

Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.2343 ESU
Description	X37CrMoV5-1
AISI/SAE	H11 ESR; T20811 ESR
Search for alternatives in the ABRAMS STEEL GUIDE [®]	www.steel-guide.eu/alternatives/H11ESR

Specifications



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



€co-Präz[®] [€co]
L: 300 mm
L: 500 mm

Chemical composition AISI/SAE H11 ESR (reference value %)

C	Si	Mn	P	S	Cr	Mo	V
0,33 - 0,41	0,8 - 1,2	0,25 - 0,5	0 - 0,03	0 - 0,02	4,8 - 5,5	1,1 - 1,5	0,3 - 0,5

Physical properties

Hardness (delivery condition)	max. 229 HB, annealed						
Tensile strength R_m (as received condition)	approx. 770 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 - 400°C	20 - 500°C	20 - 600°C	20 - 700°C
	11,8	12,4	12,6	12,7	12,8	12,9	12,9
Thermal conductivity $W/(m \cdot K)$	20°C	350°C	700°C				
	Annealed	29,8	30,0	33,4			
	Tempered	26,8	27,3	30,3			

Technical properties

Hot work steel with excellent heat resistance and wear resistance. Good toughness and thermal conductivity. Can be cooled with water and is resistant to thermal shock. The ESR production (Electro Slag Remelted Steel) guarantees pureness and homogeneity, as well as improved toughness.

Applications

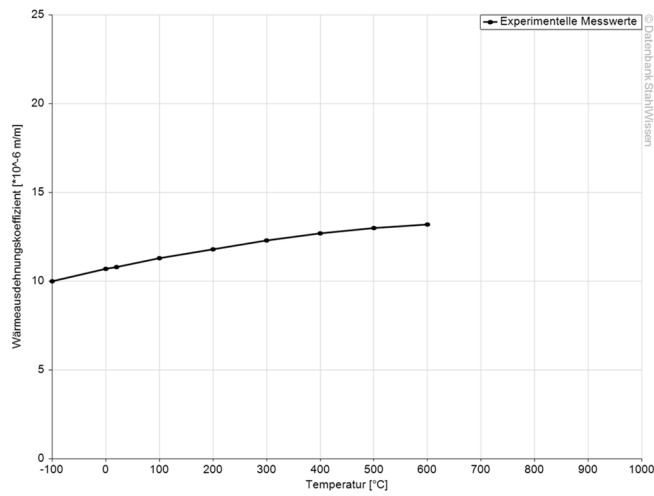
Forging tools and dies, hot shear knives, hot extrusion tools, extrusion press tools, press tools, block receivers, die casting tools, light metal die casting, press mandrels, press dies, piecer plugs, screw production, rivet production, bolts production, ejectors, plastic moulds.



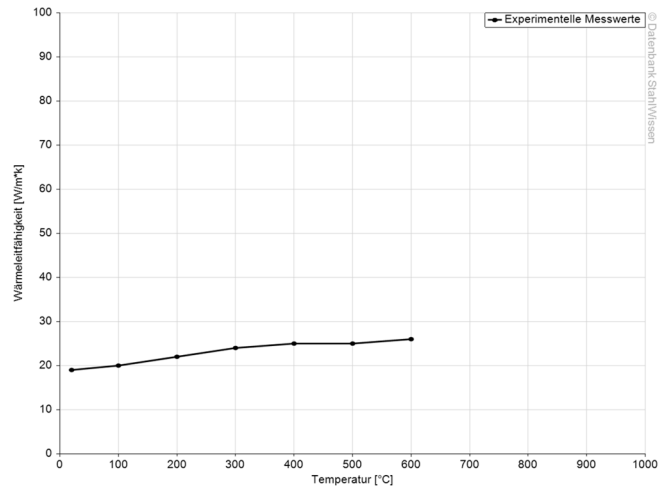
Heat treatment

Soft annealing	Temperature		Cooling		Hardness				
	750 - 800°C		Furnace		max. 229 HB				
Stress relief annealing	Temperature		Cooling						
	600 - 650°C		Furnace						
Hardening	Temperature		Quenching in		Hardness after quenching				
	1000 - 1040°C		Air, oil, hot basin (500 - 550°C)		54 HRC				
Tempering	100°C	200°C	300°C	400°C	500°C	550°C	600°C	650°C	700°C
	52 HRC	52 HRC	52 HRC	52 HRC	54 HRC	52 HRC	48 HRC	38 HRC	31 HRC

