BIBUS METALS

Technical datasheet

Alloy 42 / W-Nr. 1.3917

A binary nickel-iron alloy containing 42% nickel with a largely constant coefficient of thermal expansion making it ideal for glass-to-metal sealing systems, thermostat components and in semiconductors.

Available products

Product form	Size range from	Size range to
Sheet/plate	0.25 mm thickness	38.10 mm thickness
Bar	2.50 mm diameter	31.75 mm diameter

Chemical composition (%)

Ni	Fe	Co	Mn	Si	Cr	Al	C
42	Balance	1.0 max	0.8 max	0.30 max	0.25 max	0.15 max	0.05 max

Major specifications

ASTM F29, F30, B753	UNS K94100
SEW 385	

Physical properties

Density	8.11 g/cm^3
Melting temperature	1435°C

Mechanical properties – typical room temperature properties

Yield strength	250 MPa	Coefficient of thermal expansion (20-100°C)
Tensile strength	490 MPa	5.3 µm/m•C
Elongation	43 %	

Key attributes

Alloy 42 has a low, relatively constant coefficient of thermal expansion from room temperature to 300°C. In applications where maximum dimensional stability is required Alloy 42 should be used in the annealed condition. It is used widely in glass-to-metal sealing systems as its coefficient of expansion closely matches that of 98% alumina borosilicate glasses.

Alloy 42 is readily formed by both hot and cold forming and can be machined. Workability characteristics are similar to those of austenitic stainless steels. Alloy 42 can be welded by most standard techniques. Please contact us for further details on forming and fabrication.

Applications

Tooling for aerospace composites

Glass-to-metal and ceramic-to-metal sealing applications

Sealed unit automotive head lamps

Vacuum devices

Bi-metallic components and thermostatic applications

Electronic circuit lead frames

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