

## MIM-Material Specification and Applications

### Composition

**Material:** Nickel-Iron, nickel alloyed steel  
Low-expansion alloy

**Standards:** 36%NiFe, FN36, Fe36Ni, 1.3912

Typical composition::	Element	Content (%)
	C	≤ 0.10
	Ni	35.0 – 37.0
	Mo	≤ 0.50
	Fe	Balance
	Other	-

### Properties

	As sintered	HIP
Density	≥ 7.70 g/cm <sup>3</sup>	≥ 8.05 g/cm <sup>3</sup>
Hardness	≥ 100 HV1	≥ 150 HV1
Yield strength R <sub>p0.2</sub>	≥ 150 MPa	≥ 200 MPa
Tensile strength R <sub>m</sub>	≥ 290 MPa	≥ 320 MPa
Elongation A	≥ 20 %	≥ 20 %
Surface quality R <sub>a</sub>	≤ 1.6 μm	≤ 1.6 μm
Coefficient of thermal expansion	25 – 100 °C	0.5 – 1.6 · 10 <sup>-6</sup> 1/K
	25 – 200 °C	1.8 – 2.1 · 10 <sup>-6</sup> 1/K
	25 – 300 °C	4.0 – 5.5 · 10 <sup>-6</sup> 1/K
	25 – 400 °C	7.0 – 8.0 · 10 <sup>-6</sup> 1/K

### Application / remarks

36%NiFe is an alloy which exhibits about 1/10 of the thermal expansion of carbon steel. This alloy is applied in electrical components where the thermal expansion must be limited e.g. in electronic packaging. The material is also applied in optical equipment and thermostats.

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