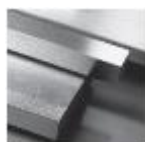


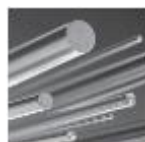
Steel grade

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

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

Chemical composition AISI/SAE H11 (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 $10^{-6} \text{ m}/(\text{m} \cdot \text{K})$	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 $W/(\text{m} \cdot \text{K})$	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

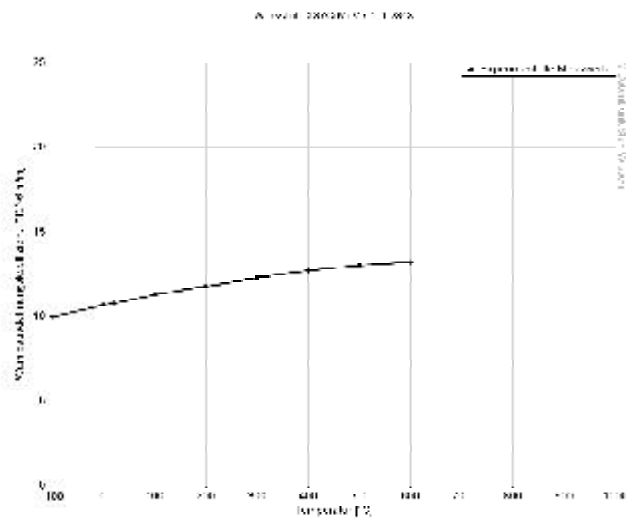
Forging tools and dies, hot shear knives, hot extrusion tools, extrusion press tools, press tools, block receivers, die casting tools, light metal die casting, press mandrels, press dies, piecer plugs, screw production, rivet production, bolts production, ejectors, plastic moulds.



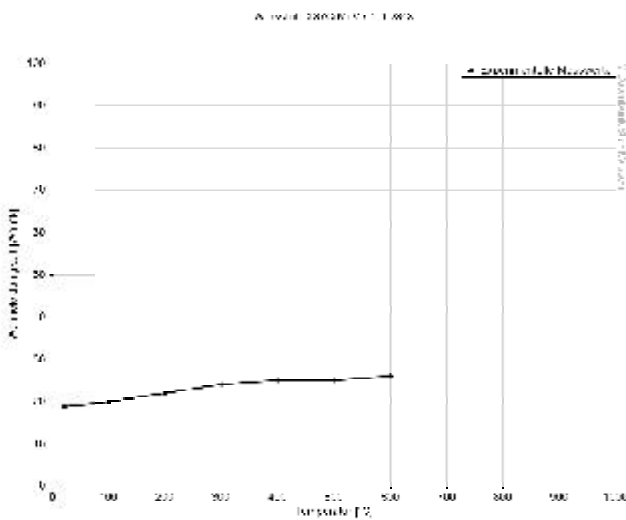
Heat treatment

	Temperature	Cooling	Hardness						
Soft annealing	750 - 800°C	Furnace	max. 229 HB						
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

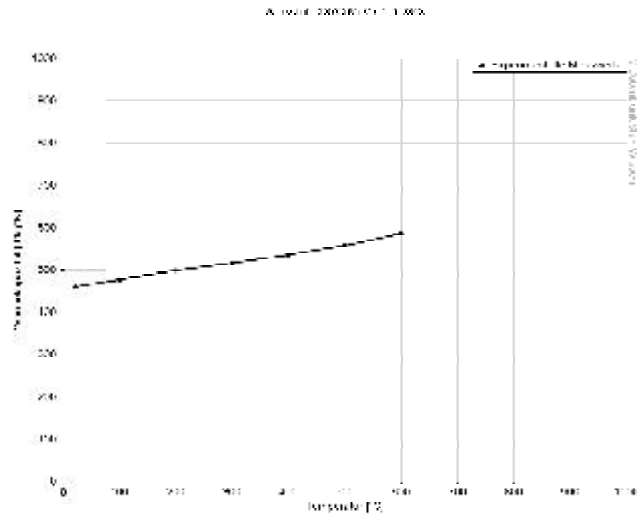
Thermal expansion coefficient diagram



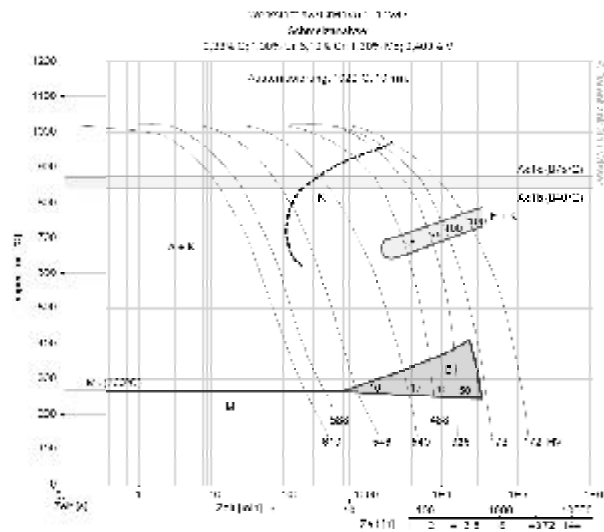
Thermal conductivity diagram



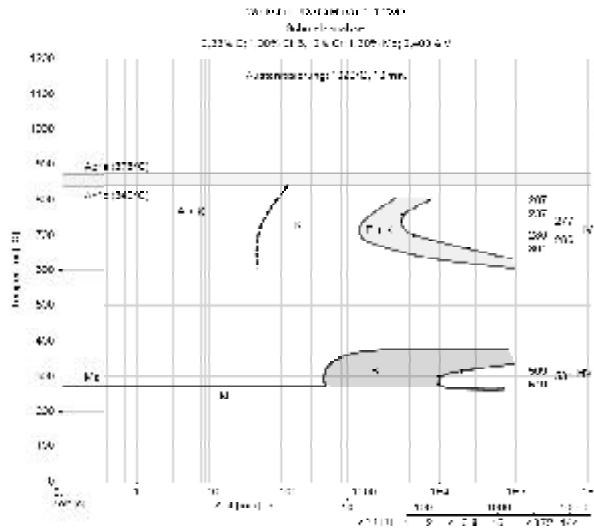
Thermal capacity diagram



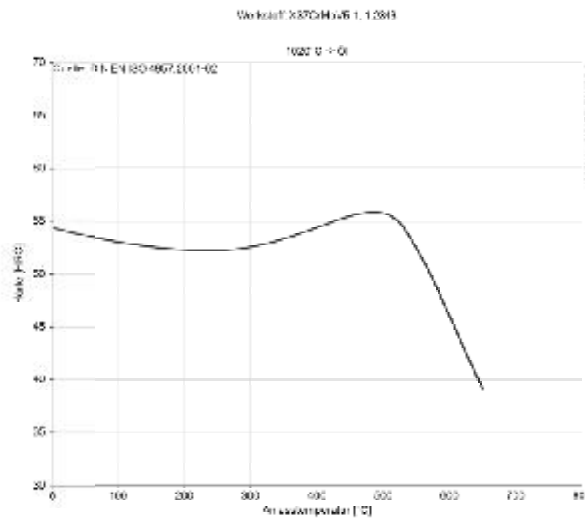
Continuous ZTU-diagram



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
Issued: 2012

