

I Buderus Hot Work Tool Steel 2367 ISO-B

	C	Si	Mn	P	S	Cr	Mo	V
Typical analysis	0.36	0.40	0.45	0.020	0.003	5.00	3.00	0.50
Chemical composition as per SEL	0.35–0.40	0.30–0.50	0.30–0.50	≤ 0.030	≤ 0.020	4.80–5.20	2.70–3.20	0.40–0.60

Figures in % by mass

Register of European Steels (SEL)	X 38 CrMoV 5-3
DIN EN ISO 4957	X 38 CrMoV 5-3
AFNOR	Z 38 CDV 5.3

Characteristics

High-alloy hot work tool steel, CrMoV-based, with greater high-temperature strength and better tempering properties than grade 2344.

Extremely high hot wear resistance compared to grades 2344 and 2365.

Applications

Extrusion tools including pipe extruders, especially for liners for pressing steel, and for pipe mandrels (including water cooling).

Forging dies and press dies for extreme wearing stresses.

Die-casting moulds for Al and Mg die-casting.

Delivered condition

Annealed to max. 229 HB

Hardened and tempered to customer specification on request

Physical properties (reference values)

Thermal expansion coefficient ($10^{-6}/K$)	20–100 °C	20–250 °C	20–500 °C
	11.9	12.6	13.1
Thermal conductivity (W/mK)	20 °C	250 °C	500 °C
	29.7	33.5	34.8
Young's modulus (GPa)	20 °C	250 °C	500 °C
	210	195	172

High-temperature yield strength

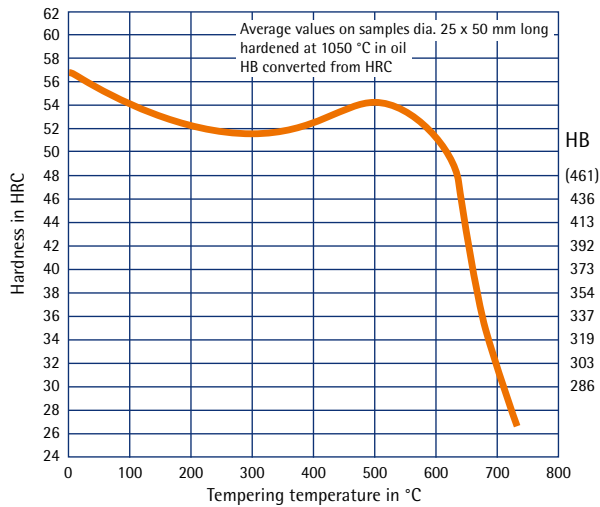
Hardened and tempered state	0.2 % yield strength in MPa at temperature			
	450 °C	500 °C	550 °C	600 °C
~ 1570 MPa	1180	1130	1030	770
~ 1370 MPa	1030	880	830	690
~ 1180 MPa	740	640	570	490

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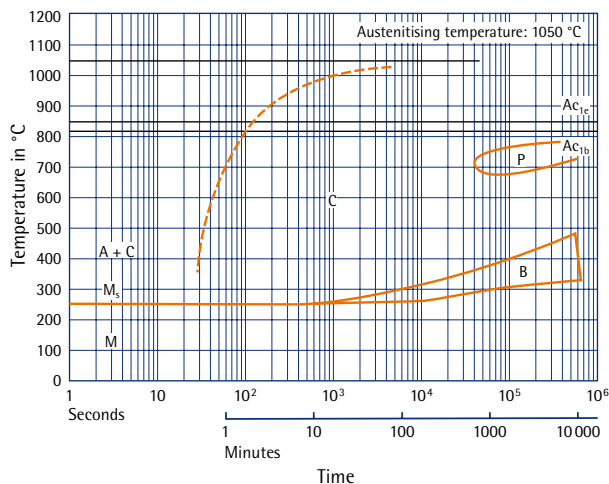
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Heat treatment	
Stress relieving	Temperature: Approx. 650 °C in the annealed state Approx. 550 °C in the hardened and tempered state Duration: 1 hour per 50 mm wall thickness Cooling: Furnace
Soft annealing	Temperature: 820 °C Duration: 1 hour per 25 mm wall thickness Cooling: Furnace
Hardening	Temperature: 1050 °C Duration: 30 seconds per mm wall thickness
Quenching hardness	Max. 58 HRC in oil, hot bath, protective atmosphere, vacuum or air
Tempering (at least twice)	Temperature: See tempering curve Duration: 1 hour per 25 mm wall thickness Cooling: Air
Working hardness	30–50 HRC

Tempering curve



TTT curve (continuous)



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