

Steel grade

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

Specifications



€co-Präz® [€co]
L: 300 mm
L: 500 mm

Chemical composition BS 1.2767 ESR (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-hardening (even for large cross-sections), as well as high impact strength and pressure resistance. Polishable, etchable and erodible. For very special purity and homogeneity we recommend BS 1.2767 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.

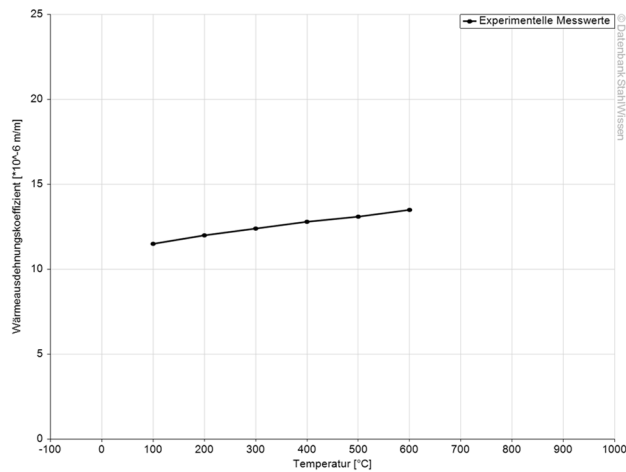


Heat treatment

	Temperature	Cooling	Hardness			
Soft annealing	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