Thermal expansion coefficient diagram

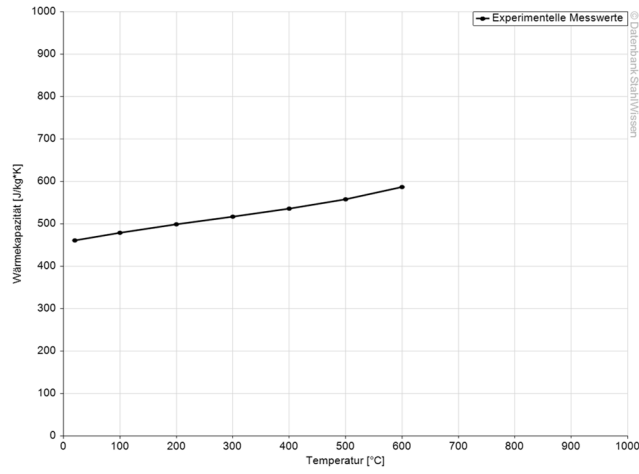


Thermal conductivity diagram

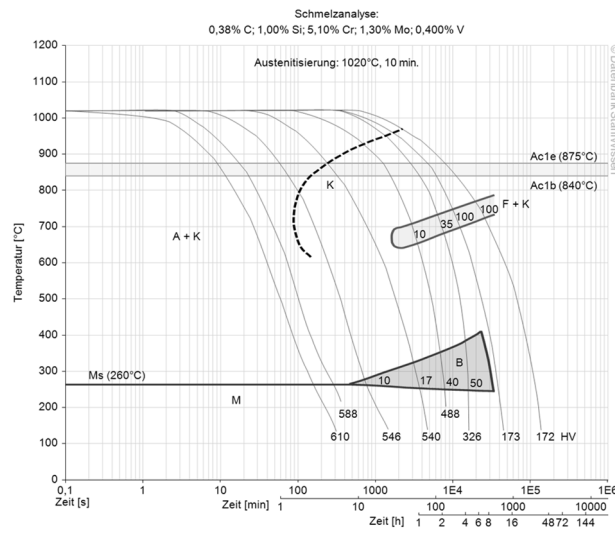


Thermal capacity diagram

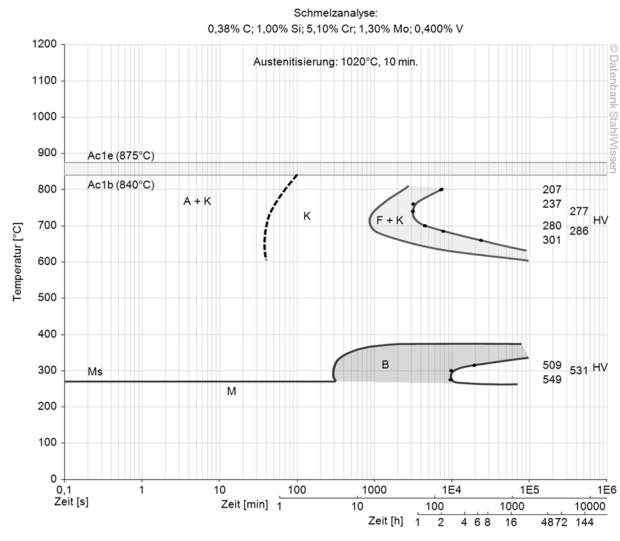
Werkstoff: X37CrMoV5-1, 1.2343



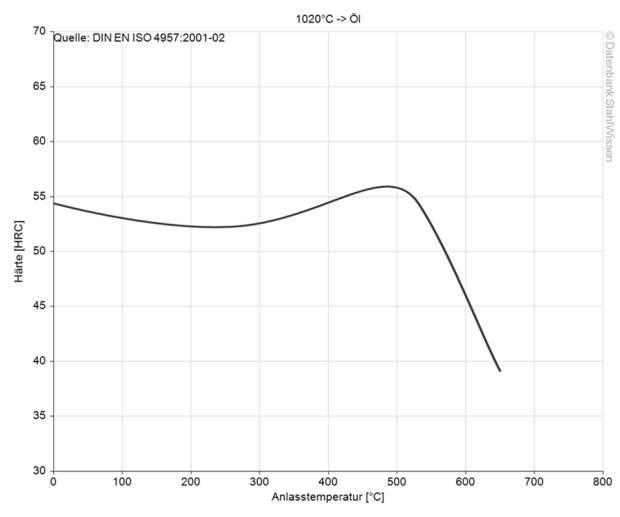
Continuous ZTU-diagram



Isothermal ZTU-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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