

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: 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/in³ 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.

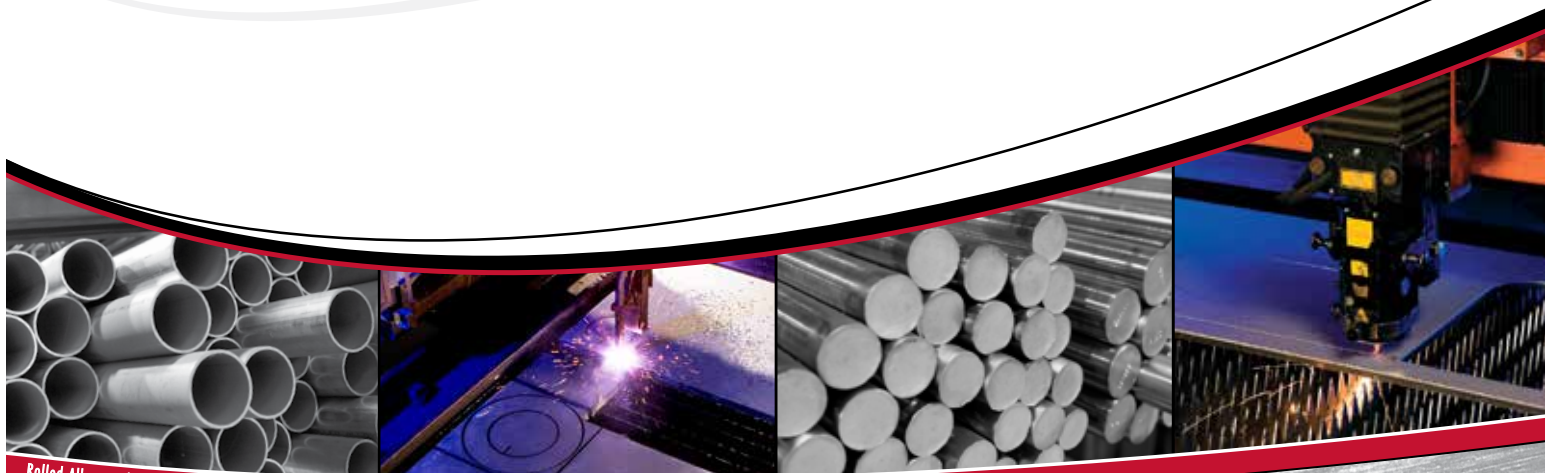
Mechanical Properties

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 | — | — | — | — |



Rolled Alloys and RA are registered trademarks of Rolled Alloys • AL-6XN is a registered trademark of ATI Properties, Inc



The Global Leader in Specialty Metals