



SPECIFICATIONS

European standards:

- X4CrNiMoN21-9-4

Medical standards:

- ISO 5832-9
- BS 7252 part 9
- ASTM F1586

TYPICAL MECHANICAL PROPERTIES

- In the solution treated condition:

| | |
|-------------------------|-----------------------|
| - UTS: | 860 N/mm ² |
| - 0.2 % Yield strength: | 450 N/mm ² |
| - Elongation (5d): | 40 % |

- In the work hardened condition:

This steel is ideal for cold work hardening.

For small diameters (please contact us), it may be supplied in the following conditions:

| | |
|-------------------------|--|
| - UTS: | between 900 and 1175 N/mm ² |
| - 0.2 % Yield strength: | between 600 and 1200 N/mm ² |
| - Elongation (5d): | between 13 and 35% |

COMPOSITION

| | |
|-----------------|------------------------------|
| Carbon..... | ≤0.06 |
| Chromium..... | 21.00 |
| Nickel..... | 9.50 |
| Manganese..... | 4.00 |
| Molybdenum..... | 2.20 |
| Nitrogen..... | 0.40 |
| | With the addition of Niobium |

APPLICATIONS

- Production of permanent surgical implants and devices for osteosynthesis.

CHARACTERISTICS

- Austenitic stainless steel with excellent corrosion resistance combined with good mechanical properties.
- Rigorous selection of the raw materials used in the steel and the use of consumable electrode remelting guarantee the very high quality required for the production of surgical implants.
- Due to its composition and the absence of ferrite, this steel is totally non-magnetic and has very good resistance to pitting and crevice corrosion in a physiological medium (Cr % + 3.3Mo % + 15N % > 32).
- Niobium stabilisation results in excellent resistance to intercrystalline corrosion.
- The combination of the melting and processing methods ensures that a homogeneous, fine-grained material with a very low level of inclusions is obtained. This results in excellent fatigue resistance which is ideal for the production of parts subject to high stresses.

HEAT TREATMENT

- Solution treatment:
 - Heat to 1050/1150°C
 - Water or air quench depending on the thickness of the parts.

PHYSICAL PROPERTIES

- Density: 7.9
- Mean coefficient of expansion in m/m.°C:
 - between 20°C and 200°C: 16.6×10^{-6}
 - between 20°C and 400°C: 17.4×10^{-6}
 - between 20°C and 600°C: 18.1×10^{-6}
- Modulus of elasticity in N/mm²:
 - at 20°C: 195×10^3
- Thermal conductivity in W.m/m².°C:
 - at 100°C: 15
 - at 400°C: 20
 - at 800°C: 26
- Electrical resistivity in $\mu\Omega.cm^2/cm$:
 - at 20°C: 80
- Absolute magnetic permeability in H/m:
 - 1.26×10^{-6}
- Specific heat in J/g.°C: 0.50

Contact:

www.aubertduval.com

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.