

Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.2316
Description	X38CrMo16
BS	1.2316
AISI/SAE	1.2316
Search for alternatives in the ABRAMS STEEL GUIDE®	www.steel-guide.co.uk/alternatives/1.2316

Specifications



Eco-Präz® [Eco]
L: 300 mm
L: 500 mm



Precision round steel without machining allowance [PRS]
bright drawn / ground, ISO h9
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 1.2316 (reference value %)

C	Si	Mn	P	S	Cr	Mo	Ni
0.33 – 0.45	0 – 1.0	0 – 1.5	0 – 0.03	0 – 0.03	15.5 – 17.5	0.8 – 1.3	0 – 1.0

Physical properties

Hardness (delivery condition)	max. 325 HB, tempered						
Tensile strength R_m (as received condition)	approx. 1100 N/mm ²						
Working hardness	max. 48 HRC						
Thermal expansion coefficient $10^{-6}m/(m \cdot K)$	20 - 100°C	20 - 200°C	20 - 300°C	20 - 350°C	20 - 400°C	20 - 450°C	20 - 500°C
	10.5	10.8	11.1	11.3	11.5	11.6	11.7
Thermal conductivity $W/(m \cdot K)$	23°C	150°C	300°C	350°C	400°C	500°C	
	23.5	24.2	24.3	24.4	24.1	23.2	

Technical properties

Tempered, corrosion resistant, polishable chromium steel. Heat resistant and resistant to wear. Often used for tools for processing chemically aggressive plastic materials (e.g. PVC).

Applications

Mechanical engineering, marine engineering, apparatus engineering, plastic processing, plastic moulds, extrusion tools, press moulds, fitting tools, shafts, spindles, bolts, pistons, valves, steam valves, water valves, beater bars, fittings parts, pump construction, pump rods, compressor construction, compressor parts, surgical instruments.

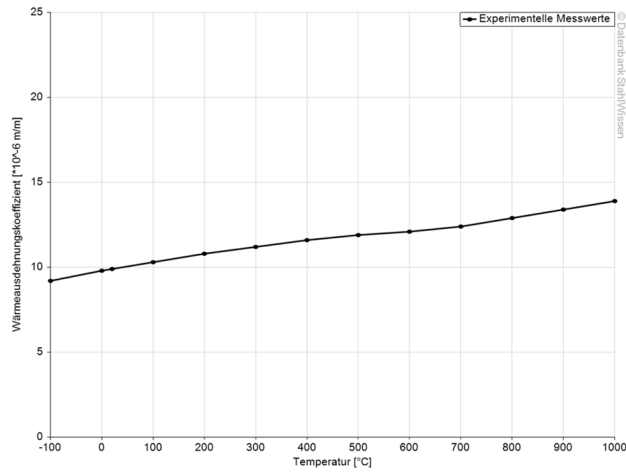


Heat treatment

	Temperature	Cooling		Hardness		
Soft annealing	760 - 800°C	Furnace		max. 325 HB		
Stress relief annealing	600 - 650°C	Furnace				
	Temperature	Quenching in		Hardness after quenching		
Hardening	1020 - 1050°C	Oil, hot basin (500 - 550°C)		49 HRC		
	100°C	200°C	300°C	400°C	500°C	600°C
Tempering	49 HRC	47 HRC	46 HRC	46 HRC	47 HRC	32 HRC

