

I Buderus Unalloyed Tool Steel 1730

	C	Si	Mn	P	S
Typical analysis	0.45	0.30	0.70	0.020	0.005
Chemical composition as per SEL	0.42–0.50	0.15–0.40	0.60–0.80	≤ 0.030	≤ 0.030

Figures in % by mass

Register of European Steels (SEL)	C 45 U
DIN EN ISO 4957	C 45 U
AFNOR	XC 48
AISI	SAE 1045
BS	C 45 E

Characteristics

Unalloyed tool steel with good machinability for mould frames and tool steel accessories or mounting plates. For surface hardening, the outer layer can be hardened up to 57 HRC.

Applications

Normalised: In mould-making and tool-making for built-on parts, base plates, tool frames with low stress, and for blow moulds.

Hardened: for blanking dies after stelling.

Delivered condition

Normalised to max. 190 HB

Physical properties (reference values)

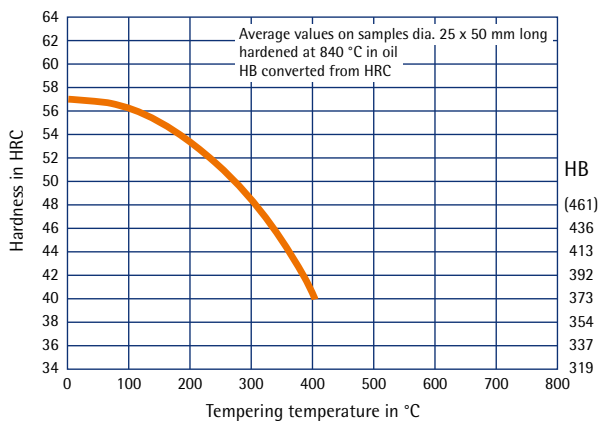
Thermal expansion coefficient ($10^{-6}/K$)	20–100 °C	20–250 °C	20–500 °C
	11.8	13.2	14.2
Thermal conductivity (W/mK)	20 °C	250 °C	500 °C
	41.0	39.0	35.0
Young's modulus (GPa)	20 °C	250 °C	500 °C
	215	197	175

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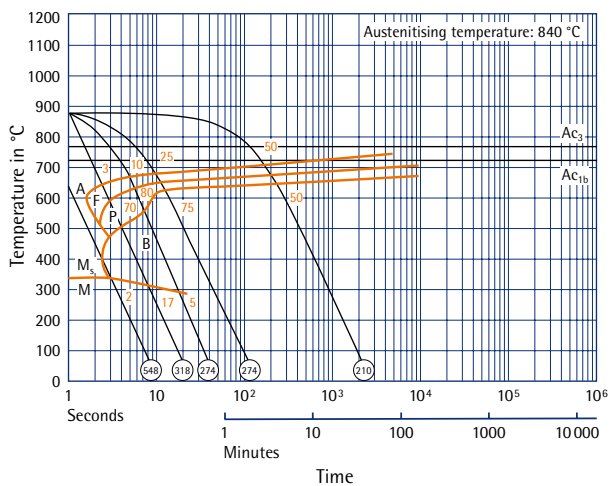
1730

Heat treatment	
Stress relieving	Temperature: Approx. 300 °C in the normalised state Duration: 1 hour per 50 mm wall thickness Cooling: Furnace
Soft annealing	Temperature: 710 °C Duration: 1 hour per 25 mm wall thickness Cooling: Furnace
Hardening	Temperature: 840 °C Duration: 30 seconds per mm wall thickness
Quenching hardness	Max. 57 HRC in oil or air
Tempering	Temperature: See tempering curve Duration: 1 hour per 25 mm wall thickness Cooling: Air
Working hardness	46–57 HRC

Tempering curve



TTT curve (continuous)



Note: The through-hardening diameter is 15 mm, the hardness penetration depth at 20–100 mm material thickness is 3–5 mm.

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