

Steel

BMV4

40CrMoV20

Variant:

BMV4W: Consumable electrode remelted steel

SPECIFICATIONS

40CrMoV20

AIR : 40 CDV 20

UNS : T20811

For the remelted grade:

AIR : E-40 CDV 20

WL : 1.7784

UNS : T20811

AMS : 6487

COMPOSITION

Carbon.....	0.40
Chromium.....	5.00
Molybdenum.....	1.30
Vanadium.....	0.45

TYPICAL MECHANICAL PROPERTIES

- Annealed condition: heat to 830°C followed by slow cooling
 - Brinell hardness: 212

HEAT TREATMENT REFERENCE

- Quench and double temper at 570°C 2 hours).

Tensile test at ambient temperature:

- UTS:	1850 N/mm ²
- 0.2 % Yield strength:	1450 N/mm ²
- Elongation (5d):	9 %
- Impact strength KCU	30 J/cm ³

Rapid Tensile test at temperature:

- at 300°C:
 - UTS: 1600 N/mm²
 - 0.2 % Yield strength: 1350 N/mm²
 - Elongation (5d): 12 %
 - Impact strength KCU 40 J/cm³
- at 400°C:
 - UTS: 1500 N/mm²
 - 0.2 % Yield strength: 1300 N/mm²
 - Elongation (5d): 13 %
 - Impact strength KCU 50 J/cm³
- at 500°C:
 - UTS: 1350 N/mm²
 - 0.2 % Yield strength: 1150 N/mm²
 - Elongation (5d): 14 %
 - Impact strength KCU 55 J/cm³

APPLICATIONS

- Mechanical parts working at high temperatures
- Fasteners for high temperature environments

CHARACTERISTICS

- Good mechanical strength at temperature
- Good creep resistance up to 400°C
- Nitrurable steel

Creep

Temperature in °C	Load in N/mm ² causing creep fracture		
	100hrs	300hrs	1000hrs
400	1380	1320	1240

HEAT TREATMENT

- Harden:
 - Preheat at 750°C.
 - Heat to 1010°C.
 - Air cool.
- Temper:
 - Two successive tempers between 550°C and 650°C depending on properties required.

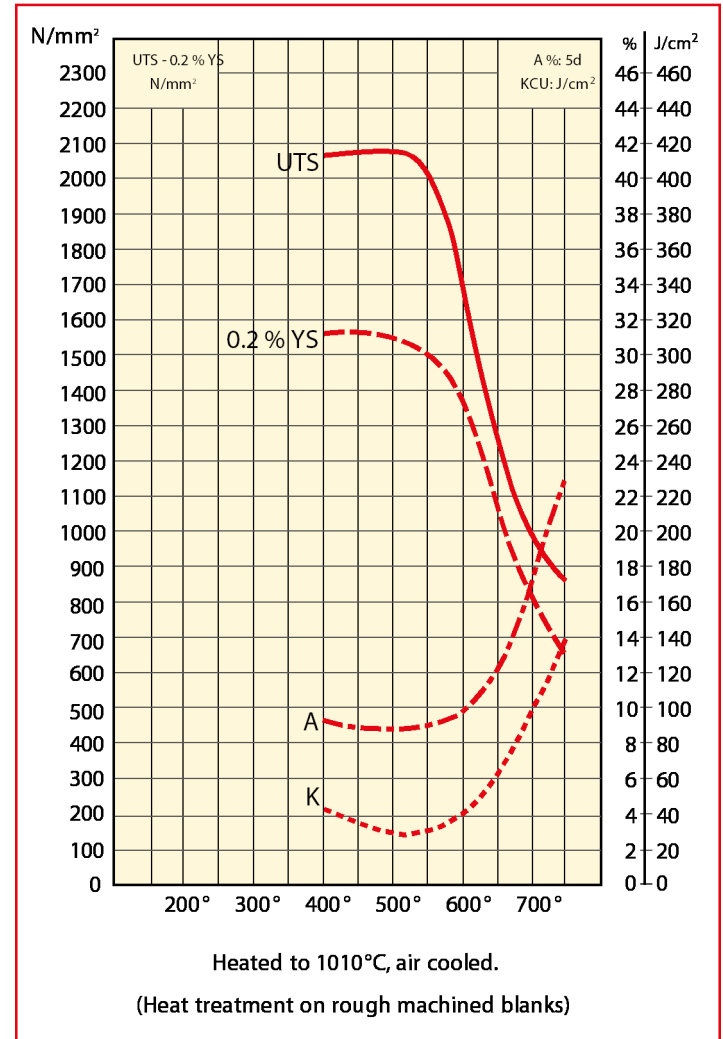
PHYSICAL PROPERTIES

- Density: 7,8
- Mean coefficient of expansion in m/m.°C:
 - between 20°C and 200°C: 11.9×10^{-6}
 - between 20°C and 400°C: 12.6×10^{-6}
 - between 20°C and 600°C: 13.4×10^{-6}
 - between 20°C and 800°C: 13.9×10^{-6}
- Critical points:
 - Ac 1: 840°C
 - Ac3: 900°C
- Thermal conductivity in W.m/m².°C:
 - at 20°C: 29

FORGING

- 1150/1000°C

TEMPERING CURVE



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.