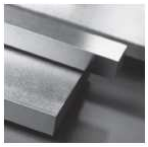
Steel grade

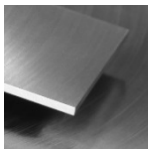
Material No. / Werkstoff-Nr.	PREMIUM 1.2083
Description	X40Cr14
AISI/SAE	~420
Search for alternatives in the ABRAMS STEEL GUIDE®	**www.steel-guide.eu/alternatives/420**

Specifications



Precision flat steel with machining allowance[PFS/BA]
L: 1.000 mm

€co-Präz® [€co]
L: 500 mm



Hart-Präz® [Hart]
L: 250 mm
L: 500 mm

Precision round steel without machining allowance [PRS]
bright 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 420 (reference value %)

C	Si	Mn	P	S	Cr
0,36 - 0,42	0 - 1,0	0 - 1,0	0 - 0,03	0 - 0,03	12,5 - 14,5

Physical properties

Hardness (delivery condition)	max. 241 HB, annealed						
Tensile strength R_m (as received condition)	approx. 815 N/mm²						
Working hardness	max. 55 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
	11,1	11,6	12,0	12,3	12,4	12,5	12,6
Thermal conductivity W/(m • K)	23°C	150°C	300°C	350°C	400°C	500°C	
	22,6	24,0	24,6	24,9	24,4	23,7	

Technical properties

Corrosion-resistant cold work steel and plastic mould steel, good machinability. Can be hardened and polished. Low distortion through-hardening steel with high hardness and high wear resistance. For maximum required polishability use the ESR (Electro Slag Remelted Steel) production. The material is conditionally acid resistant.

Applications

Mechanical engineering, medical technology, plastic moulds, synthetic resin mould tools, die casting tools, light metal die casting, cutting tools, machine knives, kitchen knives, razors, shears, scraper blades, surgical instruments, measuring tools, roller bearings, ball bearings, ice-skates, pump parts, valves.

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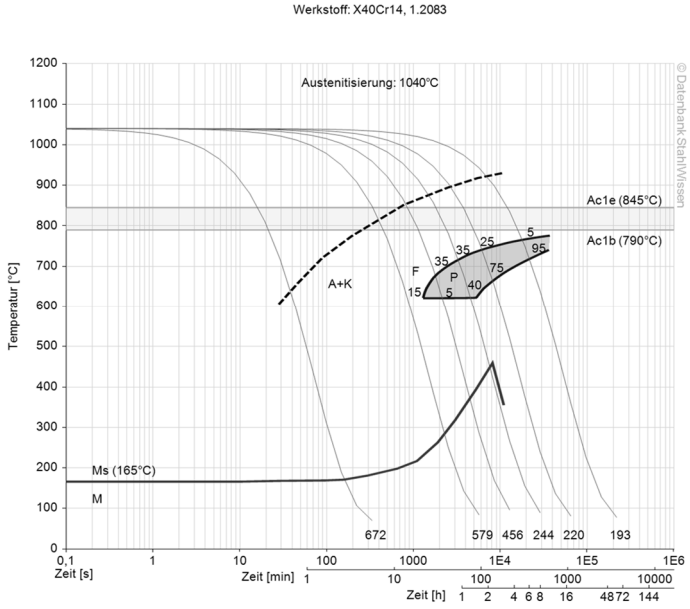
Heat treatment

Soft annealing	**Temperature**		**Cooling**		**Hardness**	
	760 - 800°C		Furnace		max. 241 HB	
Stress relief annealing	**Temperature**		**Cooling**			
	600 - 650°C		Furnace			
Hardening	**Temperature**		**Quenching in**		**Hardness after quenching**	
	1000 - 1050°C		Oil, basin (500 - 550°C)		56 HRC	
Tempering	100°C	200°C	300°C	400°C	500°C	600°C
	56 HRC	55 HRC	52 HRC	51 HRC	52 HRC	40 HRC

Continuous ZTU-diagram



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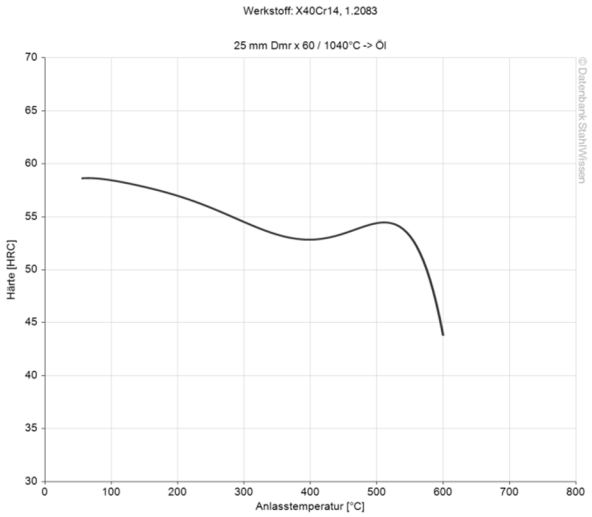
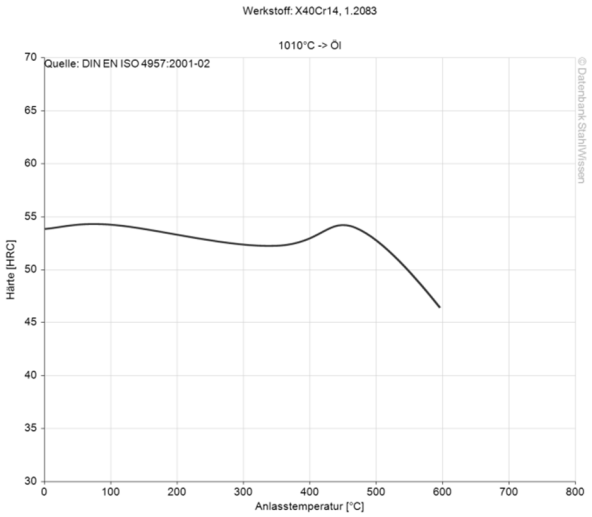
Tempering diagrams





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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