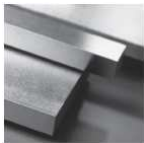


Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.2312
Description	40CrMnMoS8-6
BS	1.2312
AISI/SAE	P20+S
Search for alternatives in the ABRAMS STEEL GUIDE®	www.steel-guide.co.uk/alternatives/1.2312

Specifications



Precision flat steel with machining allowance [PFS/BA]
L: 500 mm
L: 1,000 mm



Precision round steel without machining allowance [PRS]
bright ground, ISO h8
L: 1,000 mm



Precision round steel with machining allowance [PRS/BA]
peeled / rough-turned
L: 500 mm
L: 1,000 mm

Chemical composition BS 1.2312 (reference value %)

C	Si	Mn	P	S	Cr	Mo
0.35 – 0.45	0.3 – 0.5	1.4 – 1.6	0 – 0.03	0.05 – 0.1	1.8 – 2.0	0.15 – 0.25

Physical properties

Hardness (delivery condition)	max. 325 HB, tempered					
Tensile strength R_m (as received condition)	approx. 1100 N/mm ²					
Working hardness	max. 50 HRC					
Thermal expansion coefficient $10^{-6}/(m \cdot K)$	20 - 100°C	20 - 200°C	20 - 300°C			
	Annealed	12.5	13.4	13.9		
	Tempered	12.3	13.0	13.7		
Thermal conductivity $W/(m \cdot K)$	100°C	150°C	200°C	250°C	300°C	
	Annealed	40.2	40.9	40.3	40.0	39.0
	Tempered	39.8	40.4	40.4	39.9	39.0

Technical properties

Pre-hardened cold work steel and plastic mould steel. Good machinability, although less polishable and more difficult to etch, due to added sulphur. High through-hardenable and uniform component strength.

Applications

Mechanical engineering, jigs, base plates, assembling parts, moulding frames, plastic moulds, plastic processing, die casting moulds, hydroforming tools, recipient sleeves, folding bars, tool holders.

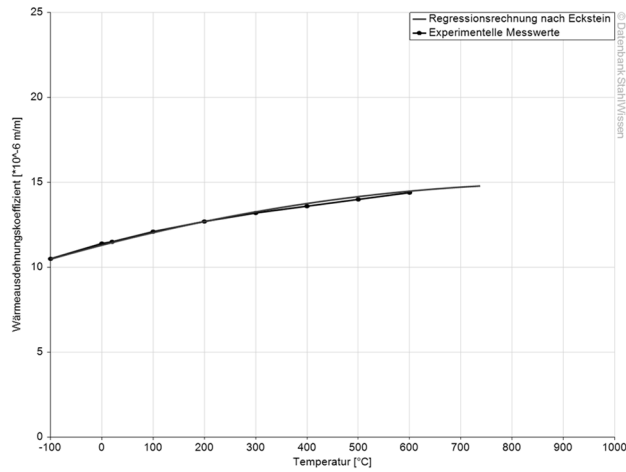


Heat treatment

Soft annealing	Temperature		Cooling		Hardness		
	710 - 740°C		Furnace		max. 325 HB		
Stress relief annealing	Temperature		Cooling				
	580 - 620°C		Furnace				
Hardening	Temperature		Quenching in		Hardness after quenching		
	840 - 870°C		Oil, hot basin (180 - 220°C)		51 HRC		
Tempering	100°C	200°C	300°C	400°C	500°C	600°C	700°C
	51 HRC	50 HRC	48 HRC	46 HRC	42 HRC	36 HRC	28 HRC

