SIMOLD S131

SPECIFICATION SHEET

Description

This steel is in the category generally labeled as Mold Steels, it exhibits increased hardenability compared to SIMOLD 2738. Additions of vanadium are made to increase the achievable work hardness and improve the tempering resistance. This grade achieves a homogenous hardness distribution promoting good machinability, good polishability and is suitable for texturing. Also available as ESR remelted with higher polishability (SIMOLD S131 R).

Chemical composition (in weight %)

C	Si	Mn	Cr	Ni	Mo	V	Others
0.28	0.15	1.40	1.30	1.00	0.50	0.12	-

Application

Typically used for relatively low temperature applications such as injection molds, synthetic plastic molds, particularly suitable for large molds in different fields of industry.

Hardness range

SIMOLD 2738: 280 - 325 HBW (approx. 29-35 HRc / 950-1100 N/mm²)

SIMOLD S131: 310 - 360 HBW (approx. 33-39 HRc / 1050-1220 N/mm²)

SIMOLD S133: 360 – 400 HBW (approx. 39- 43 HRc / 1220- 1360 N/mm²)

Physical properties

Modulus of elasticity: [10^3 x N/mm²]: 205

Density [g/cm³]: 7.8

Specific heat capacity [J/kgK]: 460

Thermal conductivity [W/mK]

20 °C	100 °C	200 °C	300 °C	400 °C	500 °C	600 °C	700 °C
38.9	38.7	38.3	39	39.8	38.9	37.9	32.6

Coefficient of linear thermal expansion 10^{-6} °C^{-1}

20-100 °C	20-200 °C	20-300 °C	20-400 °C	20-500 °C	20-600 °C	20-700 °C
11.7	12.3	13	13.3	13.7	13.7	14

SIJ METAL RAVNE d.o.o.
Koroška cesta 14, 2390 Ravne na Koroškem, Slovenia, EU
+386 2 870 7000
info@metalravne.com
sij.metalravne.com

