

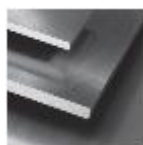
## Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.7131
Description	16MnCr5, EC 80
AISI/SAE	5115
Search for alternatives in the ABRAMS STEEL GUIDE*	<a href="http://www.steel-guide.eu/alternatives/5115">www.steel-guide.eu/alternatives/5115</a>

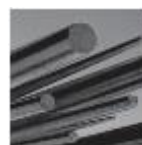
## Specifications



**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 5115 (reference value %)

C	Si	Mn	P	S	Cr
0,14 - 0,19	0 - 0,4	1,0 - 1,3	0 - 0,025	0 - 0,035	0,8 - 1,1

## Physical properties

Hardness (delivery condition)	max. 217 HB, annealed			
Tensile strength $R_m$ (as received condition)	approx. 720 N/mm <sup>2</sup>			
Working hardness	max. 60 HRC (surface hardness)			
Thermal expansion coefficient $10^{-6} m/(m \cdot K)$	20 - 100°C	20 - 200°C	20 - 300°C	20 - 400°C
	11,5	12,5	13,3	13,9
Thermal conductivity $W/(m \cdot K)$	20°C			
	44,0			

## 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	Temperature	Quenching in		
		Core hardening	860 - 900°C	Oil, hot basin (160 - 250°C)
		Surface hardening	780 - 820°C	Oil, hot basin (160 - 250°C)
Tempering	Temperature	Cooling		
		150 - 200°C	Air	

## ABRAMS PREMIUM STEEL

is a registered trademark of  
Abrams Engineering Services GmbH & Co. KG  
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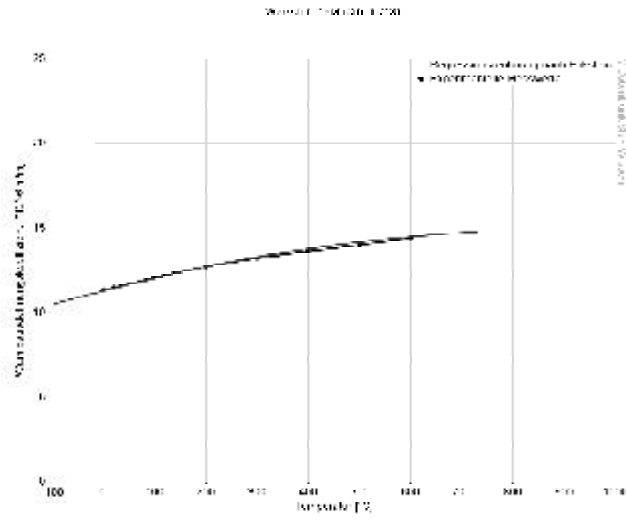
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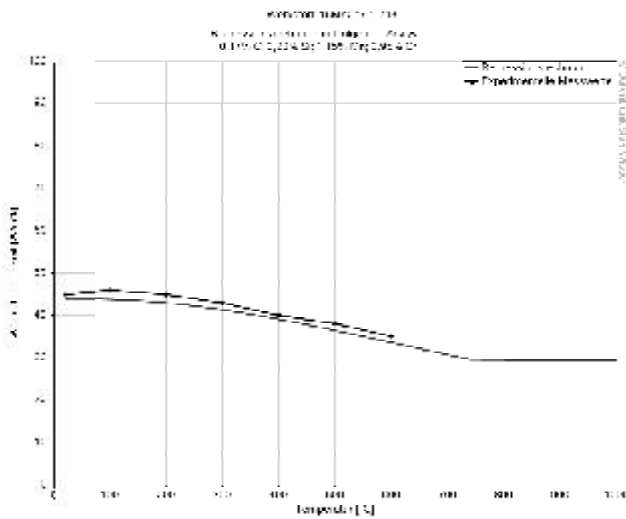
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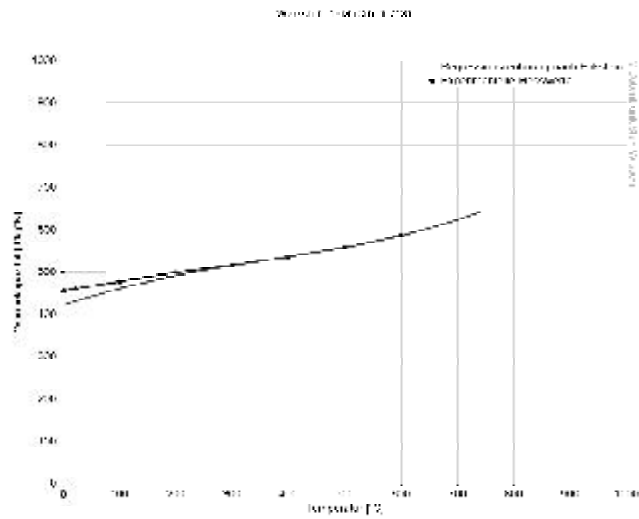
**Thermal expansion coefficient diagram**



