

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®	www.steel-guide.eu/alternatives/S165M

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 ²			
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

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



Hardening and tempering diagram

