CuSn5

KEMPER
DRIVING PROGRESS

Standard Designation

EN CW451K / UNS C51000

Chemical Composition

Cu [%]	Sn [%]	P [%]	
Balance	5	0.1	

Description / Applications

CuSn5 belongs to the copper-tin alloys. CuSn5 is primarily used for current-carrying spring elements that require high strength. Compared to bronzes with higher tin content, CuSn5 offers increased electrical conductivity.
Applications: connectors, contact pins, switches, parts in the machine and apparatus construction

Physical Properties[1)]

Density	8.85 g/cm³	Thermal expansion coefficient	$18.2 \cdot 10^{-6}$/K
Electrical conductivity	10 m/Ω·mm² 17.2 % IACS[2)]	Modulus of elasticity	118 GPa[3)]
Thermal conductivity	82 W/m·K		

[1)] Guideline values for soft temper, measured at room temperature

[2)] IACS = International Annealed Copper Standard

[3)] 1 GPa = 1 kN/mm²

Processing information

Weldability	good	Stress corrosion cracking	none
Solderability	very good		

Mechanical properties

Temper	Tensile Strength Rm [MPa]	Yield Strength Rp0,2 [MPa]	Elongation A50 [%]	Hardness HV	Bendability[1)]			
					90° r/t[2)]		180° r/t[2)]	
					GW[3)]	BW[4)]	GW[3)]	BW[4)]
R310/H75	310 - 390	max. 250	min. 45	75 - 105	0	0	0	0
R400/H120	400 - 500	min. 240	min. 14	120 - 160	0	0	0	0
R490/H160	490 - 580	min. 430	min. 8	160 - 190	0	0	0.5	0.5
R550/H180	550 - 640	min. 510	min. 4	180 - 210	0	0	0.5	1
R630/H200	630 - 720	min. 600	min. 2	200 - 230	0	1.5	1	2
R690/H220	min. 690	min. 670	-	min. 220	1	3	1	5

[1)] The r/t values are valid for a strip thickness up to 0.6 mm (without crack). The data refer to rolled-to-temper material and a width of the bending area of 5 mm.
V-shape bend test according to ISO 7438

[2)] r = inner radius, t = thickness

[3)] GW = good way

[4)] BW = bad way

The details in this datasheet are exclusively meant for general information only. They correspond to the state of knowledge at the time of issue and cannot replace the examination by our customers. Liability cannot be derived from the information.

Rev.: 04/2026

Gebr. Kemper GmbH + Co KG · Metallwerke · Harkortstr. 5, 57462 Olpe · Tel. 02761 891 0 · Fax. 02761 891 458 · info@kemper-group.com