

MIM-Material Specification and Applications

Composition

Material: Kovar Fe-Ni-Co, Low-expansion alloy

Standards: Kovar, F-15, NiCo 29-18, 1.3981

Typical composition::	Element	Content (%)
	C	≤ 0.10
	Ni	28.5 – 29.5
	Co	16.5 – 17.5
	Fe	Balance
	Other	-

Properties

		As sintered	HIP
Density		≥ 7.70 g/cm ³	≥ 8.10 g/cm ³
Hardness		≥ 100 HV1	≥ 100 HV1
Yield strength R _{p0.2}		≥ 200 MPa	≥ 200 MPa
Tensile strength R _m		≥ 300 MPa	≥ 300 MPa
Elongation A		≥ 20 %	≥ 20 %
Surface quality R _a		≤ 3.2 μm	≤ 3.2 μm
Coefficient of thermal expansion	25 – 200 °C	5.0 – 5.4 · 10 ⁻⁶ 1/K	
	25 – 300 °C	4.9 – 5.4 · 10 ⁻⁶ 1/K	
	25 – 400 °C	4.8 – 5.2 · 10 ⁻⁶ 1/K	
	25 – 450 °C	5.1 – 5.5 · 10 ⁻⁶ 1/K	
	25 – 500 °C	6.0 – 6.5 · 10 ⁻⁶ 1/K	

Application / remarks

Kovar is a material which is applied for electronic packaging or in combination with ceramic materials. Applications are micro wave tubes, transistors, Diodes integrated circuits etc.

The data given are based on our experience to date. However, no liability can be assumed.