SOFIA MED

SM194 (C19400)

CuFe2P

Alloy characteristics

SM194 is an alloy with a very high electrical conductivity, which is typical for low-alloyed copper. Of course, low-alloyed copper cannot reach a high spring force like CuSn alloys, but due to the additives in comparison to copper, low-alloyed copper is much harder than copper. SM194 is used for lead frames, LEDs and power transistors in priority.

In the last 20 years the SM194 received very high importance, replacing high content of CuNi alloys, which are very expensive due to the high nickel content. As well, the alloy was used in the connector world in the 90s; it was used in many connector applications, often in junction with hot dip tinned surface. It was even used with fuse boxes, relays and terminal boxes. No different material than SM194 has been used for many years in electrical switches in cars. It is in compliance to the requirements of the OEKO-TEX Standard 100 in terms of the PB and Cd.

Mechanical properties		Temper condition			
		H02 R370 HV110	H04 R415 HV125	H08 R480 HH140	H10 R530 HV150
Tensile strength in N/mm²		370 – 430	415 – 480	480 – 525	530 – 570
0,2% yield strength in N/mm²		330	380	440	470
Vickers hardness HV		110 – 140	125 – 145	140 – 160	150 – 170
Elongation $A_{L50\%}$		> 8	> 4	> 3	> 3
Bendability					
0.10 ≤ s ≤ 0.25 mm	Transverse	0 x s	0.5 x s	0.5 x s	1 x s
	Parallel	0 x s	0.5 x s	1.0 x s	1.5 x s
0.25 < s ≤ 0.5 mm	Transverse	0 x s	1 x s	1 x s	1.5 x s
	Parallel	0 x s	1 x s	2 x s	3 x s

Physical properties (Typical values in annealed temper at 20 °C)		
Thermal expansion coefficient 20 … 300 °C	16.3	10^{-6}/K
Specific heat capacity	0.385	J/(g·K)
Density	8.8	g/cm³
Thermal conductivity	260	W/(m·K)
Thermal coefficient of electrical resistance (0 … 100 °C)	3.3	10^{-3}/K
Modulus of elasticity (1 GPa = 1 kN/mm²) cold formed	125	GPa
Electrical conductivity (IACS)	60	%

Material designation	
DIN EN	CW107C
UNS	C19400

Chemical composition	
Cu	Rest %
Fe	2.1 … 2.6 %
Zn	0.05 … 0.2 %
Other	≤ 0.2 %

This information was given with the best knowledge, but cannot guarantee any characteristics we describe listed above. The contract terms of Sofia Med agreed with any individual customer and our general conditions of sales describe the liability of these conditions.
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