

C50715 [KLF5] (CuSn2Fe0.1P) 18 08 US

Comparable standards: UNS C50715
 Aurubis designations: KLF5 • PNA328

Description Tin bronzes are some of the most commonly used copper alloys. Typically the tin content is between 4 and 8 %. The alloys have high strength and good spring properties and are often used in computer and telecommunication applications. The electrical conductivity decreases rapidly with increasing tin content and the alloys are therefore not perfect for high current applications. The stress relaxation resistance is very good at moderate temperatures, but decreases rapidly at higher temperatures. High temperature automotive environments are therefore not suitable for these alloys. Tin bronze with around 2 % tin and coherent precipitates has considerably improved properties. The lower tin content with small amount of elements results in an electrical conductivity of at least 30 % IACS. Precipitates of iron and phosphorus stabilize the structure, increase the strength and improve the softening characteristics. KLF-5 has the right combination of formability, conductivity, strength and stress relaxation resistance to be used for automotive applications at relatively high ambient temperatures. In addition the strength is similar as for 4 % tin bronze.

Composition

Cu*	Sn	Fe	P	Pb
[%]	[%]	[%]	[%]	[%]
rem	1.7 – 2.3	0.05 – 0.15	0.025 – 0.04	0.02 max

*) Cu+Sn+Fe+P min 99.5 %

Physical properties

Melting point	Density	Specific heat cap. at 20°C	Electrical cond.	Thermal cond. at 20°C	Mod. of elasticity	Coef. of therm exp. at 20°C
[°F] [°C]	[lb/in³] [g/cm³]	[Btu/lb°F] [kJ/kgK]	[%IACS] [MS/m]	[Btu/ft h °F] [W/mK]	x1000 ksi [GPa]	[10 ⁻⁶ /°F] [10 ⁻⁶ /K]
1958 1070	0.32 8.9	0.09 0.38	30 18	75 137	18 120	9.8 17.6

Mechanical properties

	Tensile strength Rm	Yield strength Rp0.2 nominal	Elongation 2" nominal	Hard-ness HV nominal	min bend ratio 90°		min. bend ratio 180°	
	[ksi] [MPa]	[ksi] [MPa]	[%]	[-]	GW	BW	GW	BW
Soft								
H02	64-78 441-538	69 476	12	166	0	0	0	0.5
H04	78-90 538-621	84 579	9	187	0	0.5	0	1.0
H06	85-100 586-690	86 593	8	200	0	1.0	1.0	2.0

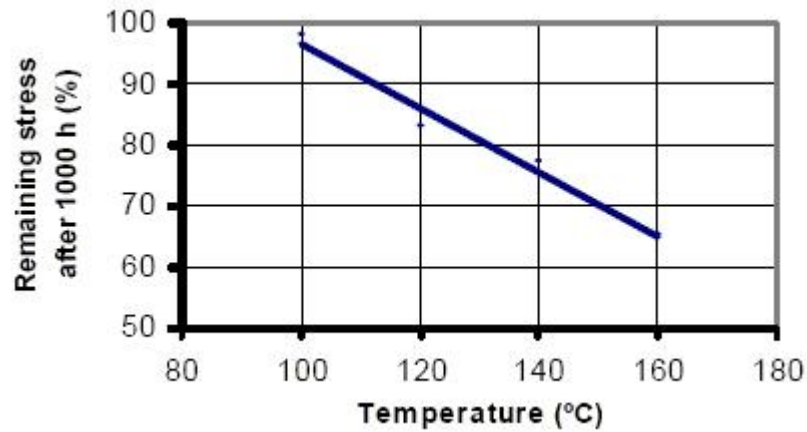
Other tempers are available upon request.
 GW bend axis transverse to rolling direction. BW bend axis parallel to rolling direction

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Fabrication properties

Soldering	excellent
Gas shielded arc welding	good
Cold formability	excellent

Stress relaxation resistance



Typical temperature for min 70 % remaining stress after 3000 h: 130 °C

Typical uses

Connectors and terminals for signal and power applications

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