AUBERT&DUVAL

Steel

X15U5W

X5CrNiCu15-5

Consumable electrode remelted steel

SPECIFICATIONS

European standard:

- X5CrNiCu15-5

WL : 1.4545
UNS : S15500
AMS : 5659

COMPOSITION

Carbon	< 0.07
Chromium	15.00
Nickel	5.00
Copper	3.00
Niobium	0.30

TYPICAL MECHANICAL PROPERTIES

HEAT TREATMENT REFERENCE

- Harden for 4 hrs at 550°C followed by air cooling.
  - UTS: 1120 N/mm^2
  - 0.2 % Yield strength: 1060 N/mm^2
  - Elongation (5d): 15 %
  - Impact strength KV: 130 J

- 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: 160 J

APPLICATIONS

- Forgings and mechanical parts requiring very good mechanical properties as well as good resistance to fatigue and sudden rupture.
  Better coefficient of friction than austenitic stainless steels.

CHARACTERISTICS

- Precipitation hardened martensitic stainless steel.
- Melting: consumable electrode remelted steel.
- Good mechanical properties in the longitudinal and transverse directions.
- Excellent toughness, ductility and fatigue properties.
- Good resistance to various corrosive agents.
- Good weldability.

HEAT TREATMENT

- Delivered condition:
  - We supply this steel either in the “solution treated” or the “solution treated and aged” condition, in most cases 550°C/ 4hrs for UTS $\geq$ 1070 N/mm^2.

- 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: 1120 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: 1350 N/mm^2 approx.

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 μΩ.cm^2/cm:
  - at 20°C: 80

Contact:

www.aubertduval.com