# Elgiloy Specialty Metals – Wire Products

## Inconel® alloy 625

**UNS N06625**
**W. Nr 2.4856**

### Applicable Specifications

| | |
|---|---|
| Wire & Bar | AMS 5666, AMS 5837, ASTM B446, AWS A5.14, NACE MR0175/ISO 15156-3, NACE MR0103/ISO 17945 |

**Description:** Inconel® 625 is a Nickel-Chromium-Molybdenum-Columbium (Niobium) alloy with excellent oxidation resistance, corrosion resistance, and strength at high temperatures. Age-hardening treatments are not required to obtain the high strength properties of Inconel® 625 due to the solid solution effects of molybdenum and columbium on the nickel-chromium matrix. Inconel® 625 is resistant to chloride-ion stress-corrosion cracking, pitting, and stress-corrosion cracking making it suitable for seawater applications. Inconel® 625 can operate from cryogenic temperatures up to 1800°F (980°C).
**Applications include: S**prings, seals, nuclear water reactors, and aircraft ducting systems.
**Industries supplied include:** Marine, Chemical Processing, and Aerospace.

### Nominal Composition

| | Ni | Cr | Mo | Nb | Fe | Co | Si | Mn | Al | Ti | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| min | 58 | 20 | 8 | 3.15 | | | | | | | |
| max | | 23 | 10 | 4.15 | 5 | 1.0 | 0.5 | 0.5 | 0.4 | 0.4 | 0.10 |

### Physical Properties

| | At 70°F | At 20°C |
|---|---|---|
| **Density** | 0.305 lb/in$^3$ | 8.44 g/cm$^3$ |
| **Modulus of Elasticity (E)** | 30.1 x 10$^3$ ksi | 208 GPa |
| **Modulus of Rigidity (G)** | 11.8 x 10$^3$ ksi | 81.2 GPa |
| **Coefficient of Expansion** | 7.4 microinches/in.-°F (70-600°F) | 13.3 x µm/m-°C (20-300°C) |
| **Electrical Resistivity** | 50.8 µ ohm.in | 129 µ ohm.cm |
| **Thermal Conductivity** | 68 Btu-in./ft.$^2$hr.-°F | 9.8 W/m-K |

### Typical Mechanical Properties

| Condition | Heat Treatment | Tensile Strength | Suggested Operating Conditions |
|---|---|---|---|
| **Annealed** | 1925-2050°F (1050-1120°C) | 120 – 150 ksi (830-1100 MPa) | -300°F to 1800°F (-184°C to 980°C) |
| **Spring Temper** | | 200 – 240 ksi (1380-1655 MPa) | -300°F to 700°F (-184°C to 370°C) |



**Elgiloy Specialty Metals – Wire Products**
**356 North Cross Street**
**Sycamore, IL 60178 USA**

**Phone: 1-847-695-1900**

**www.elgiloy.com**

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