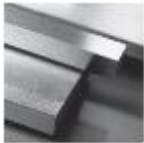


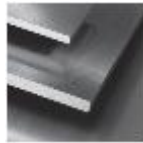
Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.7147
Description	20MnCr5, EC100
AISI/SAE	4820
Search for alternatives in the ABRAMS STEEL GUIDE®	www.steel-guide.eu/alternatives/4820

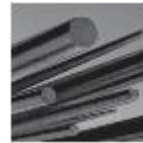
Specifications



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



€co-Präz [€co]
L: 500 mm



Round steel [RS]
black
L: 500 mm
L: 1.000 mm

Chemical composition AISI/SAE 4820 (reference value %)

C	Si	Mn	P	S	Cr
0,17 - 0,22	0 - 0,4	1,1 - 1,4	0 - 0,025	0 - 0,035	1,0 - 1,3

Physical properties

Hardness (delivery condition)	max. 217 HB, annealed			
Tensile strength R_m (as received condition)	approx. 720 N/mm ²			
Working hardness	max. 60 HRC (surface hardness)			
Thermal expansion coefficient 10 ⁻⁶ m/(m • K)	20 - 100°C	20 - 200°C	20 - 300°C	20 - 400°C
	11,5	12,5	13,3	13,9
Thermal conductivity W/(m • K)	20°C			
	42,0			

Technical properties

Cold work and plastic mould steel (group of case hardening steel) with the objective of high surface hardness with core toughness. Excellent machinability, good cold hobbing and polishing properties. The tensile strength is a result of the combination of hardened surface and tough core.

Applications

Machine construction, jig construction, plant engineering, apparatus engineering, plastic processing, plastic moulds, synthetic resin moulds, base plates, bending bars, guide columns, gear parts, joint parts, shafts, gears, rods, bevel gears, crown wheels, piston pins, camshafts, bolts, pins, cardan joints.

Heat treatment

	Temperature	Cooling	Hardness
Soft annealing	650 - 700°C	Furnace	max. 217 HB
Hardening	850 - 900°C	Cooling	
		Oil, hot basin (160 - 250°C)	
Core hardening	780 - 820°C	Oil, hot basin (160 - 250°C)	
Tempering	150 - 200°C	Cooling	
		Air	

ABRAMS PREMIUM STEEL

is a registered trademark of
Abrams Engineering Services GmbH & Co. KG
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Managing Director: Dipl.-Wi.-Ing. Dr. Juergen Abrams

Amtsgericht Osnabrueck / Germany, HRA 6865
VAT-No.: DE 221940667
General Partner: Abrams Engineering Verwaltungs GmbH
Amtsgericht Osnabrueck / Germany, HRB 20019

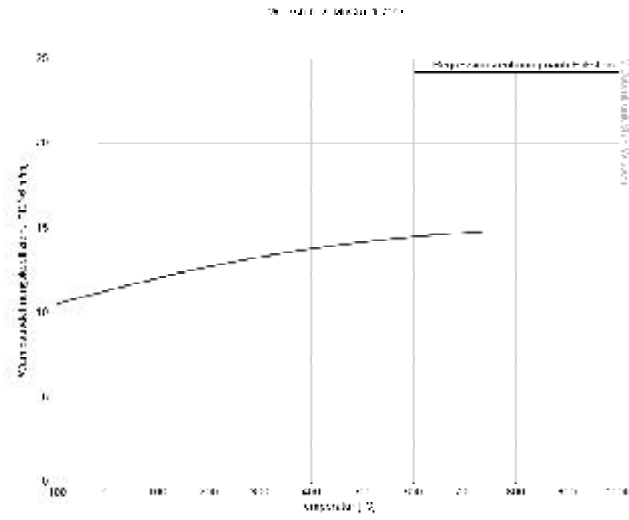
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www.steel-guide.eu

