

Steel grade

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

Specifications



€co-Präz* [€co]
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 AISI/SAE 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. 1.100 N/mm ²						
Working hardness	max. 48 HRC						
Thermal expansion coefficient 10 ⁻⁶ m/(m • 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 • 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 and resistant to wear. Often used for tools for processing chemically aggressive plastic materials (e.g. PVC). The material is conditionally acid resistant.

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			
	Temperature	Cooling				
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

ABRAMS INDUSTRIES[®]
abrams-industries.eu

ABRAMS PREMIUM STEEL[®]
premium-steel.eu

ABRAMS PREMIUM ALUMINIUM[®]
premium-aluminium.eu

ABRAMS[®] PREMIUM TOOLS
premium-gewindebohrer.eu

ABRAMS STEEL GUIDE[®]
steel-guide.eu

Divisions of
ABRAMS Industries GmbH & Co. KG
Hannoversche Str. 38 / 46
49084 Osnabrück
Germany

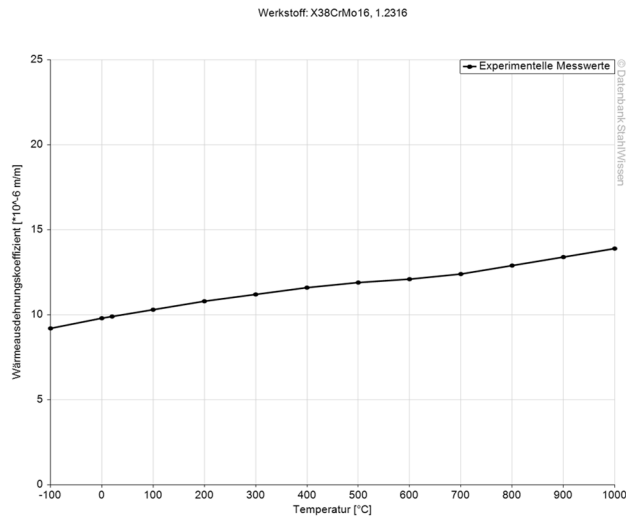
County court Osnabrück / Germany, HRA 6865
GP: ABRAMS Industries Verwaltungs GmbH
Country court Osnabrück / Germany, HRB 20019
CEO: Dipl.-Wi.-Ing. Dr. Jürgen Abrams
COO: Ms. Nur H. Nezir, LL. B.

T: +49 541 / 357 39-0
sales@abrams-industries.eu
www.abrams-industries.eu/shop
VAT-No.: DE221940667

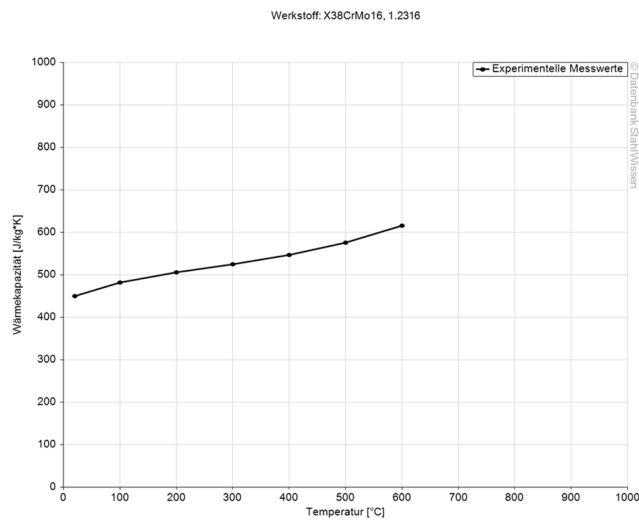
Bank details:
Bank: Sparkasse Osnabrück / Germany
SWIFT / BIC: NOLADE22
IBAN: DE63 2655 0105 1522 9268 96



