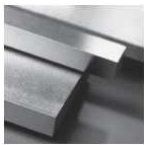


Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.1730
Description	C45U
BS	1.1730
AISI/SAE	1045
Search for alternatives in the ABRAMS STEEL GUIDE®	www.steel-guide.co.uk/alternatives/1.1730

Specifications



Precision flat steel without machining allowance [PFS]
L: 500 mm
L: 1,000 mm



Precision round steel without machining allowance [PRS]
bright drawn / ground, ISO h9
L: 1,000 mm



Round steel [RS]
black
L: 500 mm
L: 1,000 mm

Chemical composition BS 1.1730 (reference value %)

C	Si	Mn	P	S
0.42 – 0.5	0.15 – 0.4	0.6 – 0.8	0 – 0.03	0 – 0.03

Physical properties

Hardness (delivery condition)	max. 190 HB			
Tensile strength R_m (as received condition)	approx. 650 N/mm ²			
Working hardness	max. 54 HRC (surface hardness)			
Thermal expansion coefficient $10^{-6}m/(m \cdot K)$	20 - 100°C	20 - 200°C	20 - 300°C	20 - 400°C
	12.5	13.0	13.6	14.1
Thermal conductivity $W/(m \cdot K)$	20°C	350°C		
	44.9	41.6		

Technical properties

Unalloyed tool steel with excellent machining properties for unhardened parts (e.g. fixture construction), due to its carbon proportion (0.45 %) it can be hardened, but has a low depth of hardening. Shallow depth case-hardening steel with a hard surface and a tough core.

Applications

Mechanical engineering, construction materials, jigs, base plates, moulding frames, small dies, hand tools, simple knives, sledges, pliers, forks, hatchets, axes, shears, screwdrivers, chisels.

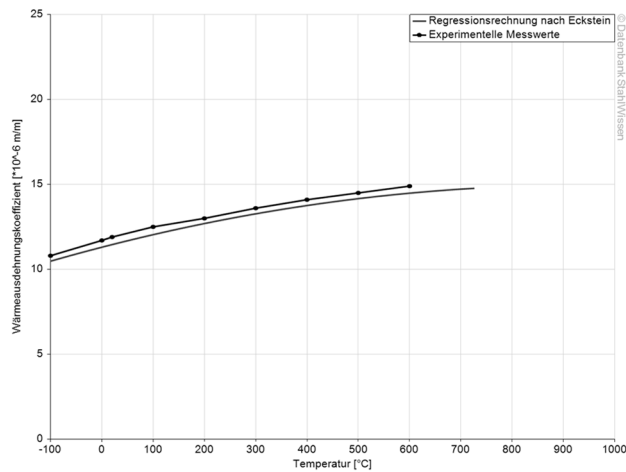


Heat treatment

Soft annealing	Temperature		Cooling		Hardness
	680 - 710°C		Furnace		max. 190 HB
Stress relief annealing	Temperature		Cooling		
	approx. 600 - 650°C		Furnace		
Hardening	Temperature		Quenching in		Hardness after quenching
	800 - 830°		Water		57 HRC
Tempering	100°C	200°C	300°C	350°C	
	57 HRC	54 HRC	49 HRC	42 HRC	