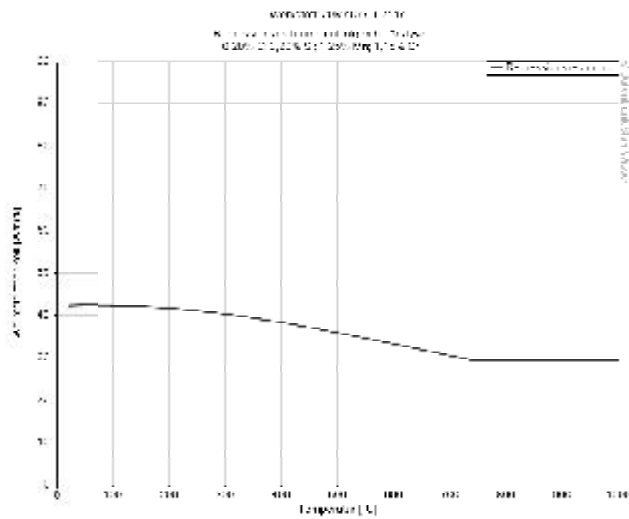
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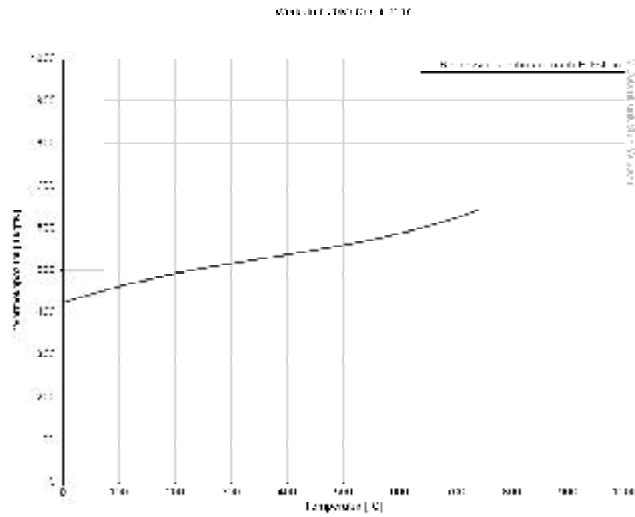
Thermal expansion coefficient diagram



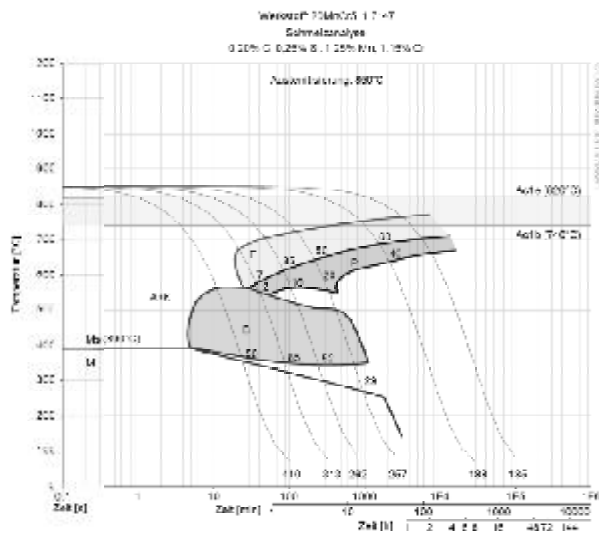
Thermal conductivity diagram



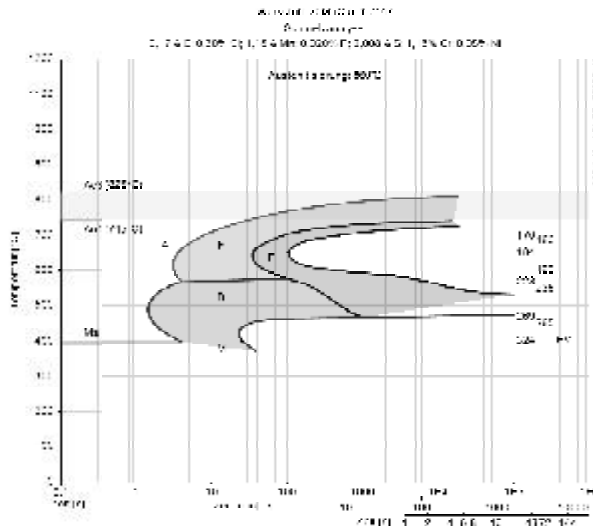
Thermal capacity diagram



Continuous ZTU-diagram



Isothermal ZTU-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

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