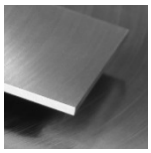
Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.4031
Description	X39Cr13
AISI/SAE	~420
Search for alternatives in the ABRAMS STEEL GUIDE®	**www.steel-guide.eu/alternatives/1.4031**

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 - 0,04	0 - 0,015	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 - 400°C
	10,5	11,0	11,5	12,0
Thermal conductivity W/(m • K)	20°C			
	30,0			

Technical properties

Martensitic chromium steel with good mechanical properties. Excellent polishing properties, good corrosion resistance, good chemical resistance and difficult to weld. Due to it's high contents of carbon excellent to use for cutting tools. The material is conditionally acid resistant.

Applications

Mechanical engineering, medical technology, machine knives, shears, cutting tools, razors, automotive industry, food technology, fasteners, decoration purposes, kitchen equipment, power engineering, springs, piston rods, screws.

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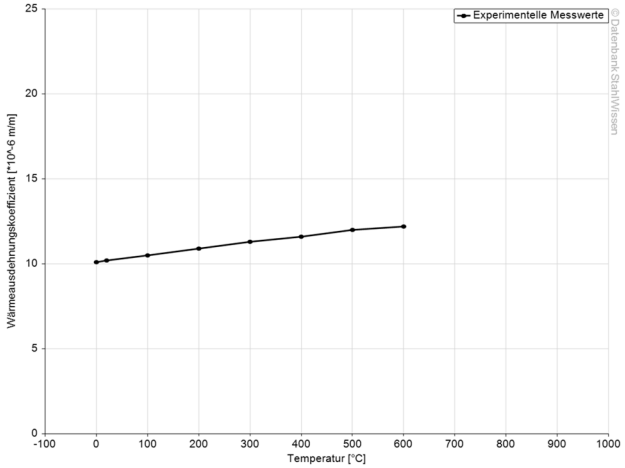
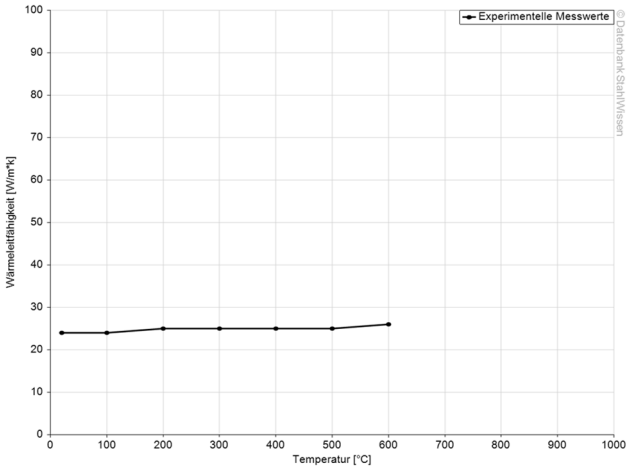
Heat treatment

Soft annealing	**Temperature**	**Cooling**	**Hardness**
	760 - 800°C	Furnace, air	max. 241 HB
Stress relief annealing	**Temperature**	**Cooling**	
	600 - 650°C	Furnace	
Hardening	**Temperature**	**Quenching in**	
	1000 - 1050°C	Air, oil, basin (500 - 550°C)	

Thermal expansion coefficient diagram



Thermal conductivity diagram



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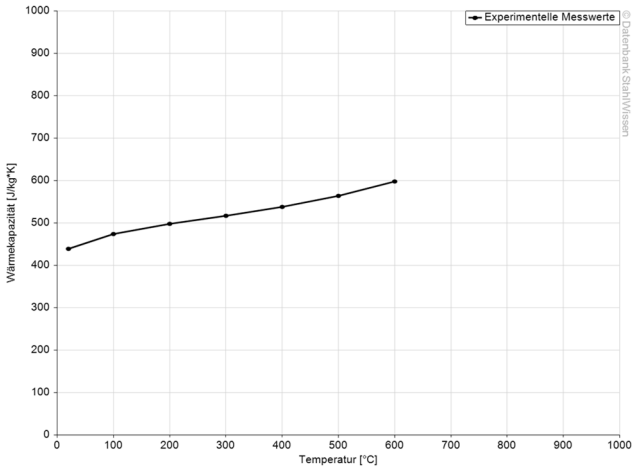
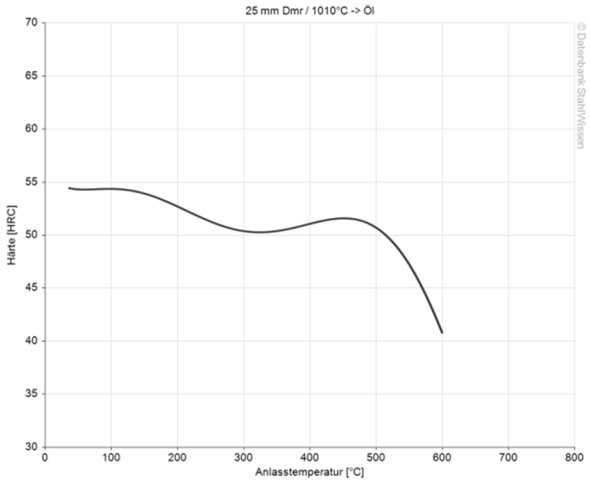
Thermal capacity diagram



Tempering diagrams



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