-1}]
8'800	0.133 at 20°C	380 at 20°C	62 at 20°C

Coefficient of thermal expansion α [10^{-6}.°C^{-1}] between 20°C and							**Elastic modulus** E [GPa]
100 °C	200 °C	300 °C	400 °C	500 °C	600 °C	700 °C	115 at 20°C
18.2	18.2	18.2					

Mechanical properties

State	**Yield strength** $Rp_{0.2}$ [MPa]				**Tensile strength** Rm [MPa]	**Elongation** A_5 [%]	**Vickers Hardness [HV]**
	20°C	100°C	200°C	300°C			
Annealed	155				360	70	105
Full hard	965				720	1	220

Thermal treatment

Type	**Temperature** [°C]	**Time** [minutes]	**Protective atmosphere**	**Cooling**
Annealing	475 - 675	15 - 60	Air, argon or $N_2 + H_2$	not critical
Stress relief	200 - 250	240	Air, argon or $N_2 + H_2$	not critical

Surface treatment

Type	**Solution**	**Remarks**
Pickling	H_2SO_4 4 - 15% during 0.5 to 15 minutes	RT or at 60°C
Pickling	HCl 40 - 90 % during 1 to 3 minutes	RT

Fabrication characteristics

Cold formability is excellent, hot formability very limited. The alloy can easily be cold drawn and stamped as well.
Annealing in air requires subsequent pickling to remove the surface oxide layer. Annealing can also be done in a neutral (Argon) or reducing (cracked ammoniac, N2 + H2) atmosphere. The most performant microstructures and mechanical properties are achieved with annealing temperatures to the lower bound of the temperature interval given above. Machining is extremely difficult.
Machinability is estimated at 20% on a scale with the free cutting brass CuZn35.5Pb3 at 100%.

Welding, brazing and soldering

This alloy can easily be brazed and soldered. Point welding and MIG are also suitable joining techniques. .
Continuous resistance welding, and welding with mantled electrodes or osidizing flames are less recommended.

Available products

Sheets, ribbons, wires, profiles, tubes, dimensions and tolerances on request.