AUBERT&DUVAL

Steel

X17U4

X5CrNiCuNb16-4

Variant:

X17U4W: Consumable electrode remelted steel

SPECIFICATIONS

European standards:

- X5CrNiCuNb16-4
- Numerical designation: 1.4542

UNS : S17400
AMS : 5643

- For the remelted grade:

WL : 1.4548
UNS : S17400
AMS : 5622

COMPOSITION

Carbon.....	< 0.07
Chromium.....	16.50
Nickel.....	4.00
Copper.....	4.00
Niobium + Tantalum.....	0.35

APPLICATIONS

- Forgings and mechanical parts requiring very good mechanical properties and an acceptable coefficient of friction.

TYPICAL MECHANICAL PROPERTIES

After solution treatment and aging.

- Harden for 4 hrs at 550°C followed by air cooling.
  - UTS: 1070 N/mm^2
  - 0.2 % Yield strength: 1000 N/mm^2
  - Elongation (5d): 10 %
  - Impact strength KV: 120 J

HEAT TREATMENT REFERENCE

- Harden for 4 hrs at 620°C followed by air cooling
  - UTS: 950 N/mm^2
  - 0.2 % Yield strength: 750 N/mm^2
  - Elongation (5d): 16 %
  - Impact strength KV: 140 J

CHARACTERISTICS

- Precipitation hardened martensitic stainless steel.
- Good resistance to various corrosive agents.
- Good weldability.

HEAT TREATMENT

- Delivered condition:
  - We supply this steel either in the “solution treated” or in the “solution treated and aged” condition.

- Aging
  - After solution treatment this steel must undergo precipitation hardening (or "aging") in order to achieve its mechanical properties.

- The two most common aging treatments are:
  - 4 hours at 550°C for UTS: 1070 N/mm^2.
  - 4 hours at 620°C for UTS: 950 N/mm^2.

- Other strength levels can be achieved. The highest level corresponds to aging for 1 hr at 480°C for UTS: 1300 N/mm^2 approx. At this ultimate level of resistance, there is a risk of stress corrosion in service.

PHYSICAL PROPERTIES

- Density: 7.8

- Mean coefficient of expansion in m/m.°C:
  - between 20°C and 200°C: 10.4×10^{-6}
  - between 20°C and 400°C: 11.1×10^{-6}
  - between 20°C and 600°C: 11.7×10^{-6}

- Modulus of elasticity in N/mm^2:
  - at 20°C: 200×10^3

- Thermal conductivity in $W.m/m^2.°C$:
  - at 20°C: 16

- Specific heat in J/g.°C:
  - at 20°C: 0.46

- Electrical resistivity in $\mu\Omega.cm^2/cm$:
  - at 20°C: 80

Contact:

www.aubertduval.com