



Innovative Hermetic Solutions

Heat Sinks - Tungsten/Copper Composites

Reference Physical and Mechanical Properties	Density at 20°C [g/cm³]	Coefficient of thermal expansion at 20°C [10 ⁻⁶ /K]	Thermal Conductivity at 25°C/100°C [W/mk]	Specific heat at 100°C [J/kgK]	Electrical resistance at 20°C [μΩm]	Young's modulus at 20°C [GPa]	Vickers hardness [HV 10]
WCu 90:10	17.1	6.4	174	160	0.045	330	300
WCu 87:13	16.8	6.7	183	168	0.043	320	290
WCu 85:15	16.4	7.3	188	174	0.040	310	280
WCu 80:20	15.5	8.3	206	195	0.034	280	260

Heat Sinks - Molybdenum/Copper Composites

Reference Physical and Mechanical Properties	Density at 20°C [g/cm³]	Coefficient of thermal expansion at 20°C [10 ⁻⁶ /K]	Thermal Conductivity at 20°C/100°C [W/mk]	Specific heat at 100°C [J/kgK]	Electrical resistance at 20°C [μΩm]	Young's modulus at 20°C [GPa]	Vickers hardness [HV 10]
MoCu 70:30	9.7	7.5	195	301	0.037	225	170
MoCu 50:50	9.5	9.9	220	323	0.028	172	150
MoCu 85:15	9.8	6.6	130	288			

Other Materials

Material	Density [g/cm³]	Coefficient of Thermal Expansion [10 ⁻⁶ /K]	Thermal Conductivity [W/mk] xy	Thermal Conductivity [W/mk] z	Electrical Resistance [μΩcm]	Young's Modulus (msi)	Rockwell E Hardness
Cu-Mo-Cu	9.3	5.7	200	170	9.300		
S-CMC	9.1	7.4	345	290			
Silvar Kovar	8.8	7	110				
Al Gr 4-230	2.4	4	230	120			
Al Gr 7-200	2.46	7	200	125	6.890		
CuGr 4-280	5.5	4	280	200	4.360		
CuGr 7-300	6.07	7	300	210			

Heat Sinks - Various Materials

Material	Density [g/cm³]	Thermal Conductivity [W/mk]		Thermal Expansion
		20°C	100°C	
AlN	3.3	180	150	4.5
Al ₂ O ₃	3.8	25	17	6.7
BeO	2.9	285	180	7.6
Al-SiC ^o	2.7-3.2	80-200	-	6.8-12.0
Fe-Ni-Co	2.4	17	17	5.3
Si	2.3	151	-	4.8
GaAs	5.3	54	34	5.8
Mo	10.2	142	135	5.5
W	19.3	165	152	4.5
Cu	8.9	398	393	17.1



Our Mission

To be your partner of choice, always trying to understand and deliver what will make you successful.

Contact Us

10113 Carroll Canyon Road
San Diego, CA 92131
(+1)858-271-1993

