Alloy 617

Smiths Advanced Metals

High Temperature Strength

Nickel-chromium-cobalt-molybdenum alloy.

Alloy 617 (UNS N06617) is a nickel-chromium-cobalt-molybdenum alloy which combines exceptional high temperature strength with oxidation resistance.

High nickel, chromium and aluminium content gives strong resistance to oxidation and carburisation at high temperatures, while molybdenum helps the alloy withstand many wet corrosive environments.

The alloy is easy to fabricate and can be welded using conventional techniques.

It keeps very high creep-rupture strength at 980 °C and above, and its thermal expansion is lower than most austenitic alloys, reducing stress where it is joined to carbon or low-alloy steels.

We stock Alloy 617 in a broad range of sizes and shapes.



Grades / Specifications

- UNS N06617
- W.Nr 2.4663
- ASTM B166
- ASME SB166
- AMS 5887–5889

Key Applications

- Gas turbine combustion cans
- Ducting & liners
- Power generation & boiler tubes
- Reformer tubes
- Petrochemical plant

* Chemical Composition (weight %)

	Ni	Cr	Co	Mo	Al	C	Fe	Mn	Si	Ti	Cu	S	B
min.	44.5	20.0	10.0	8.0	0.8	0.05							
max.		24.0	15.0	10.0	1.5	0.15	3.0	1.0	1.0	0.6	0.5	0.015	0.006

* As per ASTM B166

* Mechanical Properties

Tensile Strength	769 MPa
0.2% Yield Strength	318 MPa
Elongation	56%
Hardness	181 HB

* Typical values, solution annealed hot rolled bar

Physical Properties

Density	8.36 g/cm³
Melting Range	1332–1380 °C
Modulus of Elasticity	211 GPa
Thermal Conductivity	13.4 W/m °C
Electrical Resistivity	1.223 µΩ·m
Thermal Expansion (100 °C)	11.6 µm/m °C

High Temperature Performance

Alloy 617 is one of the few materials covered by the ASME Boiler and Pressure Vessel Code with design stresses up to 980 °C. In a 25-hour carburisation test at 1095 °C it gained 10 g/m², compared with 28 g/m² for Alloy 600.

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bsi ISO 9001 Quality Management Systems CERTIFIED
AS/EN 9100 Aviation Space and Defence CERTIFIED
EN 9120 Aviation Space and Defence CERTIFIED
UKAS TESTING 1930

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