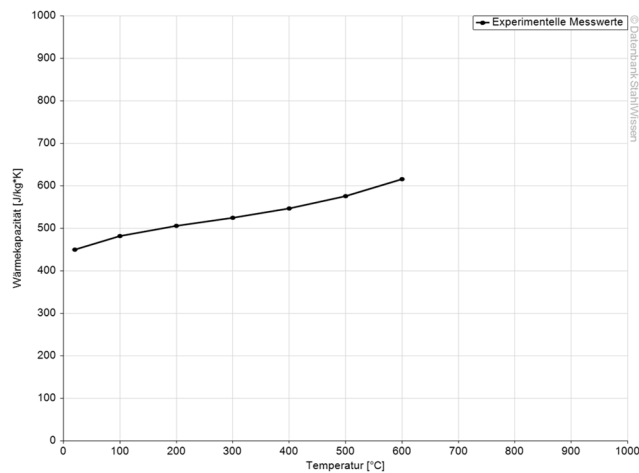
Thermal expansion coefficient diagram

Werkstoff: X38CrMo16, 1.2316

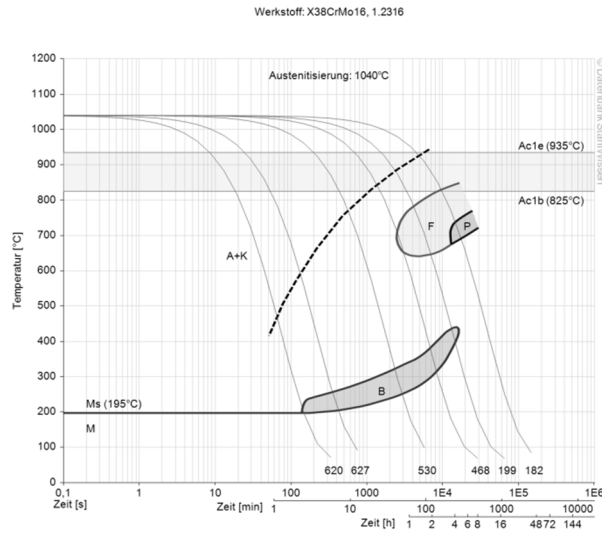


Thermal capacity diagram

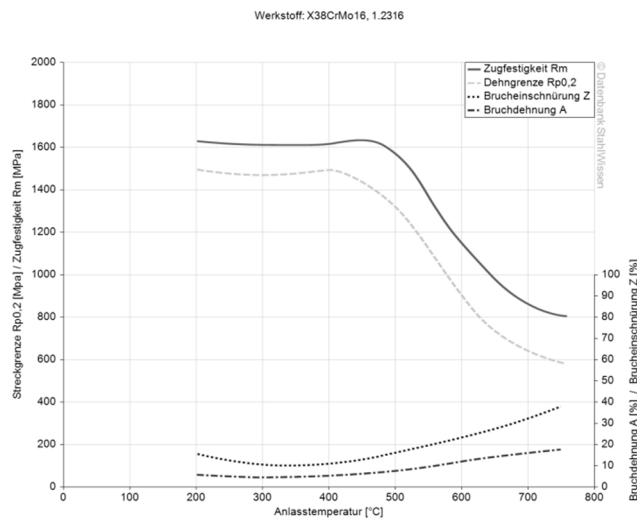
Werkstoff: X38CrMo16, 1.2316



Continuous ZTU-diagram

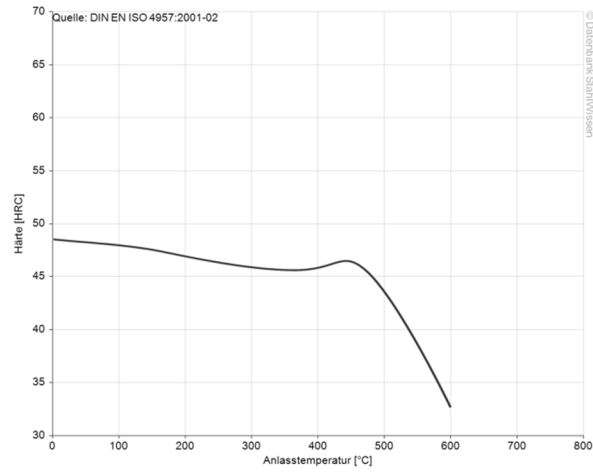


Hardening and tempering diagram



Tempering diagram

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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
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