

Steel grade

Material No.	PREMIUM P20 PH
AISI	P20 PH
Search for alternatives in the ABRAMS STEEL GUIDE	www.abrams-steelguide.com/alternatives/P20PH

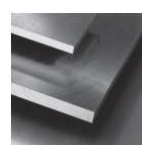
Shapes



Precision Ground Flat Stock Metric oversize [GFSM O/S]
L: 500 mm
L: 1,000 mm



Smart Flat Stock [Smart] Standardized Precision Blanks
L: 12"
L: 24"



Smart Flat Stock Metric [SmartM] Standardized Precision Blanks Metric
L: 300 mm
L: 600 mm

Chemical composition AISI P20 PH (reference value %)

C	Si	Mn	P	S	Cr	Mo
0.35 - 0.45	0.2 - 0.4	1.3 - 1.6	0 - 0.035	0 - 0.035	1.8 - 2.1	0.15 - 0.25

Physical properties

Hardness (delivery condition)	max. 325 HB, tempered						
Tensile strength R_m (as received condition)	approx. 159.5 KSI						
Working hardness	max. 50 HRC						
Thermal expansion coefficient $10^{-6}m/(m \cdot K)$	68 - 212°F	68 - 392°F	68 - 572°F	68 - 662°F	68 - 752°F	68 - 842°F	68 - 932°C
	12.6	13.0	13.5	13.7	13.9	14.1	14.3
Thermal conductivity $W/(m \cdot K)$	73.4°F	302°F	572°F	662°F	752°F	932°F	
	32.5	32.9	31.3	30.2	29.5	27.4	

Technical properties

Pre-hardened cold work steel and plastic mold steel. Good polishability and easily etched. High through-hardenability and uniform component strength.

Applications

Mechanical engineering, jigs, base plates, assembling parts, molding frames, plastic molds, plastic processing, injection molds, die casting molds, hydroforming tools, recipient sleeves, intermediate sleeves, folding bars, tool holders, extrusion presses, tube presses, die holders, die insert.

Heat treatment

	Temperature	Cooling	Hardness				
Soft annealing	1310 - 1364°F	Furnace	max. 325 HB				
	Temperature	Cooling					
Stress relief annealing	1022 - 1112°F	Furnace					
	Temperature	Quenching in	Hardness after quenching				
Hardening	1544 - 1598°F	Oil, hotbasin (356 - 428°F)	51 HRC				
	212°F	392°F	572°F	752°F	932°F	1112°F	1292°F
Tempering	51 HRC	50 HRC	48 HRC	46 HRC	42 HRC	36 HRC	28 HRC

