

Steel grade

Material No.	PREMIUM P20+Ni
AISI	P20+Ni
Search for alternatives in the ABRAMS STEEL GUIDE	www.abrams-steelguide.com/alternatives/P20Ni

Shapes



**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+Ni (reference value %)

C	Si	Mn	P	S	Cr	Mo	Ni
0.35 - 0.45	0.2 - 0.4	1.3 - 1.6	0 - 0.03	0 - 0.03	1.8 - 2.1	0.15 - 0.25	0.9 - 1.2

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 - 752°F	68 - 932°F	68 - 1112°F	68 - 1292°F
	11.1	12.9	13.4	13.8	14.2	14.6	14.9
Thermal conductivity $W/(m \cdot K)$	68°F	662°F	1292°F				
	34.5	33.5	32.0				

Technical properties

Steel grade with focus on plastic mold making; nickel additives for a better through-hardenableity (constant strength), also for thicknesses > 400 mm. Low sulphur steel and therefore polishable and grainable.

Applications

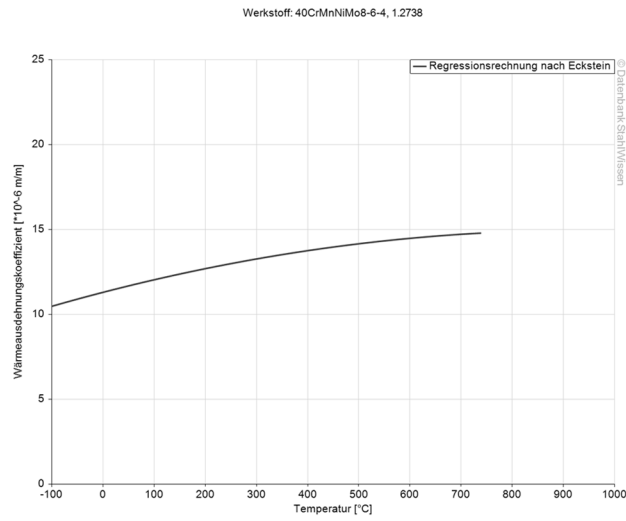
Plastic molds, molding frames, die casting molds, dies, forging tools, metal extrusion tools, tube presses, hydroforming tools.

Heat treatment

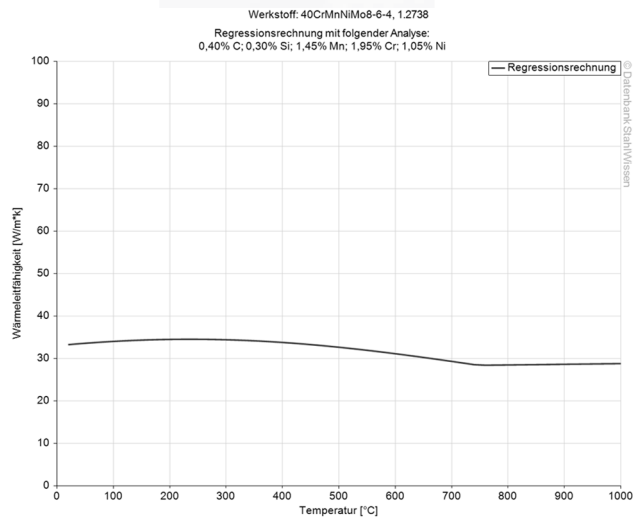
	Temperature	Cooling	Hardness				
Soft annealing	1310 - 1364°F	Furnace	max. 325 HB				
	Temperature	Cooling	Hardness				
Stress relief annealing	1022 - 1112°F	Furnace					
	Temperature	Quenching in	Hardness after quenching				
Hardening	1544 - 1598°F	Polymer, oil	51 HRC				
Tempering	212°F	392°F	572°F	752°F	932°F	1112°F	1292°F
	51 HRC	50 HRC	48 HRC	46 HRC	42 HRC	39 HRC	28 HRC



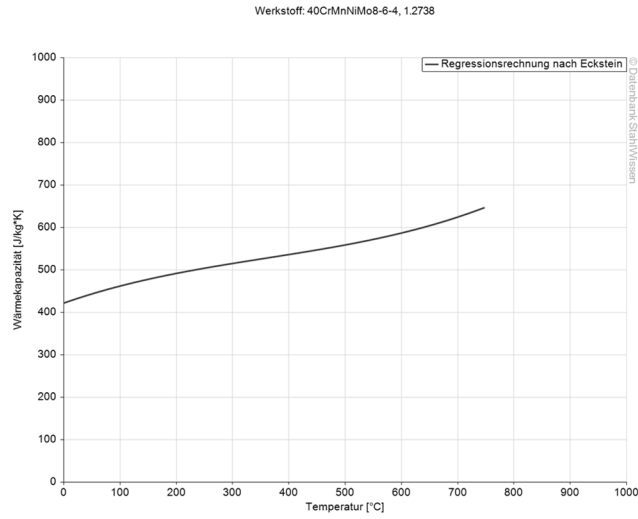
Thermal expansion coefficient diagram



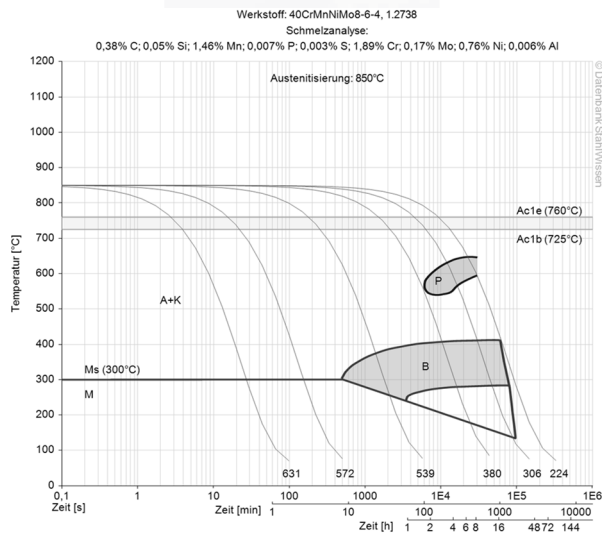
Thermal conductivity diagram



Thermal capacity diagram

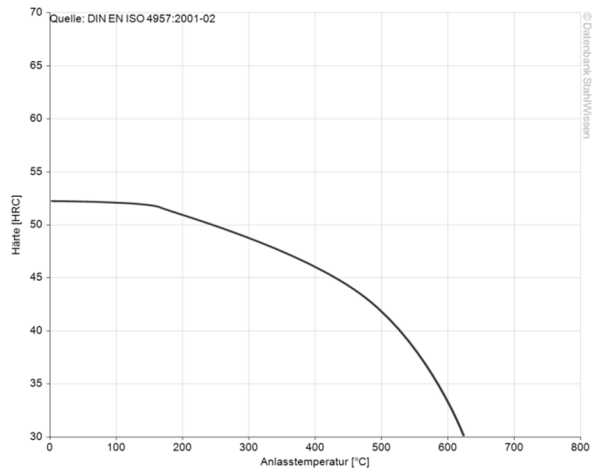


Continuous ZTU-diagram



Tempering diagram

Werkstoff: 40CrMnNiMo8-6-4, 1.2738



The data shown here is to be used only as an indication of the statistics, thus we accept no liability.
Diagramsretakenfrom Datenbank StahlWissen Dr. Sommer Werkstofftechnik
Issued: 2012