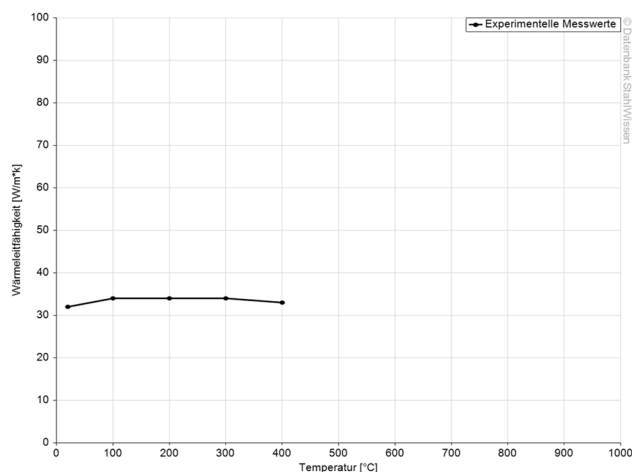
Thermal expansion coefficient diagram

Werkstoff: 45NiCrMo16, 1.2767



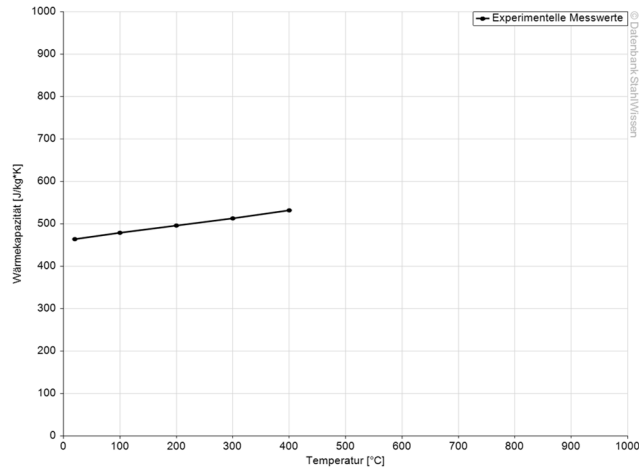
Thermal conductivity diagram

Werkstoff: 45NiCrMo16, 1.2767



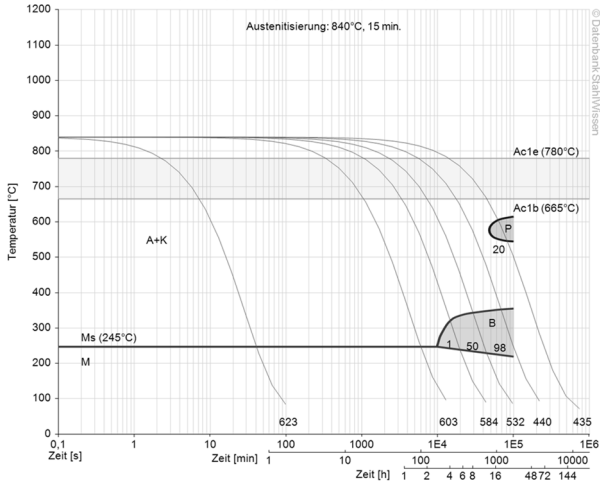
Thermal capacity diagram

Werkstoff: 45NiCrMo16, 1.2767

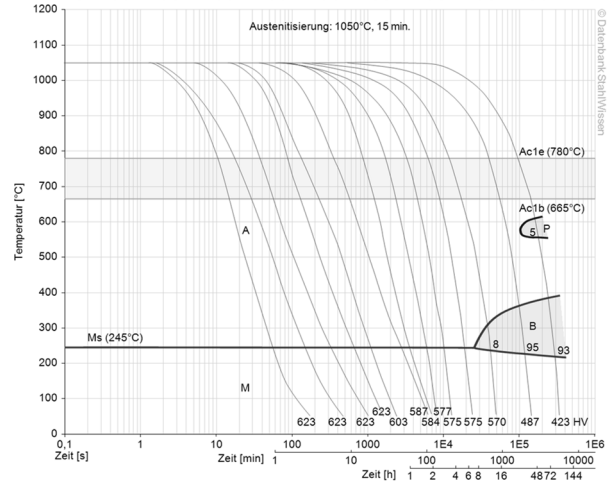


Continuous ZTU-diagrams

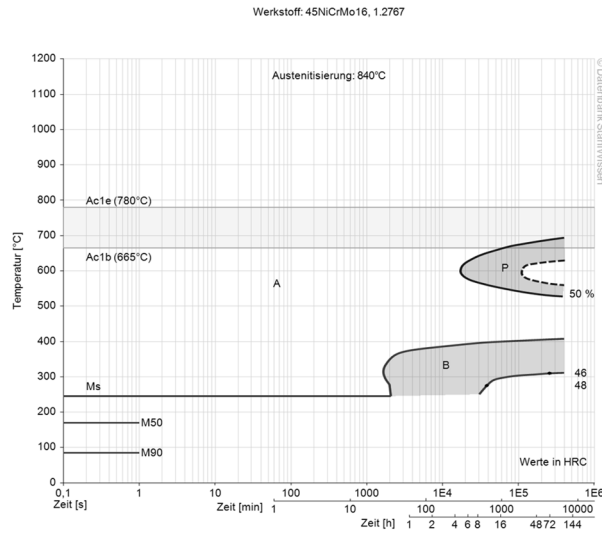
Werkstoff: 45NiCrMo16, 1.2767
Schmelzanalyse:
0,45% C; 0,20% Si; 0,40% Mn; 1,30% Cr; 0,30% Mo; 4,00% Ni



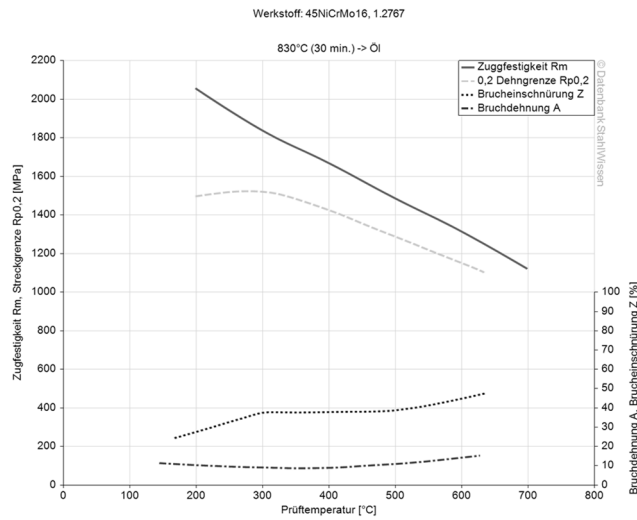
Werkstoff: 45NiCrMo16, 1.2767
Schmelzanalyse:
0,42% C; 0,39% Si; 0,38% Mn; 0,017% P; 0,010% S; 1,61% Cr; 0,23% Mo; 4,40% Ni; 0,060% V; 0,018% Al



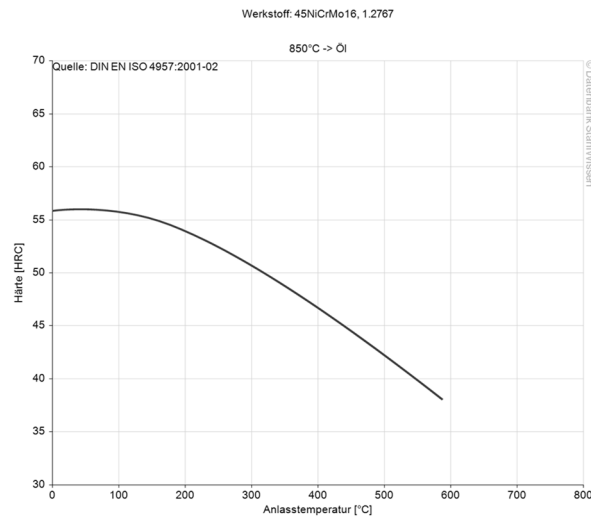
Isothermalal ZTU-diagram



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
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