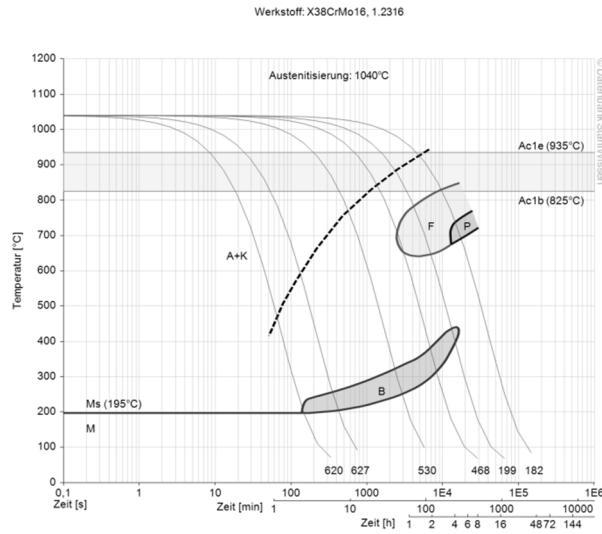
Thermal expansion coefficient diagram



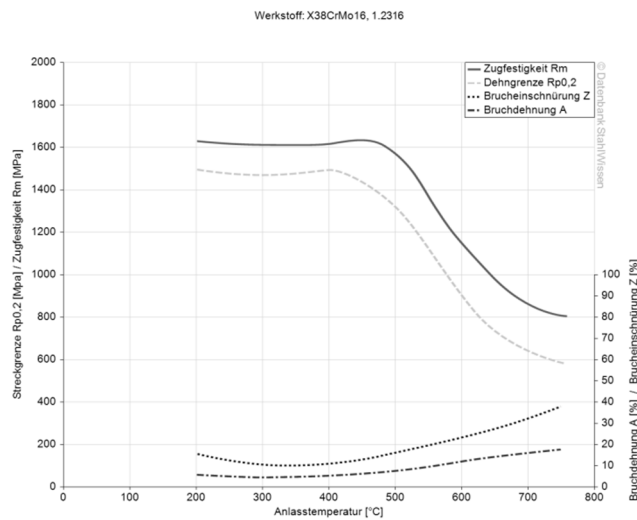
Thermal capacity diagram



Continuous ZTU-diagram

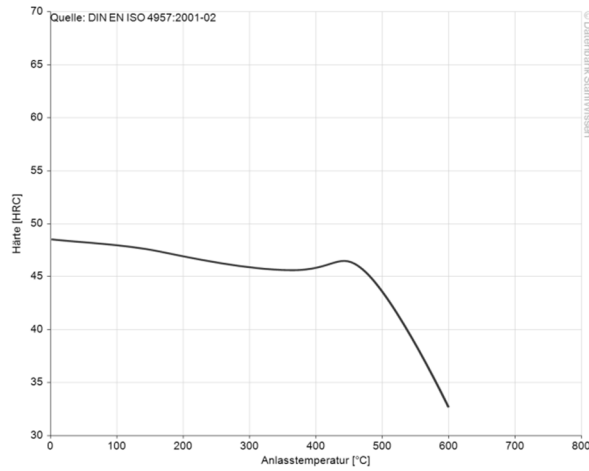


Hardening and tempering diagram



Tempering diagram

Werkstoff: X38CrMo16, 1.2316



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

ABRAMS INDUSTRIES[®]
abrams-industries.eu

ABRAMS PREMIUM STEEL[®]
premium-steel.eu

ABRAMS PREMIUM ALUMINIUM[®]
premium-aluminium.eu

ABRAMS[®] PREMIUM TOOLS
premium-gewindebohrer.eu

ABRAMS STEEL GUIDE[®]
steel-guide.eu

Divisions of
ABRAMS Industries GmbH & Co. KG
Hannoversche Str. 38 / 46
49084 Osnabrück
Germany

County court Osnabrück / Germany, HRA 6865
GP: ABRAMS Industries Verwaltungs GmbH
Country court Osnabrück / Germany, HRB 20019
CEO: Dipl.-Wi.-Ing. Dr. Jürgen Abrams
COO: Ms. Nur H. Nezir, LL. B.

T: +49 541 / 357 39-0
sales@abrams-industries.eu
www.abrams-industries.eu/shop
VAT-No.: DE221940667

Bank details:
Bank: Sparkasse Osnabrück / Germany
SWIFT / BIC: NOLADE22
IBAN: DE63 2655 0105 1522 9268 96

