

# C50725 [KLF5Z] (CuSn2Zn2.2Fe0.1P)

## Composition

Cu* (%)	Sn (%)	Zn (%)	Fe (%)	P (%)	Pb (%)
94.0 min	1.5-2.5	1.5-3.0	0.05-0.20	0.02-0.06	0.02 max

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

## Physical Properties

Temper	Melting point (liquidus)	Density	Specific heat cap. at 68 F (20 °C)	Electrical cond. Nom in black	Thermal cond. at 68 F (20 °C)	Mod. of elasticity	Coef. of therm.exp at 68 F (20 °C)
	°F °C						
All	1958 1070	0.32 8.9	0.09 0.38	33 30	75 137	16 113	9.7 17.5

## Mechanical Properties

At max 0.040" (1 mm)

Temper	R <sub>p0.2</sub> Yield strength ksi N/mm <sup>2</sup>	R <sub>m</sub> Tensile strength ksi N/mm <sup>2</sup>	A <sub>50</sub> Elongation 2" %	Hardness for reference HR30T HV	Min bend ratio 90°		Min bend ratio 180°	
					GW	BW	GW	BW
Soft								
H02 (1/2H)	73 504	68-80 469-552	11	169	0.0	0.0	0.0	0.5
H04 (H)	85 586	81-93 559-642	9	192	0.0	0.5	0.0	1.0
H06 (EH)	92 635	85-100 586-690	8	206	0.0	1.0	1.0	2.0
H08 (SH)								
H10 (ES)								

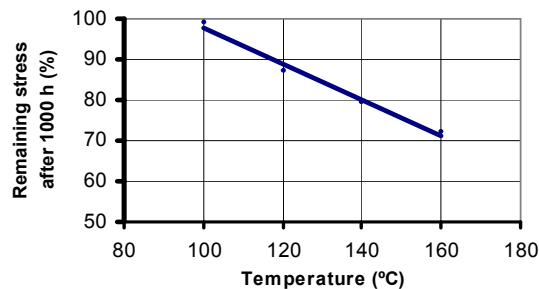
Other tempers are available upon request.

Data for information only and not for use as purchase specification.

Yield strength, Elongation and Hardness are typical values for each temper.

## Stress relaxation resistance

Typical temperature for min 70 % remaining stress after 3000 h: 145 °C



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### Alloy attributes

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. Addition of zinc further improves the electrical performance and the properties of tin coatings. KLF-5Z has the right combination of formability, conductivity, strength and stress relaxation resistance for automotive applications at relatively high ambient temperatures.

**Good stress relaxation resistance**  
**Medium conductivity**  
**High strength**  
**Good formability**

### Typical applications

Connectors and terminals for signal and power applications.

### Design limitations

### Applicable specifications