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Buderus Cold Work Tool Steel 2379 ISO-B

	C	Si	Mn	P	S	Cr	Mo	V
Typical analysis	1.55	0.20	0.30	0.030	0.005	12.0	0.80	1.00
Chemical composition as per SEL	1.45–1.60	0.10–0.60	0.20–0.60	≤ 0.030	≤ 0.030	11.0–13.0	0.70–1.00	0.70–1.00

Figures in % by mass

Register of European Steels (SEL)	X 153 CrMoV 12
DIN EN ISO 4957	X 153 CrMoV 12
AFNOR	Z 160 CDV 12
AISI	~ D 2
BS	BD 2

Characteristics

Very wear-resistant and low-distortion heavy-duty blanking tool steel with outstanding toughness achieved by special heat treatment; nitridable.

Applications

Blanking and punching dies, and precision-blanking dies. Cold-extrusion tools, fracture-prone and complicated cuts, shearing blades; in the nitrided state for cutting austenitic grades. Highly stressed plastic moulds, mould inserts with abrasive stress.

Delivered condition

Annealed to max. 255 HB

Physical properties (reference values)

Thermal expansion coefficient (10^{-6}/K)	20–100 °C 9.0	20–250 °C 12.0	20–500 °C 13.0
Thermal conductivity (W/mK)	20 °C 20.0	250 °C 21.0	500 °C 22.0
Young's modulus (GPa)	20 °C 215	250 °C 196	500 °C 180

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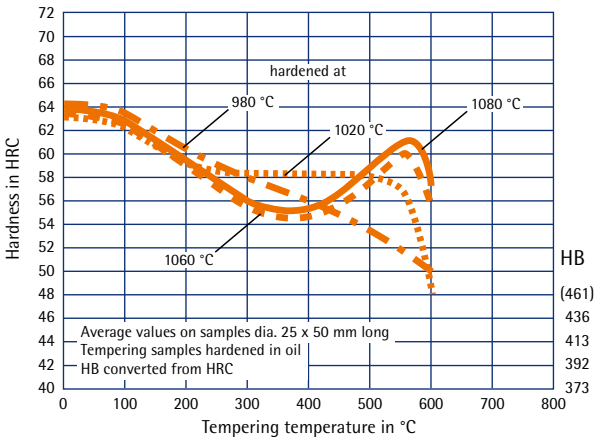
Heat treatment		
Stress relieving	Temperature: Duration: Cooling:	Approx. 650 °C in the annealed state Approx. 200 °C in the hardened state after special hardening 1 hour per 50 mm wall thickness Furnace
Soft annealing	Temperature: Duration: Cooling:	820 °C 1 hour per 25 mm wall thickness Furnace
Hardening	Temperature: Duration:	980–1080 °C, see tempering curve 90 seconds per mm wall thickness
Quenching hardness	Max. 63 HRC	in oil, hot bath, vacuum or air
Tempering	Temperature: Duration: Cooling:	See tempering curve 1 hour per 25 mm wall thickness Air
Working hardness	58–63 HRC	

Special heat treatment: Hardening 1050–1080 °C (up to 1100 °C). Tempering 500–520 °C or 550–570 °C for subsequent gas or bath nitriding.

Tempering curve



TTT curve (continuous)