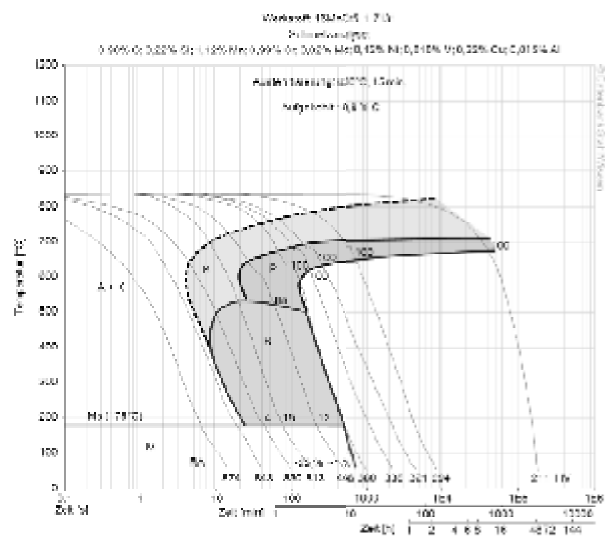
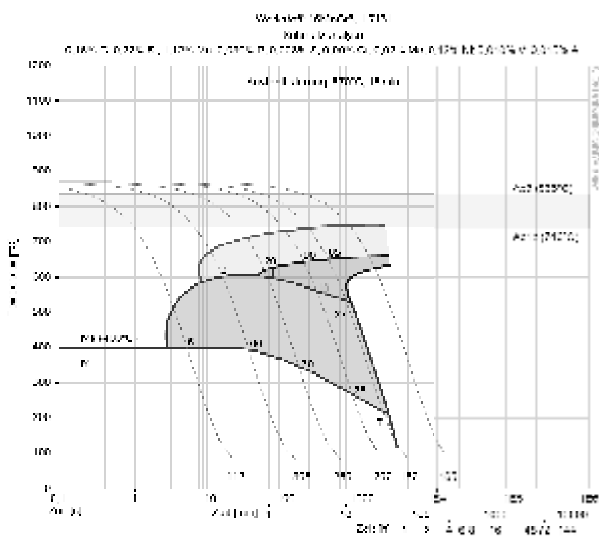
**Thermal conductivity diagram**



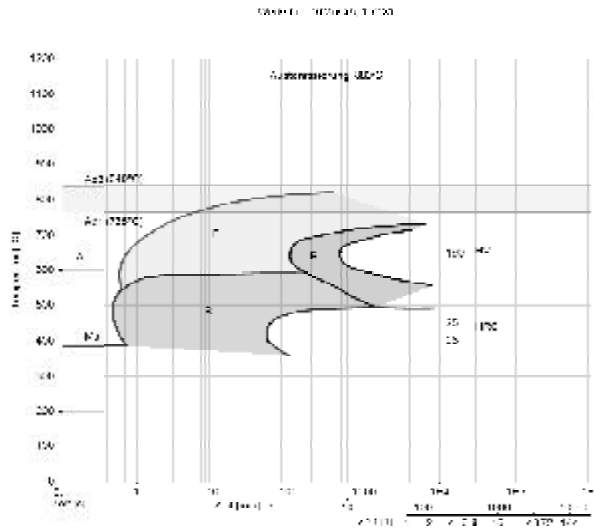
**Thermal capacity diagram**



**Continuous ZTU-diagrams**



## 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  
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