AUBERT&DUVAL

Steel

MARVAL®13X

X3CrNiMoAl13-8-2

SPECIFICATIONS

European standard:

- X3CrNiMoAl13-8-2

WL : 1.4534
UNS : S13800
AMS : 5629

COMPOSITION

Carbon	≤ 0.05
Chromium	12.50
Nickel	8.30
Molybdenum	2.10
Aluminum	1.00

TYPICAL MECHANICAL PROPERTIES

- Solution treatment: heat to 930°C followed by air cooling or faster depending on the section.

HEAT TREATMENT REFERENCE

- For UTS > 1200 N/mm^2: age at 560°C/4hrs
  - UTS: 1240 N/mm^2
  - 0.2 % Yield strength: 1205 N/mm^2
  - Elongation (5d): 12.5 %
  - Impact strength KV: 80 J
- For UTS > 1400 N/mm^2: age at 540°C/4hrs:
  - UTS: 1450 N/mm^2
  - 0.2 % Yield strength: 1410 N/mm^2
  - Elongation (5d): 10.5 %
  - Impact strength KV: 40 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.

CHARACTERISTICS

- Precipitation hardened stainless steel of very high purity, vacuum primary melted and consumable electrode remelted.
- Good toughness and good corrosion resistance.
- Excellent balance between strength and toughness properties, especially at a strength level of 1200 N/mm^2.
- 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 hardening treatment in order to attain its optimum properties. The temperature for this treatment is situated between 510 and 560°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: 10.6×10^{-6}
  - between 20°C and 200°C: 10.8×10^{-6}
  - between 20°C and 300°C: 11.2×10^{-6}
  - between 20°C and 400°C: 11.3×10^{-6}

- Modulus of elasticity in N/mm^2:
  - at 20°C: 197×10^{3}

FORGING

- 1200/900°C

WELDING

Welding may be carried out in the solution treated or temper softened condition. Due to the presence of delta ferrite, it is often necessary to carry out full heat treatment after welding to improve the ductility of the weld.

Contact:

www.aubertduval.com