Alloy 625 is used both for its high strength and outstanding aqueous corrosion resistance. The strength of alloy 625 is primarily a solid solution effect from molybdenum and columbium. Alloy 625 weld fillers have excellent weldability and are frequently used to weld AL-6XN® super austenitic stainless steel. Matching filler metals are also used to join dissimilar metals.

Specifications

UNS: N06625 **W. Nr./EN:** 2.4856 **ASTM:** B 443 Gr 1, B 446 Gr 1 **AMS:** 5599, 5666, 5837
ASME: SB-443 Gr 1, SB-446 Gr 1 **NACE:** MR0175-3 **ISO:** 15156-3

Chemical Composition, %

	Cr	Ni	Mo	Co	Cb+Ta	Al	Ti	C	Fe	Mn	Si	P	S
MIN	20.0	–	8.0	–	3.15	–	–	–	–	–	–	–	–
MAX	23.0	balance	10.0	1.0	4.15	0.4	0.4	0.1	5.0	0.5	0.5	0.015	0.015

Features

- High creep-rupture strength
- Oxidation resistant to 1800°F
- Good fatigue resistance
- Excellent weldability
- Outstanding resistance to chloride pitting and crevice corrosion
- Immune to chloride ion stress corrosion cracking
- Resistant to seawater under both flowing and stagnant conditions and under fouling

Applications

- Aircraft ducting systems
- Jet engine exhaust systems
- Engine thrust-reverser systems
- Bellows and expansion joints
- Turbine shroud rings
- Flare stacks
- Seawater components
- Chemical process equipment handling mixed acids both oxidizing and reducing.

Physical Properties

Density: 0.303 lb/in^3 **Melting Range:** 2350-2460°F **Poisson's Ratio:** 0.308 **Electrical Resistivity:** 775 ohm • circ mil/ft

Temperature, °F	70	400	600	800	1000	1200	1400	1600
Coefficient* of Thermal Expansion, in/in°F x 10^{-6}	–	7.3	7.4	7.6	7.8	8.2	8.5	8.8
Thermal Conductivity Btu • ft/ft^2 • hr • °F	5.7	7.2	8.2	9.1	10.1	11.0	12.0	13.2
Modulus of Elasticity Dynamic, psi x 10^6	29.8	28.4	27.5	26.6	25.6	24.4	23.1	–

** 70°F to indicated temperature.*

Mechanical Properties

Representative Tensile Properties, Bar

Temperature, °F	70	400	600	800	1000	1200	1400	1600
Ultimate Tensile Strength, ksi	135	124	120	119	119	114	73	40
0.2% Yield Strength, ksi	65	45	42	42	42	42	41	39
Elongation, %	44	45	42.5	45	48	34	59	117

Typical Rupture Strength Bar, Stress to Rupture at Indicated Time

Temperature, °F	1200	1300	1400	1500	1600	1700	1800
1,000 Hours, ksi	55	32	18	9.1	4.2	2.7	1.7
10,000 Hours, ksi	43	23	12	–	–	–	–