INCONEL® X-750

**Key Features**
- Good creep rupture strength at high temperatures
- Very good at cryogenic temperatures
- Age hardenable
- High temperature dynamic applications

**INCONEL® X-750 available in:**
- Round wire
- Bars or lengths
- Flat wire
- Shaped wire
- Rope/Strand

**Packaging**
- Coils
- Spools
- Bars or lengths

**Technical Datasheet**
AWS 014 Rev.2

**IMPORTANT**
We will manufacture to your required mechanical properties.

**Key advantages to you, our customer**
- Range: 0.025mm to 21mm (.001" to .827")
- Order: 3m to 3t (10 ft to 6000 Lbs)
- Delivery: within 3 weeks
- Wire to your spec
- E.M.S available
- Technical support

*Trade name of Special Metals Group of Companies.*
## Heat Treatment of Finished Parts

<table>
<thead>
<tr>
<th>Condition as supplied by Alloy Wire</th>
<th>Type</th>
<th>Temperature</th>
<th>Time (Hr)</th>
<th>Cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring Temper</td>
<td>Age Harden</td>
<td>650°C 1200°F</td>
<td>4</td>
<td>Air</td>
</tr>
<tr>
<td>Spring Temper (3 Part)</td>
<td>Anneal</td>
<td>1150°C 2100°F</td>
<td>2 ** 24</td>
<td>Air</td>
</tr>
<tr>
<td>Spring Temper</td>
<td>Stabilize</td>
<td>843°C 1550°F</td>
<td>20</td>
<td>Air</td>
</tr>
<tr>
<td>Spring Temper</td>
<td>Age Harden</td>
<td>704°C 1300°F</td>
<td>16</td>
<td>Air</td>
</tr>
<tr>
<td>No. 1 Temper</td>
<td>Age Harden</td>
<td>730°C 1350°F</td>
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<td></td>
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</tbody>
</table>

## Properties

<table>
<thead>
<tr>
<th>Condition</th>
<th>Approx. tensile strength</th>
<th>Approx. operating temperature depending on load**^** and environment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N/mm²  ksi</td>
<td>°C  °F</td>
</tr>
<tr>
<td>Annealed</td>
<td>800 – 1000 116 – 145</td>
<td>-  -</td>
</tr>
<tr>
<td>No. 1 Temper</td>
<td>900 – 1150 130 – 167</td>
<td>-  -</td>
</tr>
<tr>
<td>Spring Temper</td>
<td>1100 – 1500 160 – 218</td>
<td>-  -</td>
</tr>
<tr>
<td>No. 1 Temper + Aged</td>
<td>1300 – 1450 188 – 210</td>
<td>-200 to +550 -330 to +1020</td>
</tr>
<tr>
<td>Spring Temper + Aged</td>
<td>1350 – 1750 196 – 254</td>
<td>-200 to +370 -330 to +700</td>
</tr>
<tr>
<td>Spring Temper + 3 part heat treated</td>
<td>1100 – 1250 159 – 181</td>
<td>-200 to +550 -330 to +1020</td>
</tr>
</tbody>
</table>

The above tensile strength ranges are typical. If you require different please ask.

**^**for diameters below 1.00mm contact AWI Technical department

**^**Dynamic applications = active/lively/changing

### Chemical Composition

<table>
<thead>
<tr>
<th>Element</th>
<th>Min %</th>
<th>Max %</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-</td>
<td>0.08</td>
</tr>
<tr>
<td>Mn</td>
<td>-</td>
<td>1.00</td>
</tr>
<tr>
<td>Si</td>
<td>-</td>
<td>0.50</td>
</tr>
<tr>
<td>S</td>
<td>-</td>
<td>0.01</td>
</tr>
<tr>
<td>Cr</td>
<td>14.00</td>
<td>17.00</td>
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<tr>
<td>Ni</td>
<td>70.00</td>
<td>-</td>
</tr>
<tr>
<td>Nb/Cb</td>
<td>0.70</td>
<td>1.20</td>
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<tr>
<td>Ti</td>
<td>2.25</td>
<td>2.75</td>
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<tr>
<td>Al</td>
<td>0.40</td>
<td>1.00</td>
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<tr>
<td>Fe</td>
<td>5.00</td>
<td>9.00</td>
</tr>
<tr>
<td>Co</td>
<td>-</td>
<td>1.00</td>
</tr>
<tr>
<td>Ta</td>
<td>-</td>
<td>0.05</td>
</tr>
<tr>
<td>Cu</td>
<td>-</td>
<td>0.50</td>
</tr>
</tbody>
</table>

### Specifications

- AMS 5667
- AMS 5671
- AMS 5698 (No 1 Spring Temper)
- AMS 5699 (Spring Temper)
- ASTM B637
- BS HR 505
- GE B14H41
- ISO 15156-3
- (NACE MR 0175)

### Key Features

- Good creep rupture strength at high temperatures
- Not as strong as Nimonic 90
- Very good at cryogenic temperatures
- Age hardenable
- **^**High temperature dynamic applications

### Typical Applications

- Nuclear reactors
- Gas turbines
- Rocket engines
- Pressure vessels
- Aircraft structures

### Designations

- W.Nr. 2.4669
- UNS N07750
- AWS 014

### Density

- 8.28 g/cm³
- 0.299 lb/in³

### Melting Point

- 1430 °C
- 2600 °F

### Coefficient of Expansion

- 12.6 μm/m °C (20 – 100 °C)
- 7.0 x 10^-6 in/in °F (70 – 212 °F)

### Modulus of Rigidity

- 75.8 kN/mm²
- 10994 ksi

### Modulus of Elasticity

- (Spring Temper + Aged): 218.0 kN/mm²
- (Spring Temper + 3 Part Heat Treated): 212.4 kN/mm²
- (No.1 Spring Temper + Aged): 213.7 kN/mm²
- 31619 ksi
- 30806 ksi
- 30995 ksi