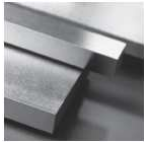


Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.2767
Description	45NiCrMo16
AISI/SAE	6F7
Search for alternatives in the ABRAMS STEEL GUIDE®	www.steel-guide.eu/alternatives/6F7

Specifications



Precision flat steel with machining allowance [PFS/BA]
L: 500 mm
L: 1.000 mm



Precision round steel without machining allowance [PRS]
bright ground, ISO h8
L: 1.000 mm



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

Chemical composition AISI/SAE 6F7 (reference value %)

C	Si	Mn	P	S	Cr	Mo	Ni
0,4 - 0,5	0,1 - 0,4	0,2 - 0,5	0 - 0,03	0 - 0,03	1,2 - 1,5	0,15 - 0,35	3,8 - 4,3

Physical properties

Hardness (delivery condition)	max. 260 HB, annealed						
Tensile strength R_m (as received condition)	approx. 880 N/mm ²						
Working hardness	max. 54 HRC						
Thermal expansion coefficient $10^{-6}m/(m \cdot K)$	20 - 100°C	20 - 200°C	20 - 300°C	20 - 350°C	20 - 400°C	20 - 450°C	20 - 500°C
	11,3	11,9	12,5	12,2	12,0	12,1	12,4
Thermal conductivity $W/(m \cdot K)$	23°C	150°C	300°C	350°C	400°C	500°C	
	31,0	34,0	33,9	34,1	33,2	31,2	

Technical properties

Steel grade with focus on cold work, high toughness (nickel content), good through-hardenability (even for large cross-sections), as well as high impact strength and pressure resistance. Polishable, etchable and erodible. For very special purity and homogeneousness we recommend AISI/SAE 6F7 ESR.

Applications

Cutting tools, cutlery punches, embossing tools, bending tools, cold hobbing tools, pressure bars, billet shear knives, cold shear knives, plastic moulds, hot press tools, light metal processing, heavy metal processing, drawing jaws, reinforcements.

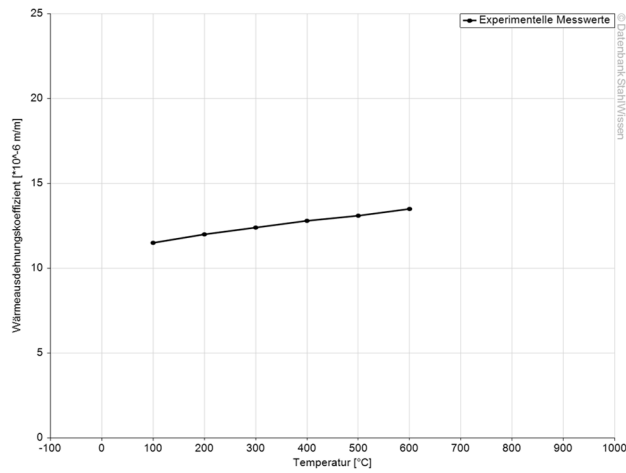
Heat treatment

Soft annealing	Temperature		Cooling		Hardness	
	610 - 650°C		Furnace		max. 260 HB	
Stress relief annealing	Temperature		Cooling			
	approx. 600 - 650°C		Furnace			
Hardening	Temperature		Quenching in		Hardness after quenching	
	840 - 870°C		Air, oil, hot basin (180 - 220°C)		56 HRC	
Tempering	100°C	200°C	300°C	400°C	500°C	600°C
	56 HRC	54 HRC	50 HRC	46 HRC	42 HRC	38 HRC