ABRAMS INDUSTRIES

ABRAMS PREMIUM STEEL

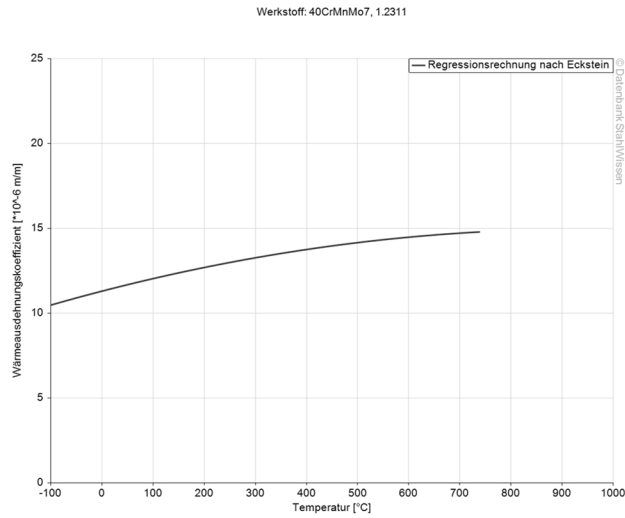
ABRAMS PREMIUM ALUMINUM

ABRAMS STEEL GUIDE

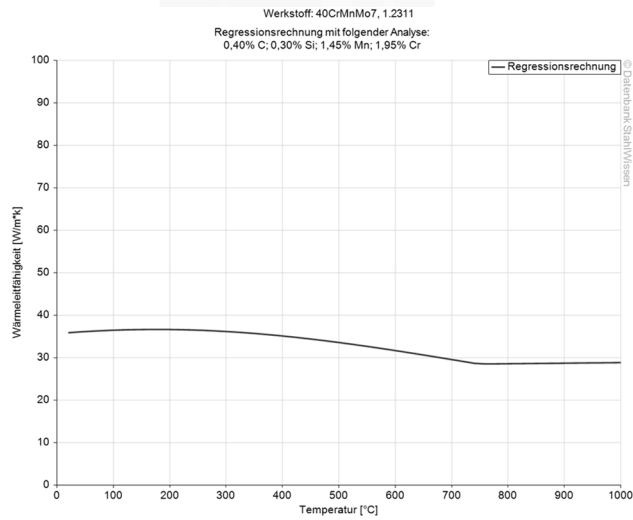
ABRAMS ART PROJECTS



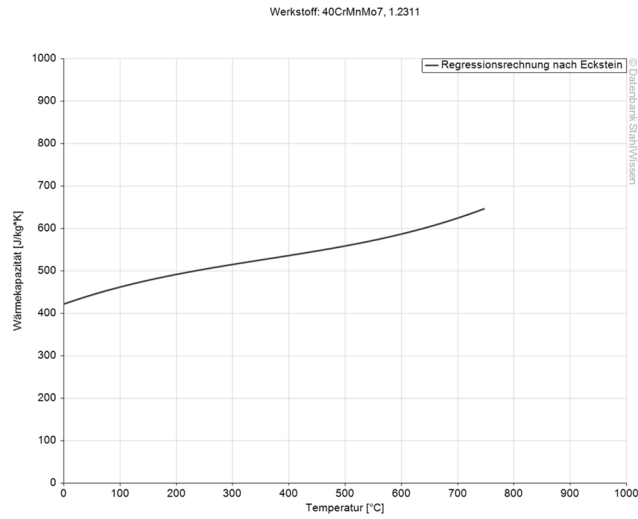
Thermal expansion coefficient diagram



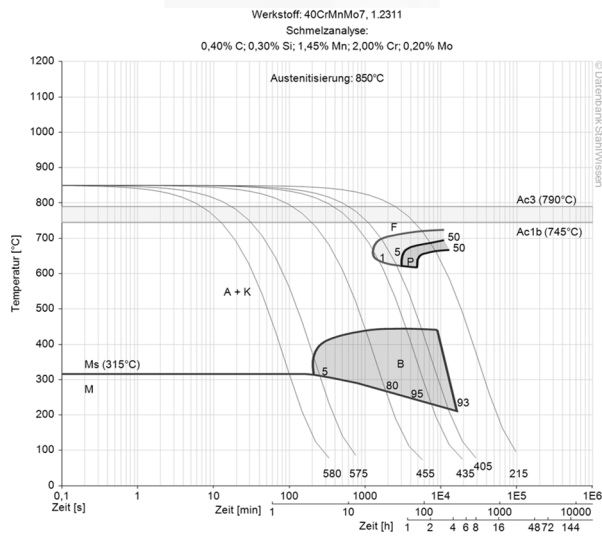
Thermal conductivity diagram



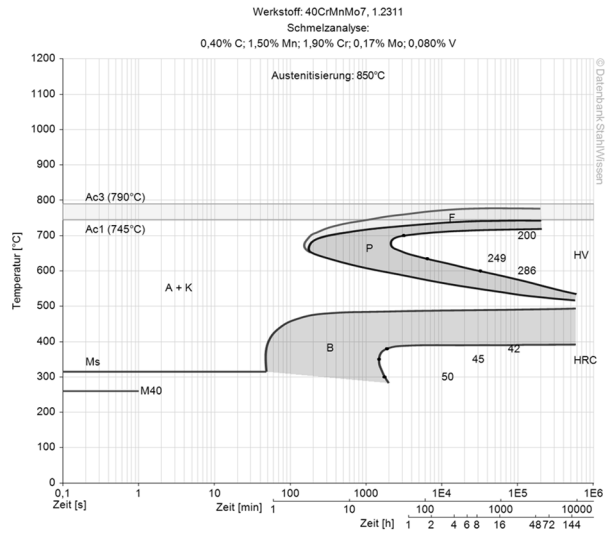
Thermal capacity diagram



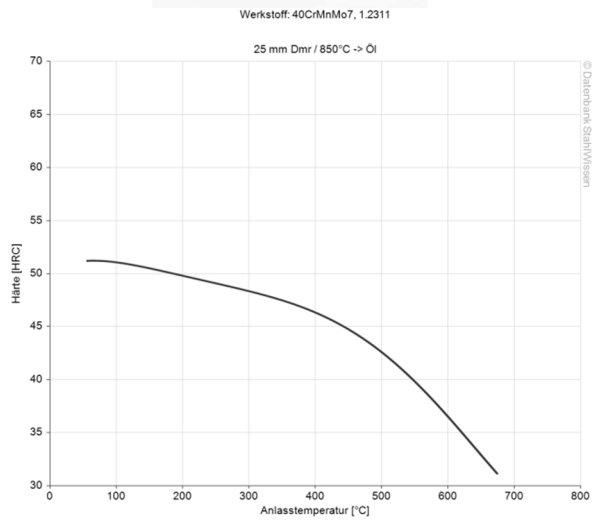
Continuous ZTU-diagram



Isothermal 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
 Issued: 2012

