钢铁之家
www.steels.org.cn

全球钢号百科！

Global Steel Grade Encyclopedia

涵盖的行业或国家与地区类别

ASTM 国材料与试验协会　GJB 国家军用标准　SAE 动力机械工程师协会　EU 前欧洲标准化　AISI 美国钢铁学会　DIN 德国工业标准　AMS 国空航天材料规范　ISO 国际标准　JASO 日本汽车标准组织

EN 欧洲标准　JB 中国机械行业标准　UNS 统一编号系统　UNI 意大利标准　ASME 美国机械工程师协会　SS 瑞典标准　GB 国家标准　JIS 日本工业标准

Steel

MLX®17

X1CrNiMoAlTi 12-11-2

SPECIFICATIONS

European standards:

- X1CrNiMoAlTi 12-11-2
- Numérical designation: 1.4612

UNS : S11000

AMS : 5937

COMPOSITION

Carbon	≤ 0.02
Chromium	12.00
Nickel	11.00
Molybdenum	2.00
Aluminum	1.50
Titane	0.30

TYPICAL MECHANICAL PROPERTIES

- After aging at 538°C / 8hrs:
  - UTS: 1590 N/mm^2
  - 0.2 % Yield strength: 1500 N/mm^2
  - Elongation (5d): 12 %
  - Impact strength KV: 45 J

HEAT TREATMENT REFERENCE

- After aging at 510°C / 8hrs:
  - UTS: 1725 N/mm^2
  - 0.2 % Yield strength: 1610 N/mm^2
  - 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.

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 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 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: 10.0×10^{-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/mm^2:
  - at 20°C: 195×10^3