

CuTe0.02Sn0.02

20 03

Comparable standards: UNS C14530
 Aurubis designations: C1453 • SM 0300

Description

A patented copper alloy for electrical and heat transfer applications features a singular combination of properties to ensure reliable performance. C1453 can be cold rolled to hard tempers, yet retains good formability for intricate connector components. Electrical conductivity ranges from 94 to 98 % IACS, depending on temper, with corresponding high thermal conductivity. Stress relaxation performance and high softening temperatures make this alloy well suited for the most demanding connector applications. Other characteristics contribute to its utility value: corrosion resistance, ease of tinning and relatively high modulus of elasticity. The excellent electrical and thermal conductivity cause less heat to be generated at the points of contact, and any heat that is produced transfers easily to the lead wires and out of the connector. This results in a significantly cooler running electrical/electronic interconnect assembly.

Composition

Cu	Sn	Te or Se	P
[%]	[%]	[%]	[%]
99.9	0.003-0.023	0.003-0.023	0.001-0.010

Composition of this alloy is in accordance with RoHS for electric & electronic components and ELV for the automotive industry.

Physical properties

Melting point	Density	c _p @ 20°C	Young's modulus	Thermal cond.	Electrical cond.		α @20-300°C
					[MS/m]	[%IACS]	
[°C]	[g/cm ³]	[kJ/kgK]	[GPa]	[W/mK]			[10 ⁻⁶ /K]
1080	8.93	0.385	117	386	55	95	17.6

Note: The specified conductivity applies to the soft condition only.

c_p specific heat capacity
 α coefficient of thermal expansion

Mechanical properties

	Tensile Strength	Yield Strength	Elongation A ₅₀	Hardness HV	Bend ratio 90° [r]		Bend ratio 180° [r]	
					[MPa]	[MPa]	[%]	[-]
Soft	221-276	≥ 83	15		0	0	0	0
H02	283-338	≥ 290	12	105	0	0	1	1
H04	324-373	≥ 345	3	115	0	0	1.5	2
H06	345-414	≥ 373	2	118	0.5	0.5	1.5	
H08	373-441	≥ 400	2	120	0.5	0.5		
H10	393 min	≥ 393	2	120				

r = x * t (thickness t ≤ 0.5mm)
 GW bend axis transverse to rolling direction. BW bend axis parallel to rolling direction.

Fabrication properties

Cold formability	excellent
Soldering	excellent
Brazing	excellent
Gas shielded arc welding	excellent
Resistance welding	good

**Electrical
conductivity**

The electrical conductivity depends on chemical composition, the level of cold deformation and the grain size. A high level of deformation as well as a small grain size decrease the conductivity.

**Relaxation
Behaviour**

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