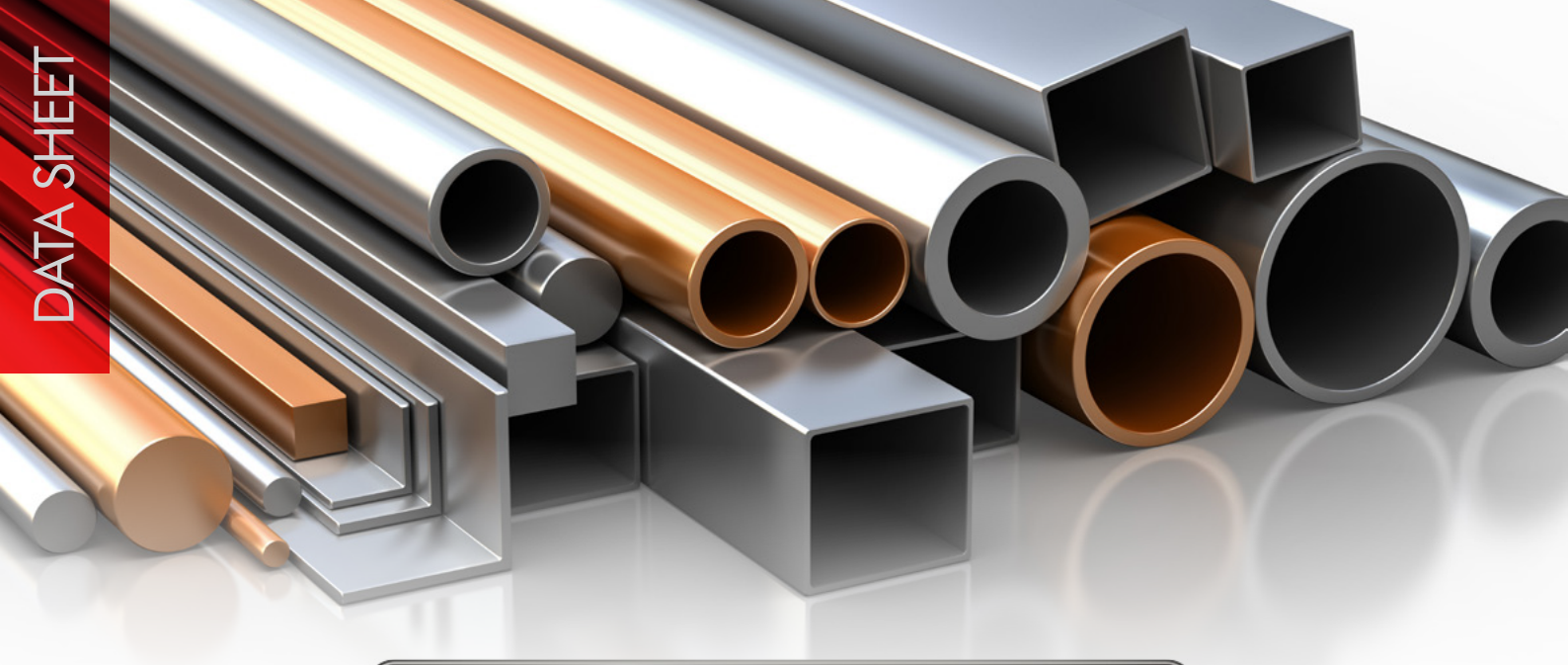
DATA SHEET



INCONEL® alloy 625

UNS No - N06625

Other common names: Alloy 625

Inconel 625 is corrosion and oxidation resistant nickel alloy. This Inconel 625 alloy is utilized both for its high strength and exceptional fluid corrosion resistance. Its extraordinary strength and sturdiness is because of the expansion of niobium, which acts with the molybdenum to stiffen the alloy's matrix. Alloy 625 has superb strength and stress corrosion cracking resistance to chloride ions. This nickel alloy has very good weldability and is as often as possible used to weld AL-6XN. This alloy resists an extensive variety of severely corrosive environments and is especially resistant to pitting and crevice corrosion. Some of the applications Inconel 625 are utilized as a part of chemical processing, aerospace as well as marine engineering, pollution-control equipment and nuclear reactors.

