

Alloy K (ASTM F15)

Smiths Advanced Metals

Rev: SAM/datasheets/nickel-alloys/controlled-expansion-alloys/allo-k/jun-2026

Page: 1 of 1

Alloy K

Highly suitable for producing durable and reliable glass-to-metal and ceramic-to-metal hermetic seals.

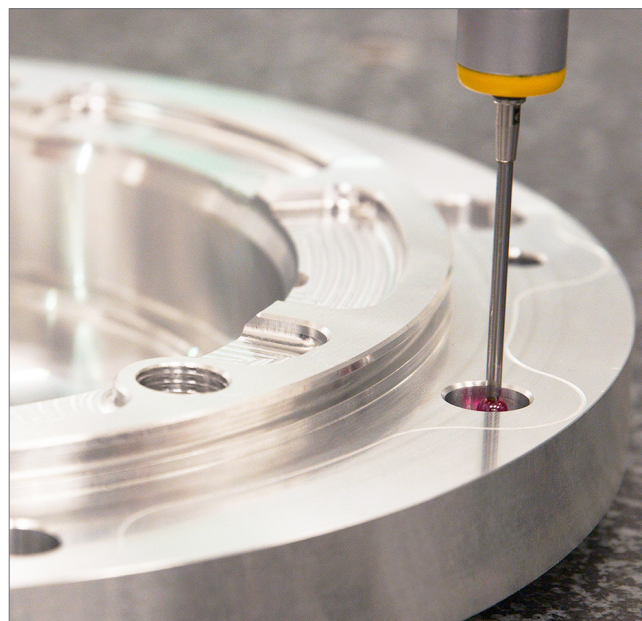
Alloy K is a precision-engineered iron-nickel-cobalt alloy specifically developed for applications requiring closely matched thermal expansion characteristics with borosilicate glass and alumina ceramics.

Due to its excellent compatibility with sealing glasses and technical ceramics, Alloy K is widely used in demanding industries where airtight performance and long-term reliability are essential. Typical applications include CT scanner assemblies, microwave and vacuum tube components, optoelectronic devices, electronic connectors, and hermetically sealed hybrid packages.

The alloy is also extensively utilised within aerospace and satellite systems where components are exposed to extreme environmental and thermal conditions.

Heat Treatment

Alloy K is normally supplied in the annealed condition in accordance with ASTM F15 specifications, ensuring optimum stability and machinability for precision manufacturing. Unannealed bar stock can also be supplied when required for specialist processing applications.



Grades/Specifications

- ASTM F15
- UNS K94610
- 1.3981

Benefits

- Reliable performance in extreme environments
- Excellent for glass and ceramic hermetic sealing
- Good dimensional stability during thermal cycling
- Controlled and stable coefficient of thermal expansion up to 500°C

*Chemical Composition (weight, %)

	Fe	Ni	Mn	Co	Si	Cu	Cr	Mo	C	Al	Mg	Zr	Ti	Al+Mg+Zr+Ti
Nominal	53	29		17										
Max			0.50		0.20	0.20	0.20	0.20	0.04	0.10	0.10	0.10	0.10	0.20

*As per ASTM F15

Average Linear Coefficient of Thermal Expansion (CTE)

Temperature Range 30 to 400 °C	4.60 to 5.20 µm/m°C
Temperature Range 30 to 450 °C	5.10 to 5.50 µm/m°C

CTE tested per melt

Tensile Strength

Temper Designation A

Annealed:

585 MPa max

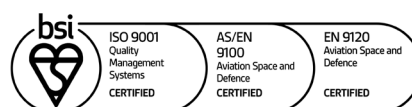
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1930