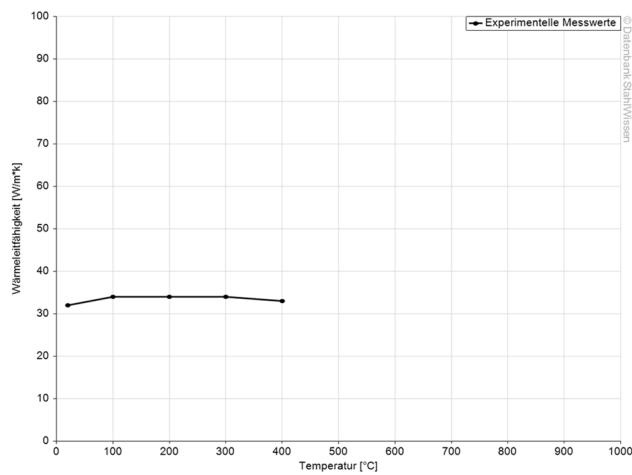
Thermal expansion coefficient diagram

Werkstoff: 45NiCrMo16, 1.2767



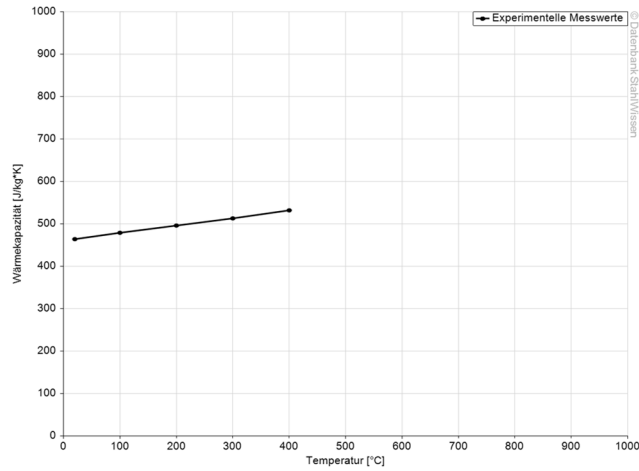
Thermal conductivity diagram

Werkstoff: 45NiCrMo16, 1.2767



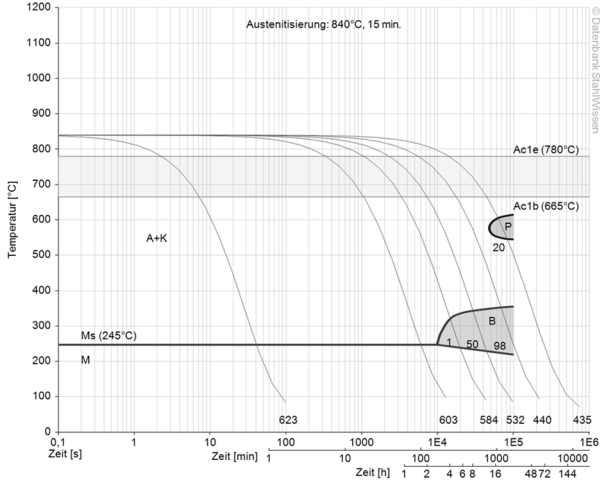
Thermal capacity diagram

Werkstoff: 45NiCrMo16, 1.2767

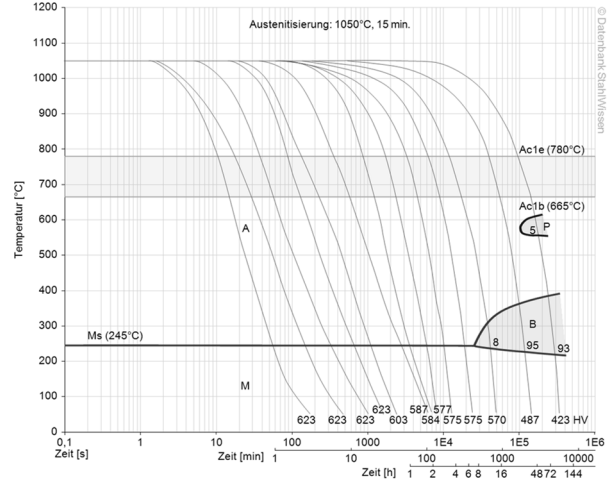


Continuous ZTU-diagrams

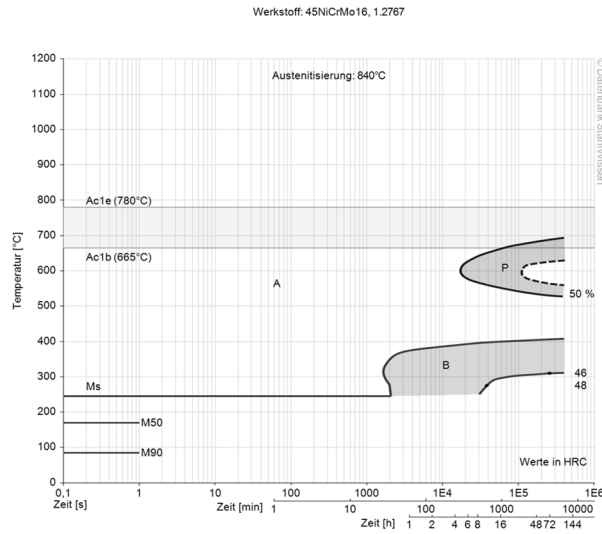
Werkstoff: 45NiCrMo16, 1.2767
