

Standard Designation

EN CW451K / UNS C51000

Chemical Composition

Cu	Sn [%]	P [%]	
Balance	4.5 - 5.5	0.01 - 0.4	

Description / Applications

CuSn5 belongs to the copper-tin alloys. CuSn5 is applied when a phosphor bronze with high strength combined with good electrical conductivity is required.

Applications: connectors, contact pins, switches, parts in the machine and apparatus construction

Physical Properties¹⁾

Density	8.85 g/cm ³	Thermal expansion coefficient	18.2·10 ⁻⁶ /K
Electrical conductivity	10 m/Ω·mm ² 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

³⁾ 1 GPa = 1 kN/mm²

²⁾ IACS = International Annealed Copper Standard

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

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