

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

## TYPICAL MECHANICAL PROPERTIES

After solution treatment and aging.

- Harden for 4 hrs at 550°C followed by air cooling.
  - UTS: 1070 N/mm<sup>2</sup>
  - 0.2 % Yield strength: 1000 N/mm<sup>2</sup>
  - 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<sup>2</sup>
  - 0.2 % Yield strength: 750 N/mm<sup>2</sup>
  - Elongation (5d): 16 %
  - Impact strength KV: 140 J

## 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.

## CHARACTERISTICS

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

## HEAT TREATMENT

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- 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<sup>2</sup>.
  - 4 hours at 620°C for UTS: 950 N/mm<sup>2</sup>.
- Other strength levels can be achieved. The highest level corresponds to aging for 1 hr at 480°C for UTS: 1300 N/mm<sup>2</sup> approx. At this ultimate level of resistance, there is a risk of stress corrosion in service.

## PHYSICAL PROPERTIES

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- |  |                         |   |      |
|--|-------------------------|---|------|
| • Density:                                     | 7.8                     | • Thermal conductivity in W.m/m <sup>2</sup> .°C:   |      |
|  |                         | - at 20°C:  | 16   |
| • Mean coefficient of expansion in m/m.°C:     |                         | • Specific heat in J/g.°C:                          |      |
| - between 20°C and 200°C:                      | 10.4 x 10 <sup>-6</sup> | - at 20°C:  | 0.46 |
| - between 20°C and 400°C:                      | 11.1 x 10 <sup>-6</sup> |   |      |
| - between 20°C and 600°C:                      | 11.7 x 10 <sup>-6</sup> | • Electrical resistivity in μΩ.cm <sup>2</sup> /cm: |      |
| • Modulus of elasticity in N/mm <sup>2</sup> : |                         | - at 20°C:  | 80   |
| - at 20°C:                                     | 200 x 10 <sup>3</sup>   |   |      |

Contact:

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The data provided in this document represent typical or average values rather than maximum or minimum guaranteed values. The applications indicated for the grades described are given as guidance only in order to help the reader in his personal assessment. Please note that these do not constitute a guarantee whether implicit or explicit as to whether the grade selected is suited to specific requirements. Aubert & Duval's liability shall not under any circumstances extend to product selection or to the consequences of that selection.