

SPECIFICATIONS

European standard:

EN : X36CrMoV5-1*

AFNOR: X35CrMoV5*

W.Nr : 1.2340

DIN : X36CrMoV5-1

AISI : ~H11

*Symbolic designation

PHYSICAL PROPERTIES

- Density: 7.8
- Mean coefficient of expansion in m/m.°C:
 - between 20°C and 200°C: 11.5×10^{-6}
 - between 20°C and 400°C: 12.3×10^{-6}
 - between 20°C and 600°C: 12.9×10^{-6}
- Critical points:
 - Ac 1: 840°C
 - Ac 3: 900°C

COMPOSITION

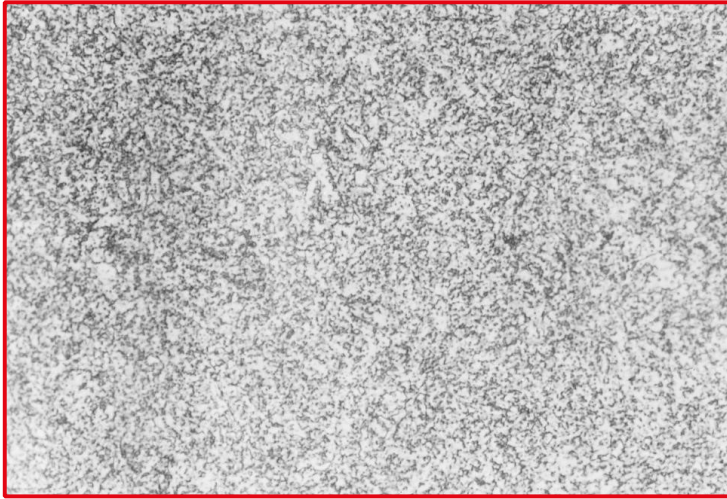
Carbon.....	0.35
Chromium.....	5.00
Moybdenum	1.30
Vanadium.....	0.40

APPLICATIONS

- Dies for light alloy die casting
- Tools for extruding aluminium alloys.

CHARACTERISTICS

- High level of toughness
- Good resistance to high temperature oxydation
- Excellent thermal fatigue resistance



AS-DELIVERED STRUCTURE IN THE ANNEALED CONDITION

According to process B2254

Correct structure
(Mx500)

- Brinell hardness of approximately 235 in the softened condition.

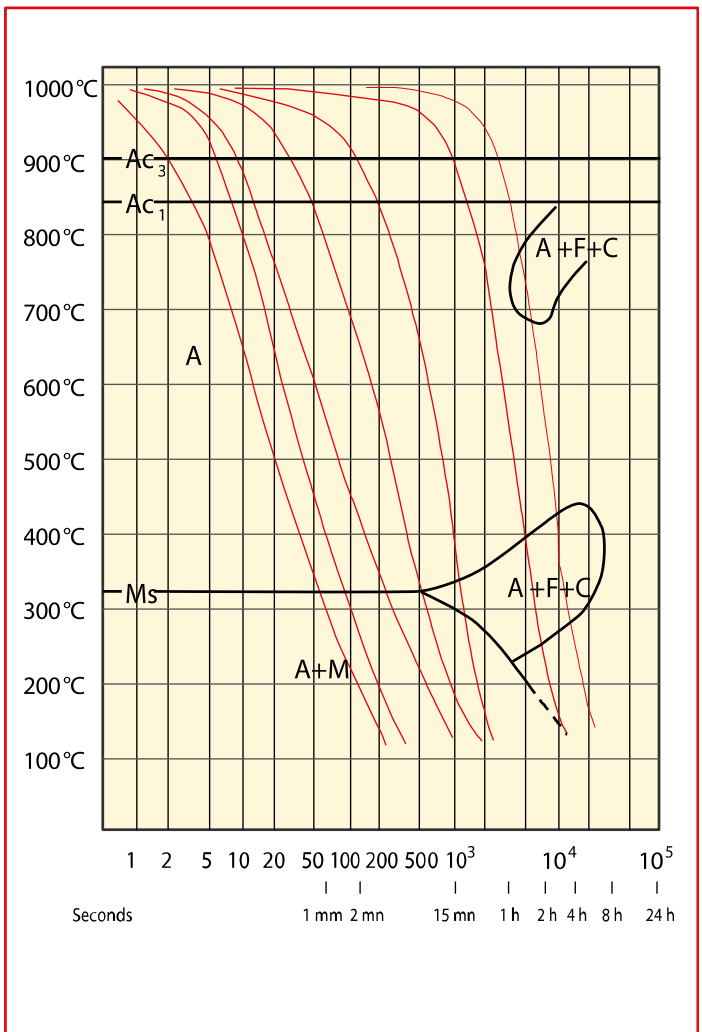
HEAT TREATMENT

- Harden:
 - Preheating in 2 steps : 600°C and 800°C
 - Austenitizing temperature : 990°C

Quench to reach a maximum cooling rate with a high gas pressure.

In case of large dies, a martempering bath is suitable, with a stop quenching at 500°C that can be followed by a cooling in air or by a second stop quenching below 250°C.

