**SPECIFICATIONS**

X1CrNiMoAlTi12-11-2
WL : 1.4612

**MECHANICAL PROPERTIES**

- After aging at 535°C / 8hrs:
  - UTS: 1590 N/mm²
  - 0.2 % Yield strength: 1500 N/mm²
  - Elongation (5d): 12 %
  - Impact strength KV: 45 J

- After aging at 510°C / 8hrs:
  - UTS: 1725 N/mm²
  - 0.2 % Yield strength: 1610 N/mm²
  - Elongation (5d): 11 %
  - Impact strength KV: 25 J

**APPLICATIONS**

- Forgings and mechanical parts in stainless steel requiring very good mechanical properties.
- Structural parts for the aerospace industry.
- Missile components.
- Fasteners.
- High pressure pumps and valves.
- Offshore industry.

**COMPOSITION**

<table>
<thead>
<tr>
<th>Element</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon</td>
<td>≤ 0.02</td>
</tr>
<tr>
<td>Chromium</td>
<td>12.00</td>
</tr>
<tr>
<td>Nickel</td>
<td>11.00</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>2.00</td>
</tr>
<tr>
<td>Aluminum</td>
<td>1.50</td>
</tr>
<tr>
<td>Titanium</td>
<td>0.30</td>
</tr>
</tbody>
</table>

**CHARACTERISTICS**

- Precipitation hardened stainless steel of very high purity, vacuum primary melted and consumable electrode remelted.
- Excellent mechanical properties in the longitudinal and transverse directions.
- Excellent balance between strength and toughness properties, and excellent fatigue resistance.
- Good resistance to corrosion and stress corrosion.
- Very good weldability. Welding should preferably be carried out in the solution treated condition. Aging carried out after welding allows both the parent metal and weld bead to be hardened.
HEAT TREATMENT

- Delivered condition:
  This steel is supplied in the solution treated condition.

- Aging:
  This steel must undergo a hardening treatment in order to attain its final properties for service. The temperature for this treatment is situated between 505 and 570°C depending on the level of mechanical properties required.

PHYSICAL PROPERTIES

- Density: 7.8

- Mean coefficient of expansion in m/m.°C:
  - between 20°C and 100°C: $10.0 \times 10^{-6}$
  - between 20°C and 300°C: $10.7 \times 10^{-6}$
  - between 20°C and 500°C: $11.8 \times 10^{-6}$

- Modulus of elasticity in N/mm²:
  - at 20°C: $195 \times 10^3$