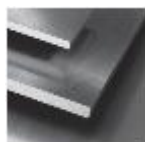


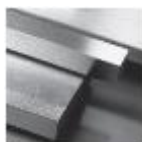
Steel grade

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



€co-Präz® [€co]
L: 300 mm
L: 500 mm



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

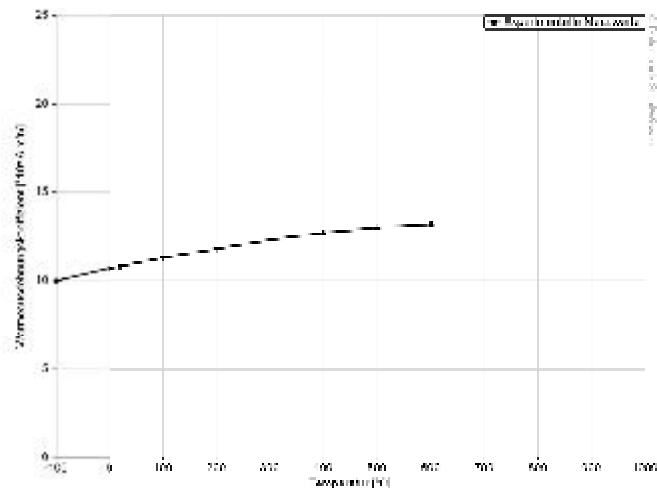
Forging tools and dies, hot shear knives, hot extrusion tools, extrusion press tools, press tools, block receivers, die casting tools, light metal die casting, press mandrels, press dies, piecer plugs, screw production, rivet production, bolts production, ejectors, plastic moulds.



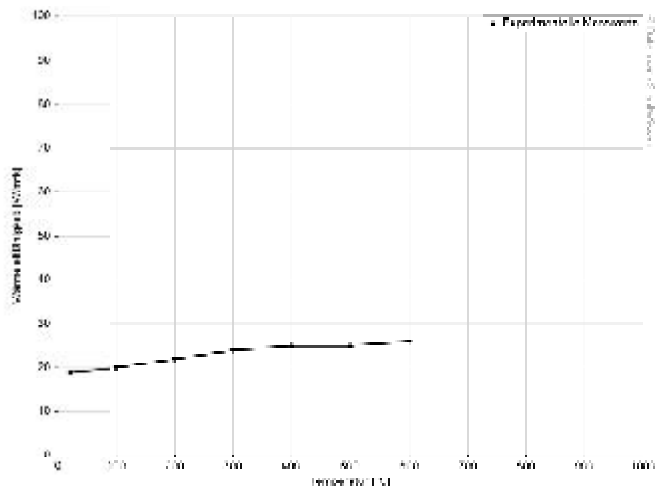
Heat treatment

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



ABRAMS PREMIUM STEEL

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 General Partner: Abrams Engineering Verwaltungs GmbH
 Amtsgericht Osnabrueck / Germany, HRB 20019

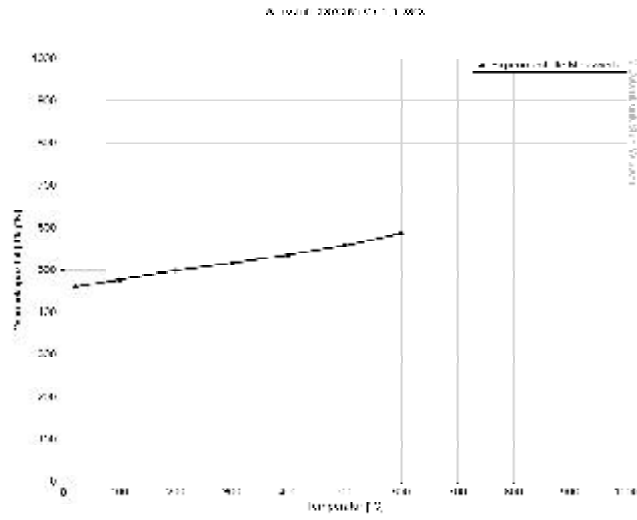
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Thermal capacity diagram



Continuous ZTU-diagram

