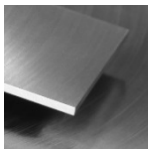
Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.4112
Description	X90CrMoV18
AISI/SAE	440B; S44003
Search for alternatives in the ABRAMS STEEL GUIDE®	**www.steel-guide.eu/alternatives/440B**

Specifications

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

€co-Präz® [€co]
L: 300 mm
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 [PRS/BA]
geschält / überdreht
L: 500 mm
L: 1.000 mm

Chemical composition AISI/SAE 440B (reference value %)

C	Si	Mn	P	S	Cr	Mo	V
0,85 - 0,95	0 - 1,0	0 - 1,0	0 - 0,04	0 - 0,015	17,0 - 19,0	0,9 - 1,3	0,07 - 0,12

Physical properties

Hardness (delivery condition)	max. 265 HB, annealed			
Tensile strength R_m (as received condition)	approx. 925 N/mm²			
Working hardness	max. 53-58 HRC			
Thermal expansion coefficient 10^{-6}m/(m • K)	20 - 100°C	20 - 200°C	20 - 300°C	20 - 400°C
	10,3	10,8	11,2	11,6
Thermal conductivity W/(m • K)	20°C	350°C		
	15,9	20,6		

Technical properties

Corrosion resistant martensitic chrome-steel (approx. 18 % Cr) for cold work. Reaches an unusually high hardness and high wear resistance after heat treatment. High gloss polishable and conditionally acid resistant.

Applications

Cutting tools, knives, knife blades, cutlery, guide rails, wear parts, perforated discs, screw elements, pump shafts, scale pans, horizontal cutting, surgical instruments, plastic moulds, injection nozzles, roller bearings, ball bearings, mechanical engineering, food industry, building industry.

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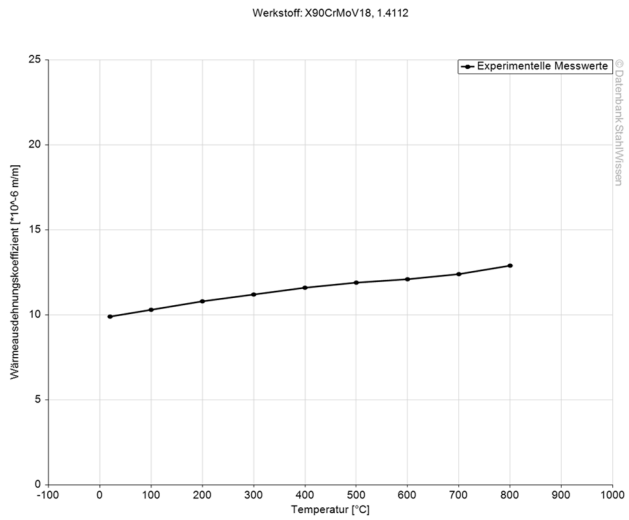
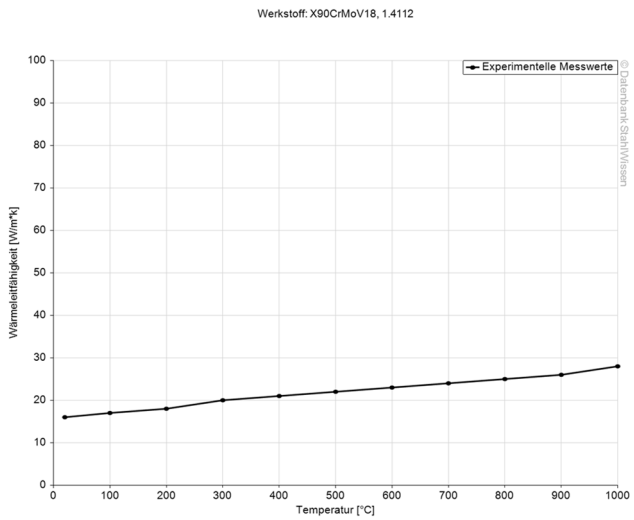
Heat treatment

