

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

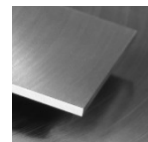
Specifications



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



Eco-Präz® [Eco]
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/mm ²			
Working hardness	max. 55 HRC			
Thermal expansion coefficient $10^{-6}m/(m \cdot K)$	20 - 100°C	20 - 200°C	20 - 300°C	20 - 400°C
	10,5	11,0	11,5	12,0
Thermal conductivity $W/(m \cdot K)$	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 its high contents of carbon excellent to use for cutting tools. The material is conditionally acid resistant.

Applications

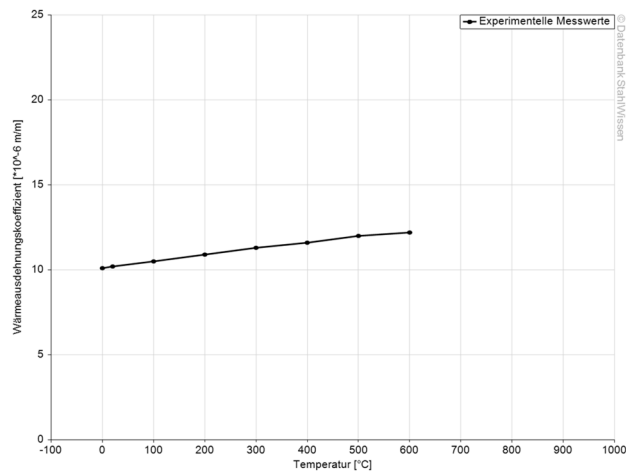
Mechanical engineering, medical technology, machine knives, shears, cutting tools, razors, automotive industry, food technology, fasteners, decoration purposes, kitchen equipment, power engineering, springs, piston rods, screws.



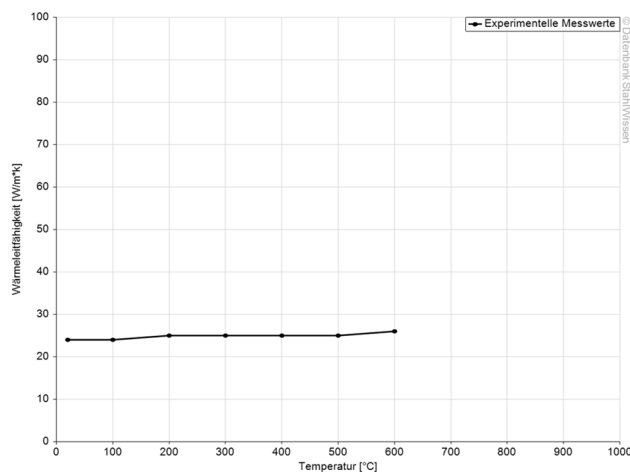
Heat treatment

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

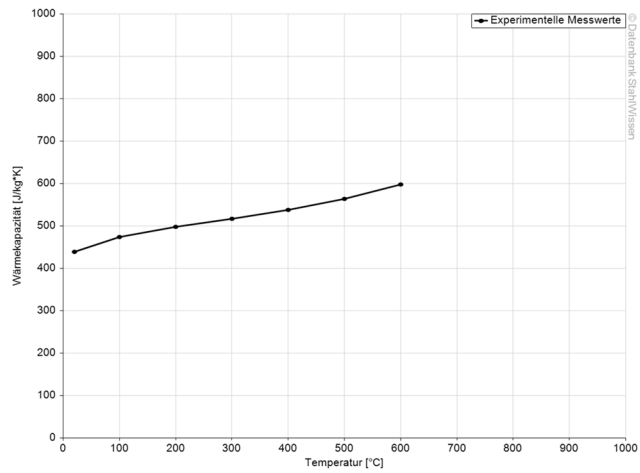
Thermal expansion coefficient diagram



Thermal conductivity diagram



Thermal capacity diagram



Tempering diagrams