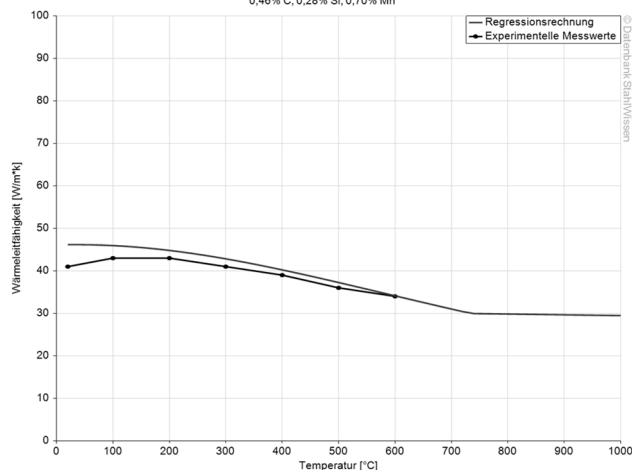
Thermal expansion coefficient diagram

Werkstoff: C45U, 1.1730



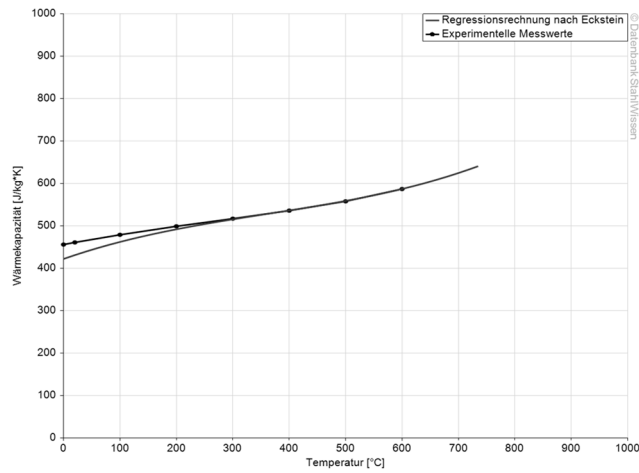
Thermal conductivity diagram

Werkstoff: C45U, 1.1730
 Regressionsrechnung mit folgender Analyse:
 0,46% C, 0,28% Si, 0,70% Mn



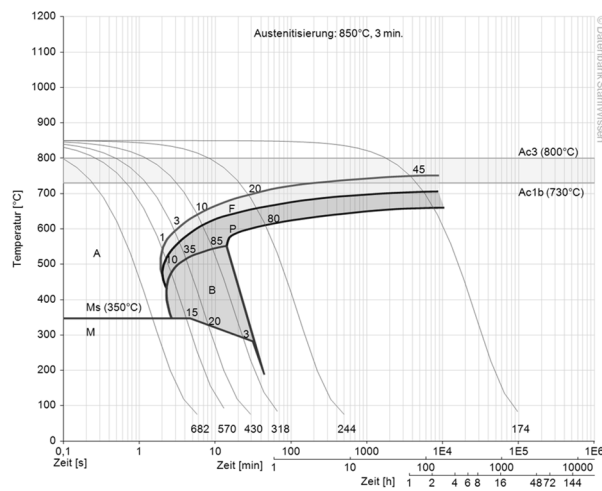
Thermal capacity diagram

Werkstoff: C45U, 1.1730

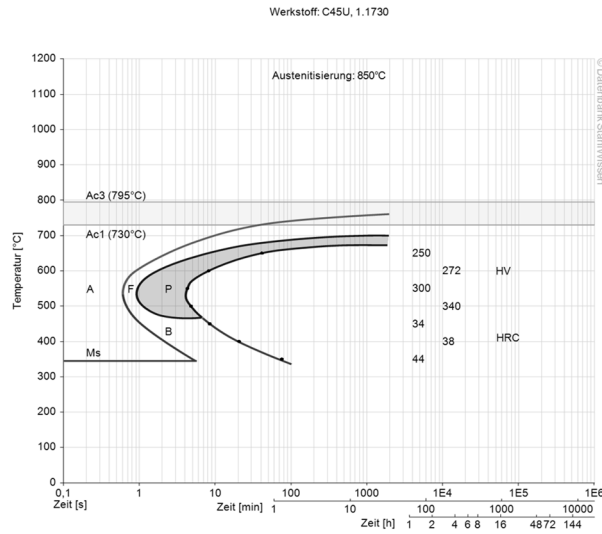


Continuous ZTU-diagram

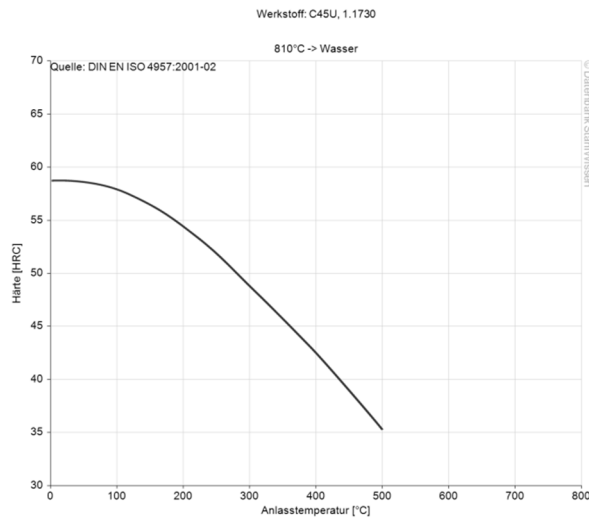
Werkstoff: C45U, 1.1730



Isothermal ZTU-diagram



Tempering diagram



The data shown here is to be used only as an indication of the statistics, thus we accept no liability.
Diagrams are taken from Datenbank StahlWissen - Dr. Sommer Werkstofftechnik
Issued: 2012

