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UNS	**C17200**	EN	**CW101C**	DIN	**2.1247 - CuBe2**

General Characteristics

Standard Copper-Beryllium.
Strongly age hardenable copper alloy with excellent cold formability, high corrosion resistance, and good electrical conductivity (15 to 30% IACS).
For pieces requiring a lot of machining operations, consider to use the variant CuBe M25.
Attention: the inhalation of Beryllium is toxic. Ensure an appropriate ventilation during operations like melting, grinding, welding or machining.

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

Chemical composition (ASTM) [wt.%]

Be	**Ni + Co**	**Ni+Co+Fe**	**Pb**	**Cu**	
1.8 - 2.0	> 0.20	< 0.60	< 0.10	Saldo	

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}]
8'250	0.057 to 0.115 at 20°C	420	105 to 130 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	125 to 130 at 20°C
16.7	17.0	17.8					

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			
Solution annealed	200 - 400				420 - 550	35 - 60	90 - 130
Cold worked 40%	650 - 800				700 - 850	2 - 8	215 - 260
Age hardened	1000-1250				1150-1370	4 - 10	350 - 420
Worked+harden.	1150-1450				1350-1550	1 - 4	415 - 475

Thermal treatment

Type	**Temperature** [°C]	**Time** [minutes]	**Protective atmosphere**	**Cooling**
Annealing	760 -790	10 - 60	Air, argon or $N_2 + H_2$	Water quenching
Age hardening	315 - 345	60 - 180	Air, argon or $N_2 + H_2$	not critical

Surface treatment

Type	**Solution**	**Remarks**
Pickling	H_2SO_4 15% + 3 % H_2O_2	at 50°C during 30 seconds
Pickling	H_2SO_4 25%	at 70°C during 10 minutes
Pickling	HNO_3 20%	at RT during 1 minute

Fabrication characteristics

Cold formability is good. Hot forming between 650 and 800°C. Check the state in which the alloy is delivered. Delivery often is in the solution annealed state. This state is prerequisite for a correct age hardening. Solution annealing must be stricltly done according to the above prescriptions in order to get the full strength in subsequent age hardening. The hardening is acccompanied by a linear shrinkage of max. 0.2% and an increase in density of max. 0.6%. Machining is cumbersome. Machinability is estimated at 20% on a scale with the free cutting brass CuZn35.5Pb3 at 100%. Avoid the use of sulfur containing lubricants as these will color the copper. For complex machining operations, consider to use the alloy Cu Be M25.

Welding, brazing and soldering

Brazing and soldering are suitable joining techniques; carefully clean the surface and use resin type flux. Fillers of the same material are used for welding.
A solution anneal and age hardening must follow joining in order to restore uniform mechanical properties.

Available products

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