It is recommended that heating should take place in a neutral atmosphere.



CCT DIAGRAM

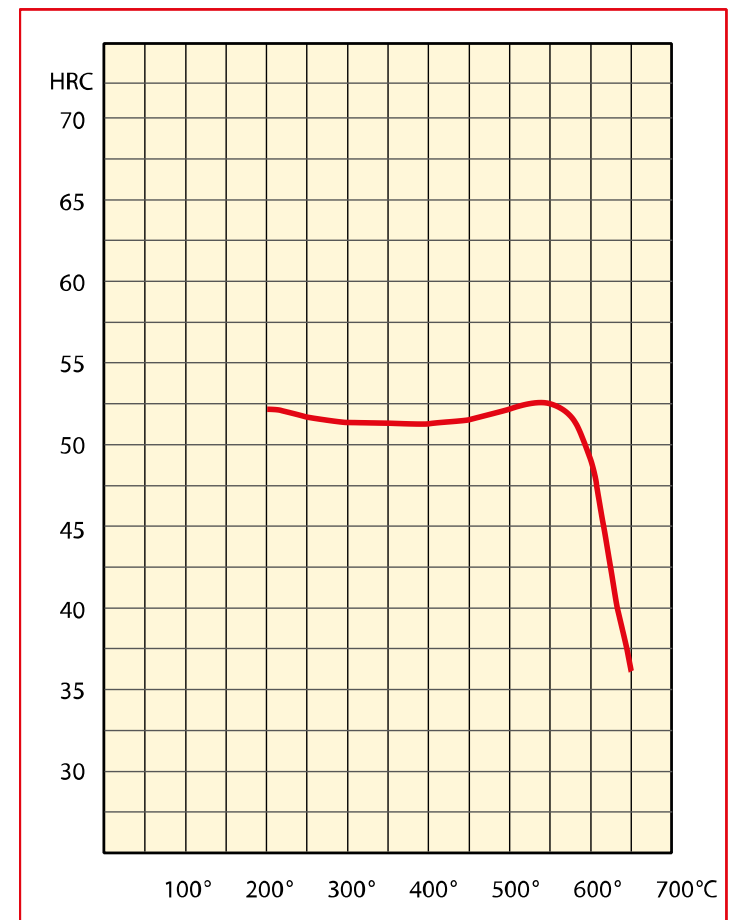
Austenitizing at 990°C

HEAT TREATMENT

- Temper:
 - 1st temper at 550°C
 - 2nd temper between 550°C and 650°C according to hardness required

TEMPERING CURVE

1 cm thick test piece

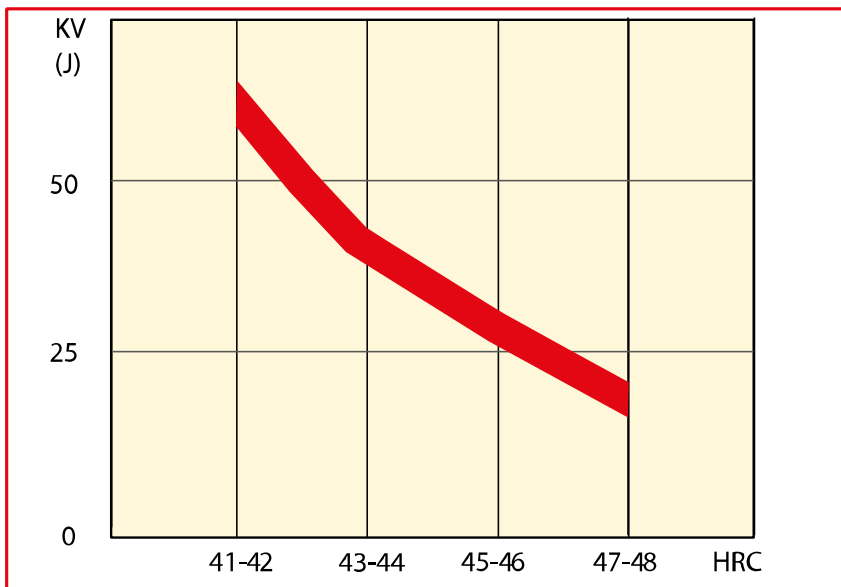


STRUCTURE AFTER HEAT TREATMENT

According to process B2254

*Correct structure
(Mx500)*

MECHANICAL PROPERTIES



VARIATION OF CHARPY IMPACT
WITH HARDNESS

SURFACE TREATMENT

- ADC3 is suitable for all nitriding processes. This treatment results in a hard surface layer providing improved resistance to erosion and wear. The hardness obtained after nitriding treatment is of the order of 1000 Vickers.

WELDING

• Parent metal in the annealed condition:

- Preheat to 250-300°C
- Weld repair:
 - Filler metal **SR3S**
 - Stress relieve at 750°C
 - Slow cool (furnace and air)

• Parent metal in the hardened condition:

- Preheat to 250-300°C
- Workshop repair:
 - Filler metal **SR3S**
 - Temper 50°C below the highest previous tempering temperature
 - Air cool
- On-site repair:
 - Filler metal **MARVAL18S**
 - Air cool.

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.