

## SPECIFICATIONS

European standards:

- X40CrMoVN16-2
- W.Nr: 1.4123

UNS : S42025

## COMPOSITION

Carbon.....	0.40
Chromium.....	15.50
Molybdenum.....	2.00
Vanadium.....	0.30
Nitrogen.....	0.20

## TYPICAL MECHANICAL PROPERTIES

- Annealed condition: Heat to 840°C followed by slow cooling:
  - Brinell Hardness: 207
- Hardened at 1010°C, oil or gas quench. Temper at 180°C.
  - HRC: 57
- Hardened at 1010°C, oil or gas quench. Double temper at 500°C.
  - HRC: 57

### HEAT TREATMENT REFERENCE

- Hardened at 1050°C, oil quench. Sub-zero treatment (-70/-80°C). Temper at 180°C.
  - HRC: 59
- Hardened at 1075°C, oil quench. Sub-zero treatment (-70/-80°C). Double temper at 500°C.
  - HRC: 59

## APPLICATIONS

- Friction components.
- Cutting blades in corrosive environments.
- Surgical instruments.
- Mould components for synthetic material processing.

## CHARACTERISTICS

- Martensitic stainless steel combining remarkable corrosion resistance, a high level of hardness, very good abrasion resistance and excellent cutting properties (>440C).
- Treatments including tempering at 180°C are recommended to obtain maximum resistance to corrosion. Treatments including double tempering at 500°C are used for hot applications or in case of surface treatments involving a rise in temperature of up to 500°C.
- From some applications the steel may be core treated to obtain a strength of 900 to 1200N/mm<sup>2</sup> with the aim of subsequently undergoing induction surface hardening to obtain 59HRC.

## HEAT TREATMENT

- Harden:
  - Heat to 1050/1075°C
  - Sub-zero treatment (-70/80°C) if required
  - Oil or gas pressure quench (> 3 bars)
- Temper:
  - According to hardness required

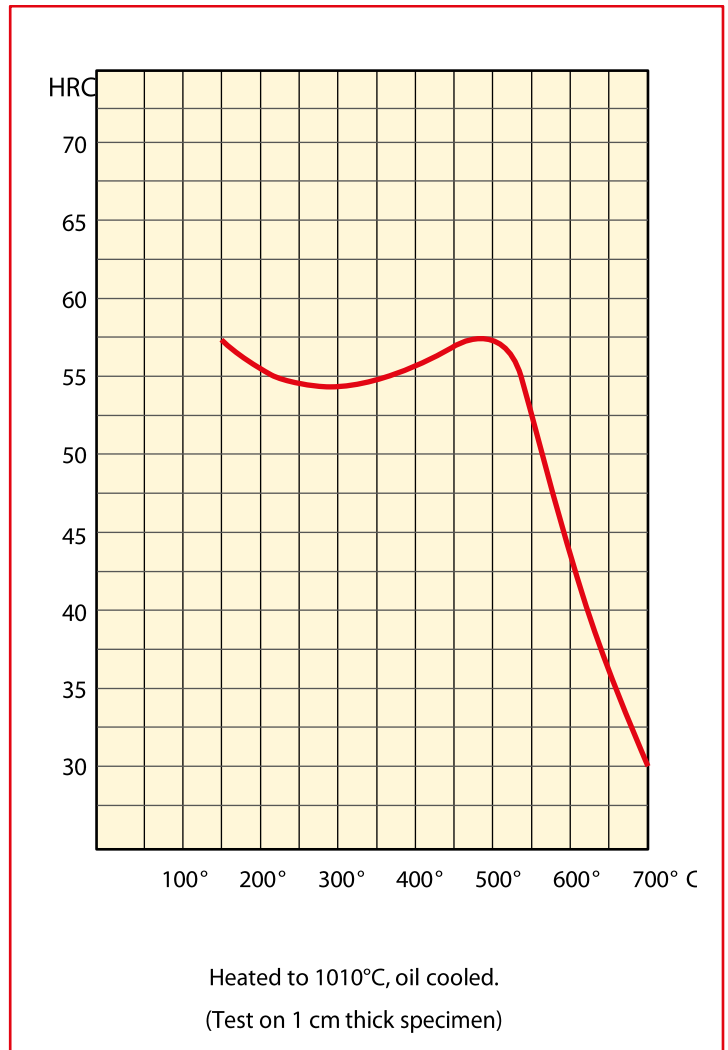
## PHYSICAL PROPERTIES

- Density: 7.7
- Mean coefficient of expansion in m/m.°C:
  - between 20°C and 100°C:  $10.4 \times 10^{-6}$
  - between 20°C and 300°C:  $10.5 \times 10^{-6}$
  - between 20°C and 500°C:  $10.8 \times 10^{-6}$
  - between 20°C and 700°C:  $11.4 \times 10^{-6}$
- Critical points:
  - Ac 1: 840°C
  - Ac 3: 1000°C

## FORGING

- 1200/1000°C

## TEMPERING CURVE



Contact:

[www.aubertduval.com](http://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.