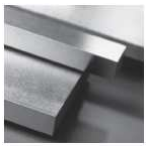
Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.2343 ESU
Description	X37CrMoV5-1
BS	BH 11 ESR
AISI/SAE	H11 ESR; T20811 ESR
Search for alternatives in the ABRAMS STEEL GUIDE®	**www.steel-guide.co.uk/alternatives/BH11ESR**

Specifications

€co-Präz® [€co]
L: 300 mm
L: 500 mm



Precision flat steel
with machining allowance [PFS/BA]
L: 1,000 mm

Chemical composition BS BH 11 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/mm²						
Working hardness	max. 54 HRC						
Thermal expansion coefficient 10^{-6}m/(m • 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 • 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 homogeneousness, 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.

Divisions of
ABRAMS Industries GmbH & Co. KG
Hannoversche Str. 38 / 46
49084 Osnabrück
Germany

County court Osnabrück / Germany, HRA 6865
General Partner: ABRAMS Industries Verwaltungs GmbH
County court Osnabrück / Germany, HRB 20019
Managing Director: Dipl.-Wi.-Ing. Dr. Jürgen Abrams
VAT-No.: DE221940667

T: +44 (0) 121 368 0910
sales@abrams-industries.co.uk
www.abrams-industries.co.uk
www.abrams-industries.co.uk/shop

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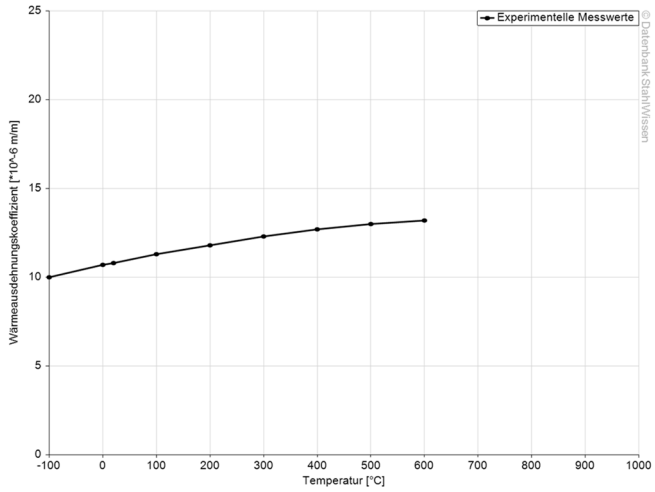
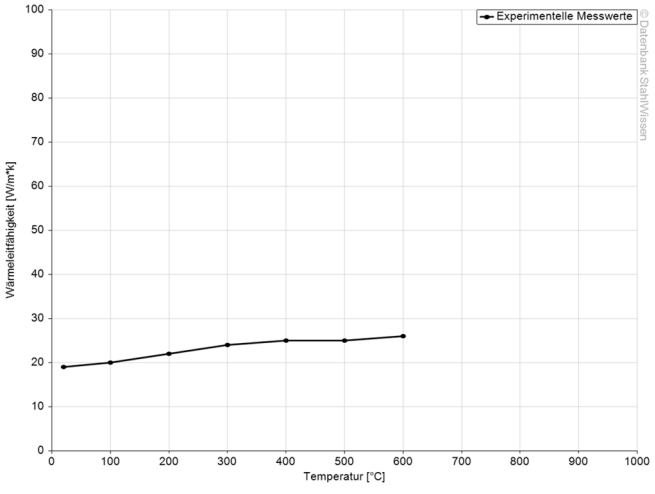
Heat treatment

