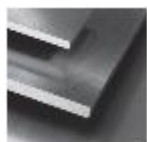


## Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.2083 ESU
Description	X40Cr14
AISI/SAE	420 ESR
Search for alternatives in the ABRAMS STEEL GUIDE®	<a href="http://www.steel-guide.eu/alternatives/420ESR">www.steel-guide.eu/alternatives/420ESR</a>

## Specifications



€co-Präz® [€co]  
L: 300 mm

## Chemical composition AISI/SAE 420 ESR (reference value %)

C	Si	Mn	P	S	Cr
0,36 - 0,42	0 - 1,0	0 - 1,0	0 - 0,03	0 - 0,03	12,5 - 14,5

## Physical properties

Hardness (delivery condition)	max. 241 HB, annealed						
Tensile strength $R_m$ (as received condition)	approx. 815 N/mm <sup>2</sup>						
Working hardness	max. 55 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
	11,1	11,6	12,0	12,3	12,4	12,5	12,6
Thermal conductivity $W/(m \cdot K)$	23°C	150°C	300°C	350°C	400°C	500°C	
	22,6	24,0	24,6	24,9	24,4	23,7	

## Technical properties

Corrosion-resistant cold work steel and plastic mould steel, good machinability, good hardenability and excellent polishing properties. Low distortion through-hardening steel with high hardness and high wear resistance. For maximum required polishability use the ESR (Electro Slag Remelted Steel) production.

## Applications

Machine construction, medical technology, plastic moulds, synthetic resin mould tools, die casting tools, light metal die casting, cutting tools, machine knives, kitchen knives, razors, shears, scraper blades, surgical instruments, measuring tools, roller bearings, ball bearings, ice-skates, pump parts, valves.

## Heat treatment

	Temperature	Cooling	Hardness			
Soft annealing	760 - 800°C	Furnace	max. 241 HB			
Stress relief annealing	Temperature	Cooling				
	600 - 650°C	Furnace				
Hardening	Temperature	Quenching in	Hardness after quenching			
	1000 - 1050°C	Oil, basin (500 - 550°C)	56 HRC			
Tempering	100°C	200°C	300°C	400°C	500°C	600°C
	56 HRC	55 HRC	52 HRC	51 HRC	52 HRC	40 HRC

## ABRAMS PREMIUM STEEL

is a registered trademark of  
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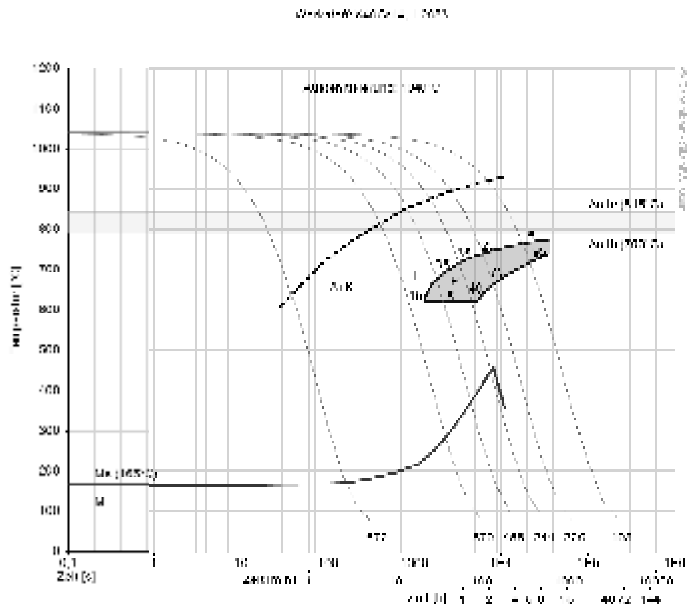
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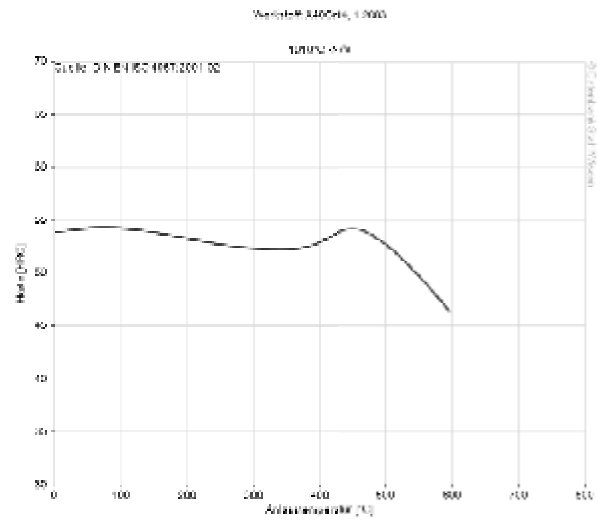
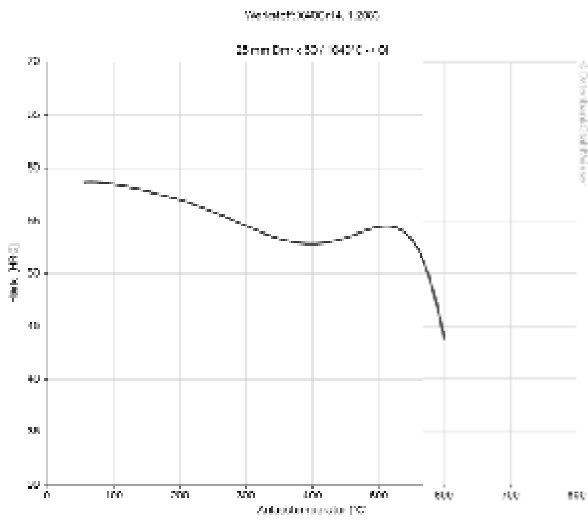
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## Continuous ZTU-diagram



## Tempering diagrams



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

