

## Haynes® 282® alloy

UNS N07208

### Applicable Specifications

Wire & Bar | AMS 5915, ASTM B637

**Description:** Haynes® Alloy 282 is an age-hardenable nickel-based superalloy that combines excellent creep strength with thermal stability, weldability, and fabricability. This new alloy has excellent creep strength in the temperature range of 1200 to 1700°F (649-927°C), surpassing that of Waspaloy alloy, and approaching that of R-41 alloy. Haynes® Alloy 282 can be further aged from the annealed condition or cold reduced condition for modest gains in physical properties. Other notable properties include resistance to strain-age cracking and high-temperature oxidation.

**Applications include:** Compressors, Combustors, Transition liners, Rings, Exhaust/nozzle components, Hot-gas-path components  
**Industries supplied include:** Aerospace, Land Based Turbines, Automotive

### Nominal Composition

|     | C    | Mn   | Si   | P     | S     | Cr   | Ni  | Co   | Mo  | W   | Nb  | Ti   | Ta   | Al   | B     | Fe  | Cu  | Zr    |
|-----|------|------|------|-------|-------|------|-----|------|-----|-----|-----|------|------|------|-------|-----|-----|-------|
| min | 0.04 | -    | -    | -     | -     | 18.5 | Bal | 9.0  | 8.0 | -   | -   | 1.90 | -    | 1.38 | 0.003 | -   | -   | -     |
| max | 0.08 | 0.30 | 0.15 | 0.015 | 0.015 | 21.5 | -   | 11.0 | 9.0 | 0.5 | 0.2 | 2.30 | 0.10 | 1.65 | 0.010 | 1.5 | 0.1 | 0.020 |

### Physical Properties

|                           | At 70°F                          | At 20°C                  |
|---------------------------|----------------------------------|--------------------------|
| Density                   | 0.299 lb/in <sup>3</sup>         | 8.27 g/cm <sup>3</sup>   |
| Modulus of Elasticity (E) | 31.5 x 10 <sup>3</sup> ksi       | 217 GPa                  |
| Modulus of Rigidity (G)   | 11.9 x 10 <sup>3</sup> ksi       | 82 GPa                   |
| Coefficient of Expansion  | 9.3 μin/in-°F (70-1800°F)        | 16.9 μm/m-°C (25-1000°C) |
| Electrical Resistivity    | 49.7 μohm-in                     | 126.1 μohm-cm            |
| Thermal Conductivity      | 72 Btu-in/ft <sup>2</sup> -hr-°F | 10.3 W/m-°C              |

### Typical Mechanical Properties

| Condition | Heat Treatment                                   | Tensile Strength          | Suggested Operating Conditions |
|-----------|--|---------------------------|--------------------------------|
| Annealed  | 2050-2150°F (1120-1177°C)                        | 110-140 ksi (758-965 MPa) | Up to 1700°F (927°C)           |
| Aged      | 1850°F for 2 hours, AC<br>1450°F for 8 hours, AC | 150 ksi min (1034 MPa)    | Up to 1700°F (927°C)           |

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

Phone: 1-847-695-1900

[www.elgiloy.com](http://www.elgiloy.com)

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