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

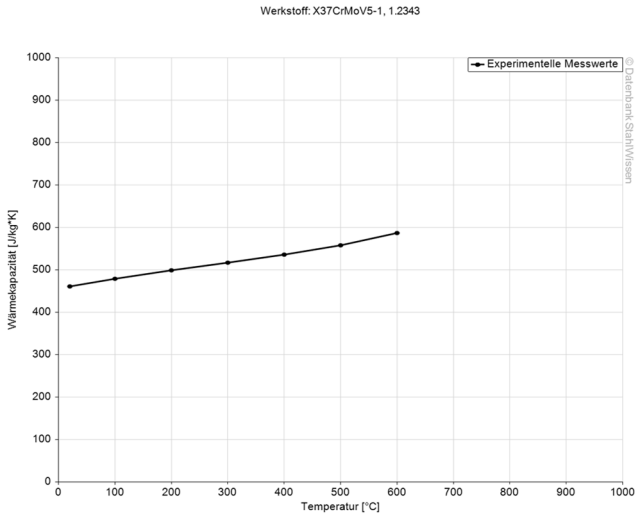
Thermal expansion coefficient diagram



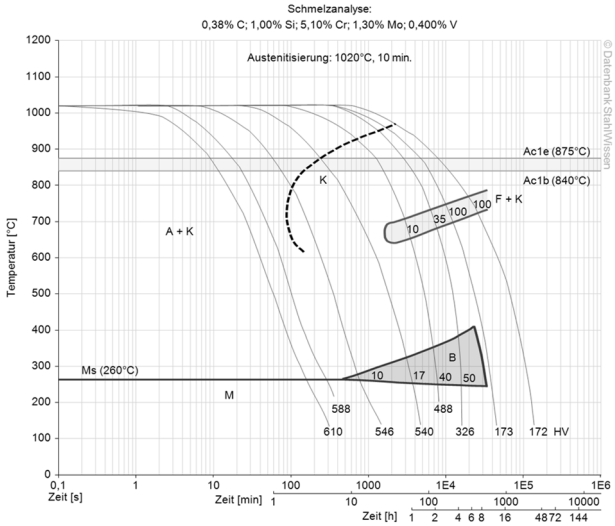
Thermal conductivity diagram



Thermal capacity diagram



Continuous ZTU-diagram



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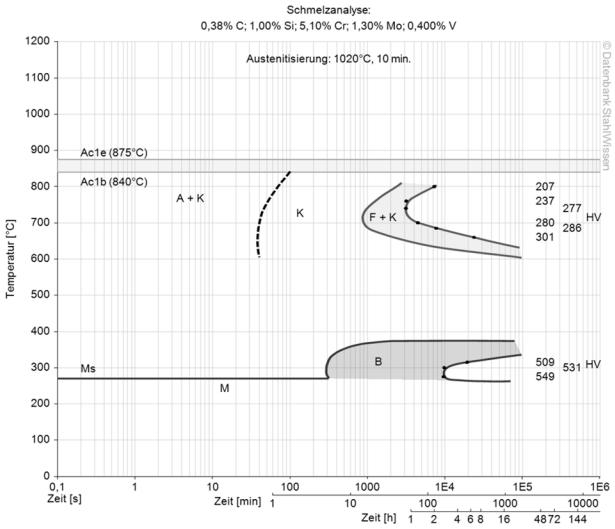
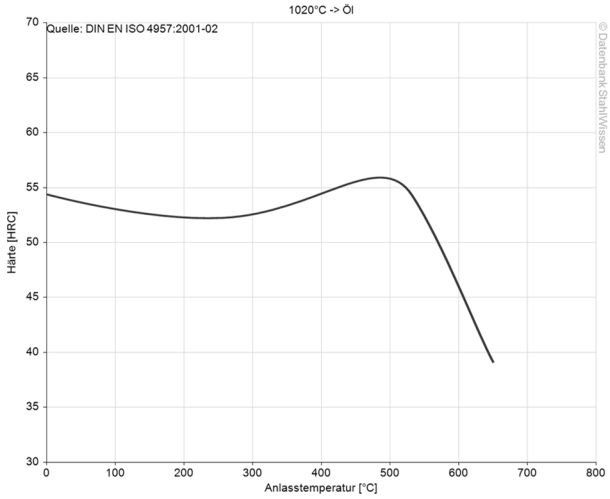
Isothermical ZTU-diagram



Tempering diagram



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