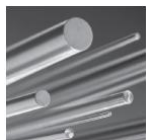


## Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.4418
Description	X4CrNiMo16-5-1
AISI/SAE	S 165 M
Search for alternatives in the ABRAMS STEEL GUIDE*	<a href="http://www.steel-guide.eu/alternatives/S165M">www.steel-guide.eu/alternatives/S165M</a>

## Specifications



**Precision round steel with machining allowance [PRS/BA]**  
 peeled / rough-turned  
 L: 500 mm  
 L: 1.000 mm

## Chemical composition AISI/SAE S 165 M (reference value %)

C	Si	Mn	P	S	Cr	Mo	Ni	N
0 - 0,06	0 - 0,7	0 - 1,5	0 - 0,04	0 - 0,03	15,0 - 17,0	0,8 - 1,5	4,0 - 6,0	≥ 0,02

## Physical properties

Hardness (delivery condition)	max. 323 HB, tempered			
Tensile strength $R_m$ (as received condition)	ca. 1095 N/mm <sup>2</sup>			
Working hardness	max. 39 HRC			
Thermal expansion coefficient $10^{-6}m/(m \cdot K)$	20 - 100°C	20 - 200°C	20 - 300°C	20 - 400°C
	10,3	10,8	11,2	11,6
Thermal conductivity $W/(m \cdot K)$	20°C			
	15,0			

## Technical properties

Stainless, martensitic steel (tempered condition). Excellent combination of high strength, good toughness and a very good corrosion resistance in aggressive substances (acids). The material is polishable, has good weldability and is suitable to use at temperatures from -30 °C up to 300 °C.

## Applications

Automotive industry, chemical industry, aviation and aerospace industry, mechanical engineering, plant engineering, ship building industry, shafts, axes, environmental engineering, centrifuge and pump components, energy technique, onshore and offshore.

## Heat treatment

Soft annealing	Temperature	Cooling
	600 - 650°C	Furnace, air
Hardening	Temperature	Cooling
	950 - 1050 C	Polymer, oil, air

## ABRAMS PREMIUM STEEL

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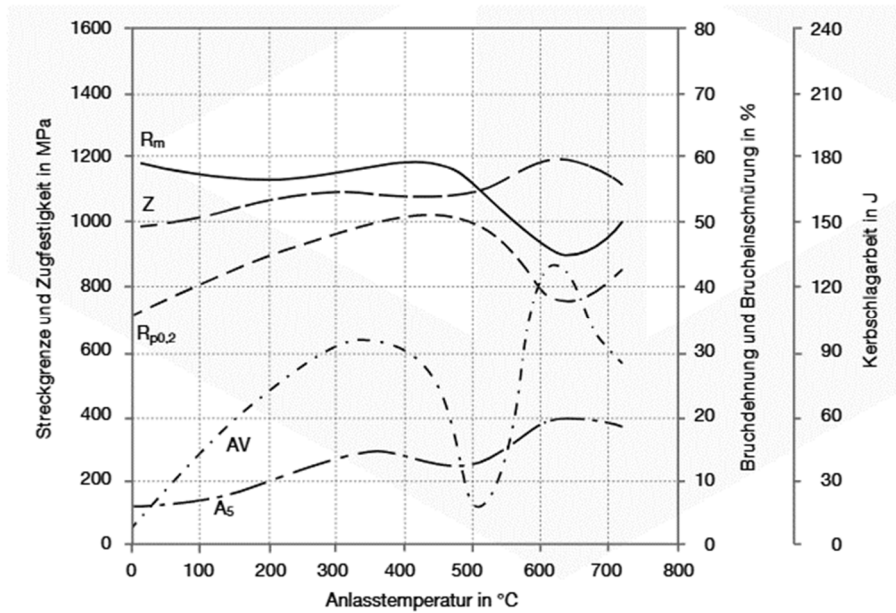
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## Hardening and tempering diagram



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