

I Buderus Cold Work Tool Steel 2080

	C	Si	Mn	P	S	Cr
Typical analysis	2.10	0.30	0.30	0.025	0.005	12.0
Chemical composition as per SEL	1.90–2.20	0.10–0.60	0.20–0.60	≤ 0.030	≤ 0.030	11.0–13.0

Figures in % by mass

Register of European Steels (SEL)	X 210 Cr 12
DIN EN ISO 4957	X 210 Cr 12
AFNOR	Z 200 C 12
AISI	~ D 3
BS	BD 3

Characteristics

Highly wear-resistant, low-distortion 12% Cr alloyed cold work tool steel, but not recommended for nitriding.

Applications

Shearing blades for cutting sheet steel up to about 3 mm thick, deep drawing dies, broaching tools, drawing cones, compression moulding dies for the ceramics and pharmaceutical industry, sandblasting nozzles and trimming dies.

Highly stressed plastic moulds and mould inserts in small dimensions.

Delivered condition

Annealed to max. 248 HB

Physical properties (reference values)

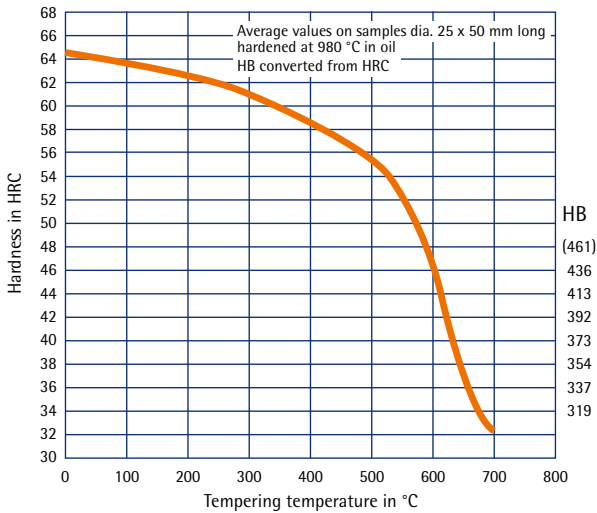
Thermal expansion coefficient ($10^{-6}/K$)	20–100 °C	20–250 °C	20–500 °C
	9.0	12.0	13.0
Thermal conductivity (W/mK)	20 °C	250 °C	500 °C
	20.0	21.0	22.0
Young's modulus (GPa)	20 °C	250 °C	500 °C
	215	196	180

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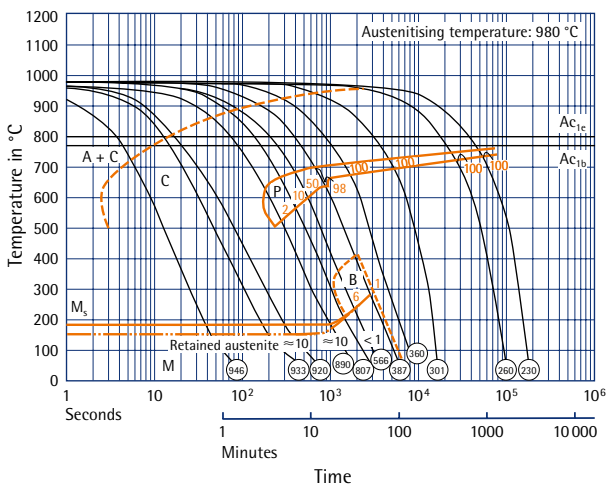
2080

Heat treatment	
Stress relieving	Temperature: Approx. 650 °C in the annealed state Approx. 180 °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: 980 °C Duration: 1.5 minutes per mm wall thickness
Quenching hardness	Max. 64 HRC in oil, hot bath, vacuum or air
Tempering or stress relieving	Temperature: See tempering curve Duration: 1 hour per 25 mm wall thickness Cooling: Air
Working hardness	59–63 HRC

Tempering curve



TTT curve (continuous)



Note: Air quenching from 950–980 °C is also possible up to a thickness of 30 mm.
Surface pitting can occur with hot quenching in nitric baths.

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