

UNS N06625 – Alloy 625

Related Specifications

ASTM B564 UNS N06625

ASTM B446 UNS N06625

Alloy 625 is a nickel-chromium-molybdenum alloy which is used for its high strength and excellent corrosion resistance. Alloy 625 exhibits excellent strength and toughness at temperatures ranging from cryogenic, up to 1100°C. This material is a solid solution strengthened alloy and is normally supplied in one of two heat treatment conditions:

Grade 1 - Annealed

Grade 2 - Solution Annealed

Alloy 625 is widely used in a variety of high-temperature aerospace, chemical process industry and power industry applications. The corrosion resistance of this alloy means that it is used for components where exposure to sea water and high mechanical stresses are required. Also in oil and gas production where hydrogen sulphide and elementary sulphur exist at temperatures in excess of 150°C.

Typical Chemical composition (Values are maximums unless otherwise stated)

Ni	58.0 min	C	0.10
Cr	20.0-23.0	Co	1.0
Fe	5.0	Mn	0.50
Nb + Ta	3.15-4.15	Si	0.50
Mo	8.0-10.0	P	0.015
Ti	0.40	S	0.015
Al	0.40		

Mechanical Property Requirements

		Yield	Tensile Strength	Elongation %	Hardness
Grade 1	To 100mm Section	60 KSI (414 MPa)	120 KSI (827 MPa)	30	175-240 HBW
	>100mm Section	50 KSI (345 MPa)	110 KSI (758 MPa)	25	-
Grade 2	All Sizes	40 KSI (276 MPa)	100 KSI (690 MPa)	30	-

Forging

Forging temperature for this material should be 1180°C maximum.
Reheat as often as necessary and cool in still air.

Heat Treatment

Grade 1 - Annealed at 871°C minimum.
Grade 2 - Solution Annealed at 1093°C minimum.

Machining

Alloy 625 can be machined by conventional means. However, the alloy tends to work harden ahead of cutting so low cutting speeds and rigid tooling are general recommendations.

Welding

Alloy 625 is readily welded using conventional processes and procedures.