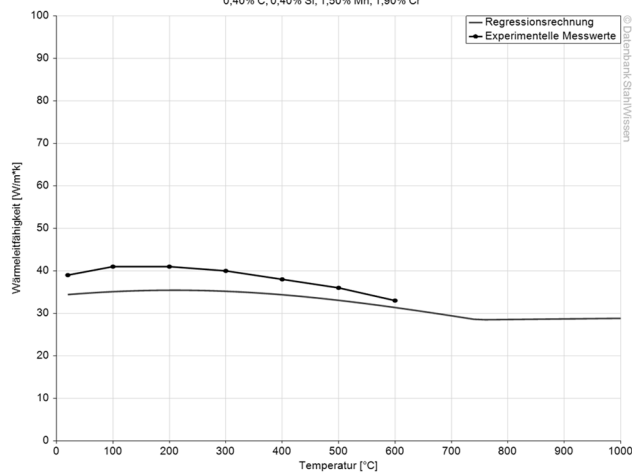
Thermal expansion coefficient diagram

Werkstoff: 40CrMnMoS8-6, 1.2312



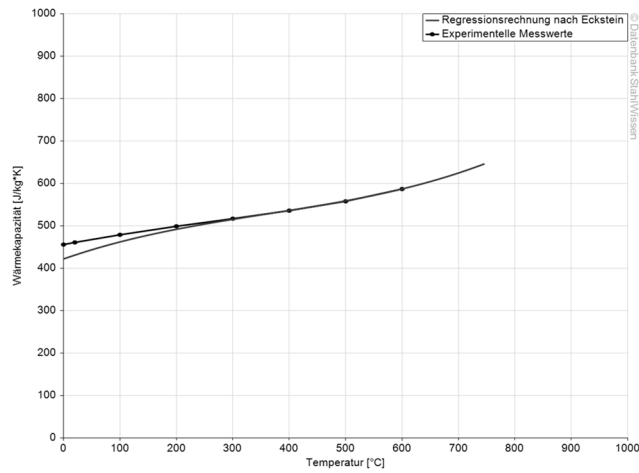
Thermal conductivity diagram

Werkstoff: 40CrMnMoS8-6, 1.2312
Regressionsrechnung mit folgender Analyse:
0,40% C; 0,40% Si; 1,50% Mn; 1,90% Cr



Thermal capacity diagram

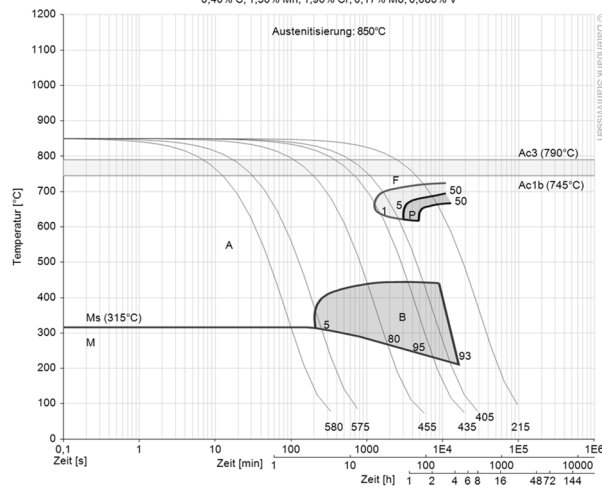
Werkstoff: 40CrMnMoS8-6, 1.2312



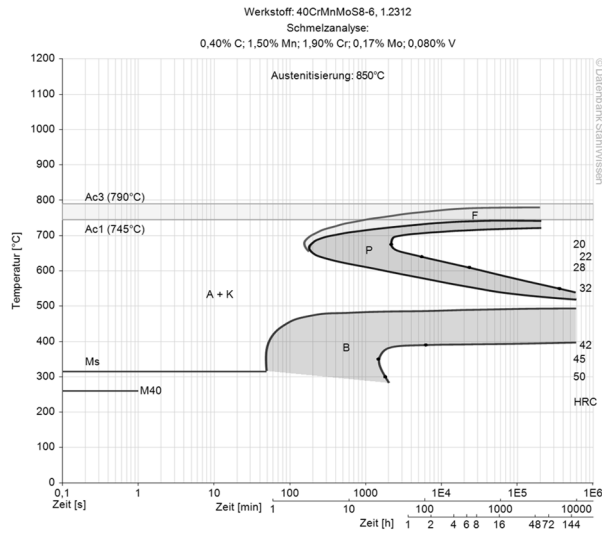
Continuous ZTU-diagram

Werkstoff: 40CrMnMoS8-6, 1.2312

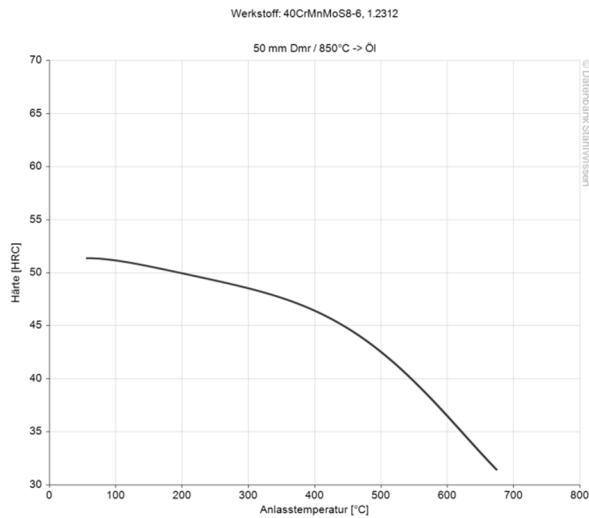
Schmelzanalyse:
0,40% C; 1,50% Mn; 1,90% Cr; 0,17% Mo; 0,080% V



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

