

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 and weldability, and high toughness. 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)

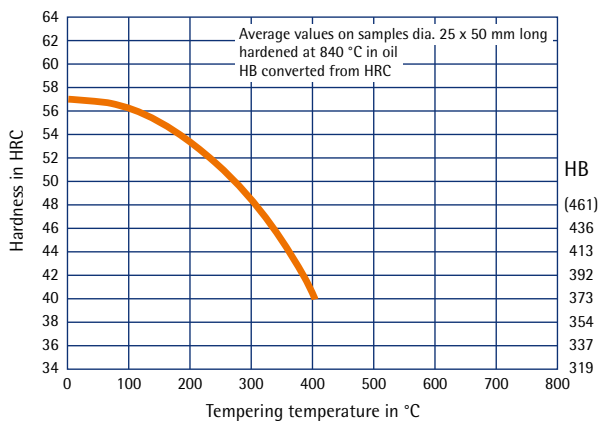
Thermal expansion coefficient ($10^{-6}/K$)	20–100 °C	20–250 °C	20–500 °C
	11.8	13.2	14.2
Thermal conductivity (W/mK)	20 °C	250 °C	500 °C
	41.0	39.0	35.0
Young's modulus (GPa)	20 °C	250 °C	500 °C
	215	197	175

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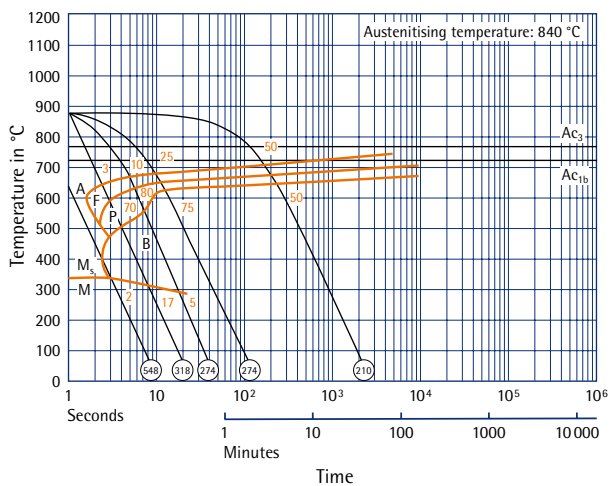
1730

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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