Nickel-based Alloy
AD730®
NiCr16Co9Fe4Mo3W3Ti3AL2

SPECIFICATIONS

European standard:
NiCr16Co9Fe4Mo3W3Ti3AL2

TYPICAL MECHANICAL PROPERTIES

• Heat treatment condition: 1080°C/OQ +730/760°C/AC

On metal supplied ready use:

• Tensile test at ambient temperature:
  - UTS: 1580 N/mm²
  - 0.2 % Yield strength: 1200 N/mm²
  - Elongation (5d): 20 %

• Tensile test at 600°C:
  - UTS: 1500 N/mm²
  - 0.2 % Yield strength: 1130 N/mm²
  - Elongation (5d): 15 %

• Tensile test at 750°C:
  - UTS: 1100 N/mm²
  - 0.2 % Yield strength: 1000 N/mm²
  - Elongation (5d): 10 %

SUB-SOLVUS HEAT TREATMENT

1070°C/1080°C Air cooling or faster + 730°C/760°C Air Cooling

• Fine grain microstructure (average size finer than ASTM 7)

• Provides the best Tensile Strength / Creep / Fatigue resistance compromise

• Strengthening provided by fine precipitation of γ' precipitates into the grains

COMPOSITION

<table>
<thead>
<tr>
<th>Element</th>
<th>Weight Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>4</td>
</tr>
<tr>
<td>Chromium</td>
<td>16</td>
</tr>
<tr>
<td>Cobalt</td>
<td>9</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>3</td>
</tr>
<tr>
<td>Tungsten</td>
<td>3</td>
</tr>
<tr>
<td>Aluminum</td>
<td>2</td>
</tr>
<tr>
<td>Titanium</td>
<td>4</td>
</tr>
<tr>
<td>Niobium</td>
<td>1</td>
</tr>
<tr>
<td>Nickel</td>
<td>Base</td>
</tr>
</tbody>
</table>

APPLICATIONS

• Aero Engines and Land Turbines: Engines disks, buckets, fasteners, blades
• Specialties: Hot parts for turbo shafts in motorsport
• Hot Tooling

CHARACTERISTICS

• Good high temperature fatigue creep resistance
• High microstructural stability up to 750°C
• Better oxidation resistance than Waspaloy or 720 Alloy
OTHER HEAT TREATMENT

- Super-solvus heat treatment is possible to enhance creep and fatigue crack growth performance.
- Contact us for more information

PHYSICAL PROPERTIES

- Density: $8.23 \text{g/cm}^3$
- Mean coefficient of expansion in m/m.°C:
  - between 20°C and 400°C: $13.4 \times 10^{-6}$
  - between 20°C and 600°C: $14.5 \times 10^{-6}$
  - between 20°C and 800°C: $15.8 \times 10^{-6}$
- Thermal Conductivity in W/m.°C:
  - at 200°C: 13.12
  - at 400°C: 15.35
  - at 600°C: 20.38
  - at 800°C: 23.62

MECHANICAL PROPERTIES

Contact:

www.aubertduval.com

The data provided in this document represent typical or average values rather than maximum or minimum guaranteed values. The applications indicated for the grades described are given as guidance only in order to help the reader in his personal assessment. Please note that these do not constitute a guarantee whether implicit or explicit as to whether the grade selected is suited to specific requirements. Aubert & Duval’s liability shall not under any circumstances extend to product selection or to the consequences of that selection.