

SPECIFICATIONS

European standards:

- X1CrNiMoAlTi12-9
- Numerical designation: 1.4530

UNS : S11800

AMS : 5928

COMPOSITION

Carbon.....	< 0.02
Chromium.....	12.00
Nickel.....	10.00
Molybdenum.....	2.00
Aluminum.....	0.90
Titanium.....	0.30

TYPICAL MECHANICAL PROPERTIES

- Solution treatment: heat to 840°C followed by air, oil or water cooling:
 - Brinell Hardness: 293

HEAT TREATMENT REFERENCE

- For UTS > 1200 N/mm²: aging 540°C / 4 hrs:
 - UTS: 1240 N/mm²
 - 0.2 % Yield strength: 1195 N/mm²
 - Elongation (5d): 12.5 %
 - Impact strength KV: 120 J
- For UTS > 1400 N/mm²: aging 520°C / 4 hrs:
 - UTS: 1430 N/mm²
 - 0.2 % Yield strength: 1385 N/mm²
 - Elongation (5d): 10.5 %
 - Impact strength KV: 45 J

APPLICATIONS

- Very heavily stressed parts requiring good corrosion resistance and very good mechanical properties.
- Aerospace industry.

CHARACTERISTICS

- Precipitation hardened stainless steel of very high purity, vacuum melted and consumable electrode remelted.
- Excellent mechanical properties in the longitudinal and transverse directions.
- Excellent balance between strength, toughness and fatigue properties, especially at the 1200 N/mm² strength level (>PH13-8Mo).
- Good resistance to corrosion and stress corrosion.
- Good weldability.

HEAT TREATMENT

- This steel may be supplied either in the solution treated condition or in the solution treated and aged condition (the latter being the in-service condition).
- Aging:
This steel must undergo a precipitation hardening treatment in order to attain its optimum characteristics. The temperature for this treatment is situated between 480 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: 10.0×10^{-6}
 - between 20°C and 300°C: 10.7×10^{-6}
 - between 20°C and 500°C: 11.8×10^{-6}
- Modulus of elasticity in N/mm²:
 - at 20°C: 195×10^3

FORGING

- 1200/800°C

WELDING

Welding is usually carried out in the solution treated condition. The aging treatment, carried out after welding, allows both the parent metal and weld bead to be hardened.

Contact:

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