Soft annealing	**Temperature**	**Cooling**	**Hardness**
	780 - 840°C	Furnace	max. 265 HB
Stress relief annealing	**Temperature**	**Cooling**	
	600 - 650°C	Furnace	
Hardening	**Temperature**	**Quenching in**	
	1000 - 1050°C	Air, oil, hot basin (500 - 550°C), compressed gas (N_2)	
Tempering	100°C / 300°C	600°C	
	59 HRC / 57 HRC	40 HRC	

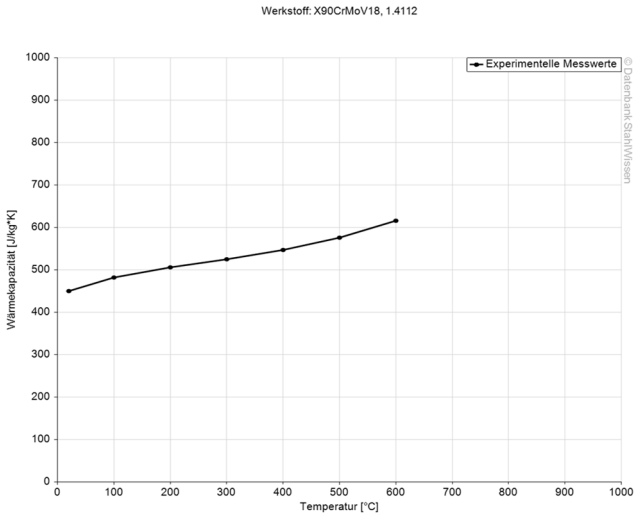
Thermal expansion coefficient diagram



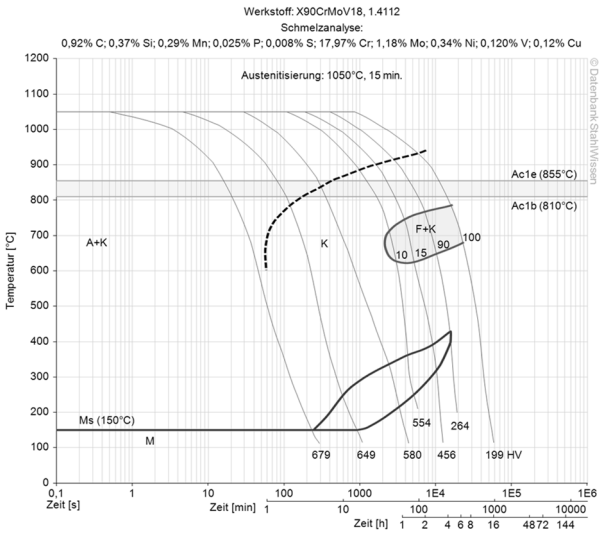
Thermal conductivity diagram



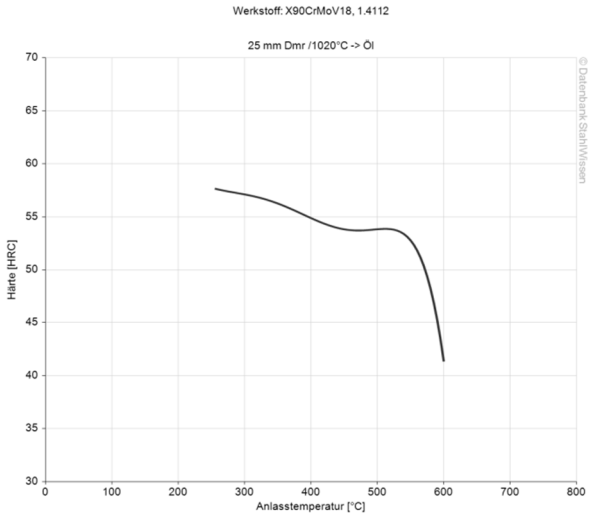
Thermal capacity diagram



Continuous ZTU-diagram



Tempering diagram



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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