Schmelzanalyse:
0,45% C; 0,20% Si; 0,40% Mn; 1,30% Cr; 0,30% Mo; 4,00% Ni



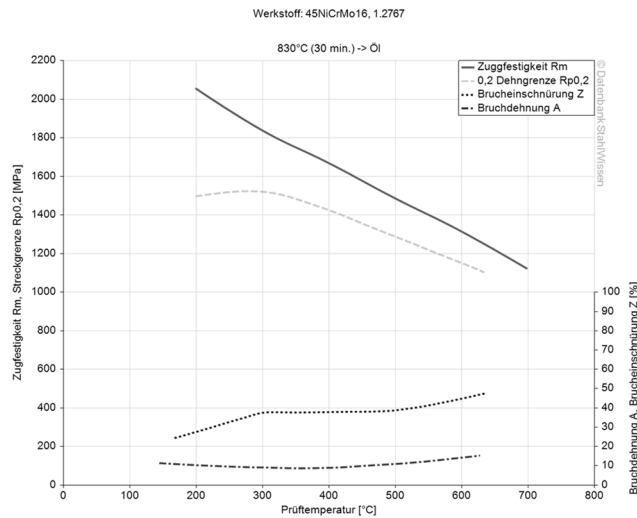
Werkstoff: 45NiCrMo16, 1.2767
Schmelzanalyse:
0,42% C; 0,39% Si; 0,38% Mn; 0,017% P; 0,010% S; 1,61% Cr; 0,23% Mo; 4,40% Ni; 0,060% V; 0,018% Al



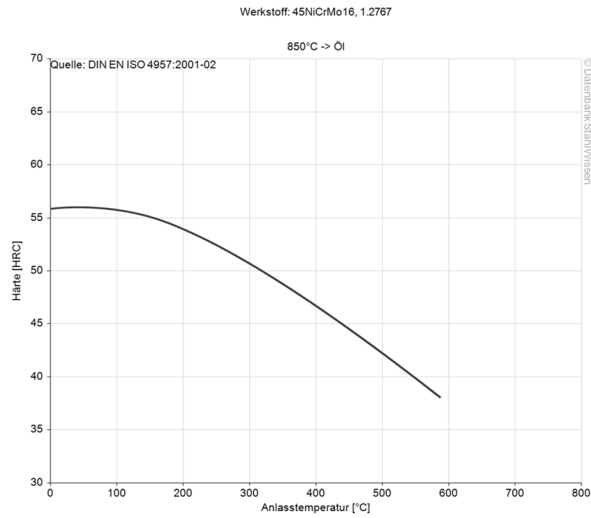
Isothermal ZTU-diagram



Hardening and tempering diagram



Tempering 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