sij | metal ravne

Continous cooling transformation (CCT) diagram

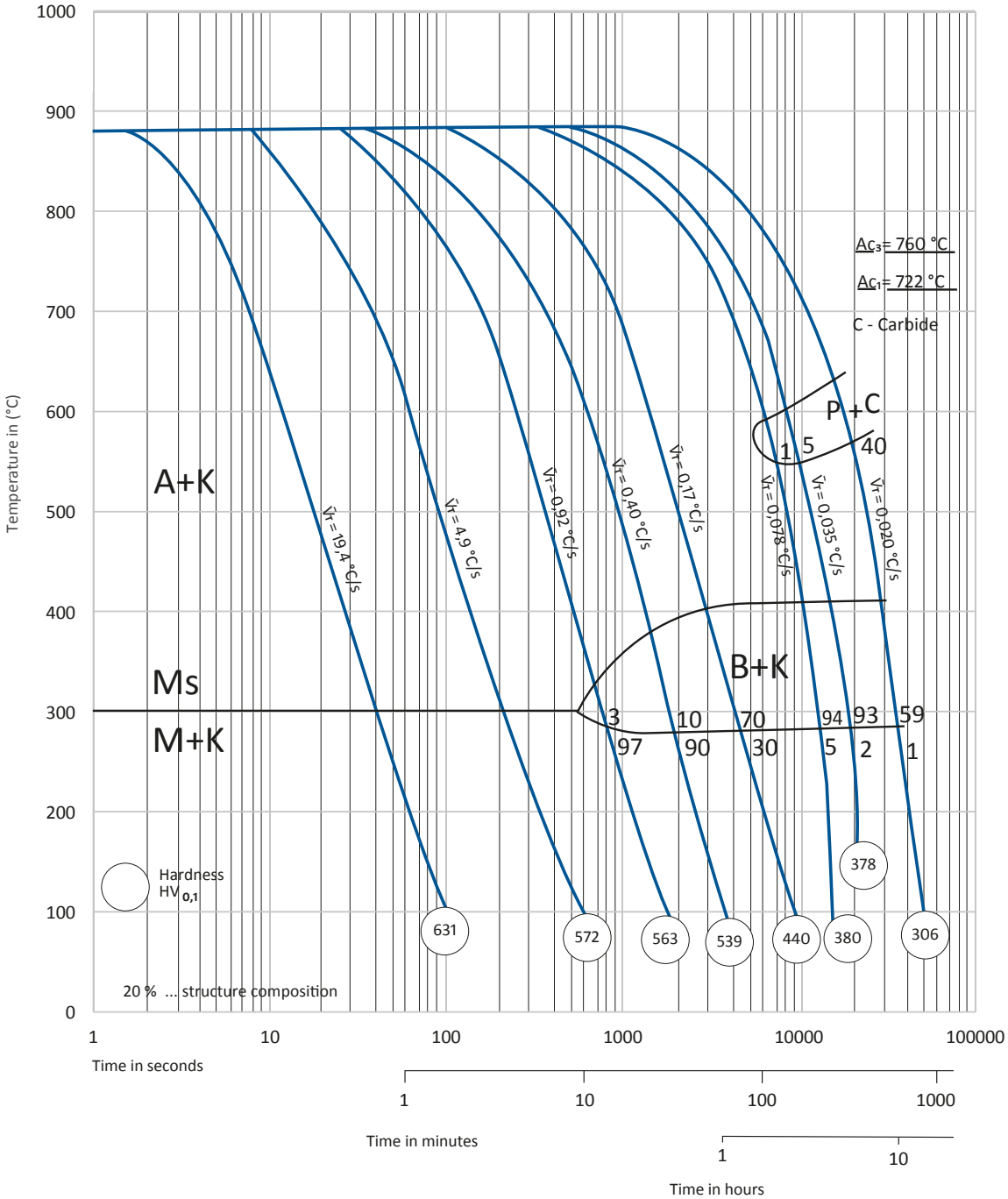

Fig. 1: Austenitizing temperature: 880 °C, holding time: 20 min

Forging

1100-950 °C

Soft annealing

Heat to 710-740 °C, followed by slow cooling, producing a hardness of max. 235 HBW.

Stress relieving

aprox. 650 °C, to remove residual machining stresess before final heat treatment.
aprox. 550 °C, after machining in prehardened condition

Hardening

Harden from an austenitization temperature of 860-880 °C, quenching in oil, polymer or vacuum, hardness after quench is approx. 52 HRc.

Tempering

Tempering temperature [°C] vs. hardness [HRc] vs. tensile strenght [N/mm2]

Tempering [°C]	20 °C	100 °C	200 °C	300 °C	400 °C	500 °C	600 °C	700 °C
[HRc]	52	51.5	50.5	49.5	47.5	45	38	25
[N/mm²] ≈	1790	1760	1700	1650	1550	1440	1200	850

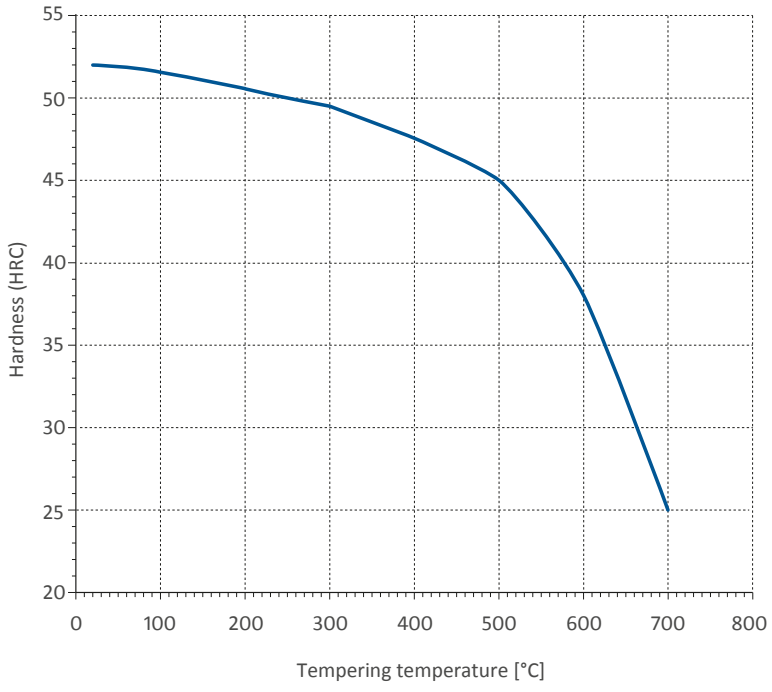

Fig. 2:
Tempering Diagram

Cleanliness

ASTM E45 method A, (conventional):

At	Bt	Ct	Dt	Ah	Bh	Ch	Dh
<=1.5	<=1.5	<=1.5	<=1.5	<=1.5	<=1.5	<=1.5	<=1.5

DIN 50602 method K (conventional); K4<=20

Polishability

According to A rating;

- SIMOLD S131: A2 - High Bright Mirror
- SIMOLD S131R: A2-A1

SIJ METAL RAVNE d.o.o.
Koroška cesta 14, 2390 Ravne na Koroškem, Slovenia, EU
+386 2 870 7000
info@metalravne.com
sij.metalravne.com