Applications

- Aircraft ducting systems
- Aerospace
- Jet engine exhaust systems
- Engine thrust-reverser systems
- Specialized seawater equipment
- Chemical process equipment

Characteristics

- High creep-rupture strength
- Oxidation resistant to 1800° F
- Seawater pitting and crevice corrosion resistant
- Immune to chloride ion stress corrosion cracking
- Non-magnetic

INCONEL® alloy 625

Fabrication
Alloy 625 has superb shaping and welding qualities. It might be forged or hot worked giving temperature is kept up in the scope of 1800-2150° F. In a perfect world, to control grain size, finished hot working operations should be performed at the low end of the temperature range. As a result of its good flexibility, alloy 625 is likewise promptly shaped by cold working. Be that as it may, the alloy works harden quickly so intermediate annealing treatments might be required for complex part shaping operations. Keeping in mind the end goal to restore the best adjust of properties, all hot or cold worked part should be tempered and quickly cooled. These nickel alloys can be welded by both manual and programmed welding techniques, including gas tungsten arc, gas metal arc, electron beam and resistance welding. It displays great limitation welding attributes.

Machining
This alloy might be machined by the standard means. However the alloy tends to work harder in front of cutting and rigid tooling is vital to avoid chatter and work hardening before the tool edge.

Forming
This alloy can be cold shaped by ordinary means and tooling. The alloy works harden during cold working with attendant increment in strength. This expansion in strength might be of worth for moderate temperature applications and in these occurrences, the formed parts can be left cold work hardened condition.

Welding
Welding is promptly expert utilizing coordinating alloy filler metal for the ordinary welding strategies.

Heat Treatment
The alloy is outfitted in the solution annealed condition. This is done at 2150 F for adequate time dependent upon segment thickness. Taking over the strength the alloy might be air cooled.

Forging
Hot forging can be done by heating the billet to 2100 - 2150 F, yet not more than 2150. Heavy forging might then be done down to a billet temperature of 1850 F and light forging down to 1700 F. Last decreases of 15 to 20% least are recommended to keep up proper grain structure.

Hot Working
Hot forming so as to shape might be finish the alloy to 2150 F. Since this alloy is built for good strength at high temperatures it will oppose hot deformation and in this way requires effective gear to perform hot shaping.

Cold Working
The alloy can be cold shaped by traditional strategies and tooling. See likewise the remarks under “Forming” in regards to work hardening.

Annealing
Since the alloy work harden during hot or cold shaping it might be important to anneal such parts with a specific end goal to finish forming operations. Annealing is done at 1800 to 2000 F and air cold. Stress alleviation of cold worked parts might be proficient at 1100 to 1400 F.

Aging
The alloy gets its strength from its chemical composition. Along these lines aging or precipitation hardening is not appropriate as a heat treatment.

Hardening
Cold working hardens the alloys and enhances the strength, subordinate upon the measure of cold working. The alloy can be utilized as a part of this higher strength cold worked condition or might be annealed at 2150 F to restore unique mechanical properties.

INCONEL® alloy 625

Chemical Properties

C	Mg	Al	Si	P	S	Ti	Cr	Fe	Co	Ni	Mo	Cb (Nb+Ta)
0.1 max	0.5 max	0.4 max	0.5 max	0.015 max	0.015 max	0.4 max	20.00 - 23.00	5.0 max	1.0 max	58.0 min	8.0 - 10.0	3.15 - 4.15

Mechanical Properties

Representative Tensile Properties, bar, 1800° F anneal

Tensile Strength (ksi)	0.2% Yield Strength (ksi)	Elongation% in 2 inches
120	60	30

Physical Properties

Properties	Units	Temperature in °C
Density	8.44 g/cm^3	Room
Specific Heat	0.098 Kcal/kg.C	21°
Melting Range	1290 - 1350 °C	-
Modulus of Elasticity	207.5 KN/mm^2	21°
Electrical Resistivity	129 µΩ.cm	21°
Coefficient of Expansion	12.8 µm/m °C	21 - 93°
Thermal Conductivity	9.8 W/m -°K	21°

ASTM Specifications

Pipe / Tube (SMLS)	Pipe Welded	Tube Welded	Sheet / Plate	Bar
B 444	B 705	B 704	B 443	B 446

Availability

MANUFACTURING	RAW MATERIALS
Fasteners	Pipes
Custom Machining	Tubes
Custom Fabrication	Bars
Piping / Spools	Sheets
Stamped Parts	Plates
B/W Fittings	-
S/W Fittings	-
Flanges	-
Compression Fittings	-