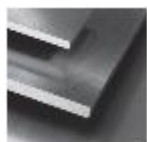


## Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.7225
Description	42CrMo4
AISI/SAE	4140
Search for alternatives in the ABRAMS STEEL GUIDE®	<a href="http://www.steel-guide.eu/alternatives/4140">www.steel-guide.eu/alternatives/4140</a>

## Specifications



€co-Präz<sup>®</sup> [€co]  
L: 500 mm  
L: 1.000 mm

## Chemical composition AISI/SAE 4140 (reference value %)

C	Si	Mn	P	S	Cr	Mo
0,38 - 0,45	0 - 0,4	0,6 - 0,9	0 - 0,035	0 - 0,035	0,9 - 1,2	0,15 - 0,3

## Physical properties

Hardness (delivery condition)	max. 217 HB, annealed / normalized			
Tensile strength R <sub>m</sub> (as received condition)	approx. 720 N/mm <sup>2</sup>			
Working hardness	max. 48 HRC			
Thermal expansion coefficient 10 <sup>-6</sup> m/(m • K)	20 - 100°C	20 - 200°C	20 - 300°C	20 - 400°C
	11,1	12,1	12,9	13,5
Thermal conductivity W/(m • K)	20°C			
	42,6			

## Technical properties

Heat-treatable steel (annealed condition) that can be used for a wide range of applications with a high degree of strength and toughness. Often used for demanding applications in automotive engineering. In quenched and tempered condition it is used in machine construction.

## Applications

Machine construction, machine parts, axes, knuckles, connecting rods, crankshafts, gear shafts, pinions, gears, bandages, base plates, assembling parts.

## Heat treatment

Soft annealing	Temperature	Cooling	Hardness
	680 - 720°C	Furnace	max. 217 HB
Hardening	Temperature	Quenching in	
	830 - 880°C	Oil or water	

## ABRAMS PREMIUM STEEL

is a registered trademark of  
Abrams Engineering Services GmbH & Co. KG  
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Managing Director: Dipl.-Wi.-Ing. Dr. Juergen Abrams

Amtsgericht Osnabrueck / Germany, HRA 6865  
VAT-No.: DE 221940667  
General Partner: Abrams Engineering Verwaltungs GmbH  
Amtsgericht Osnabrueck / Germany, HRB 20019

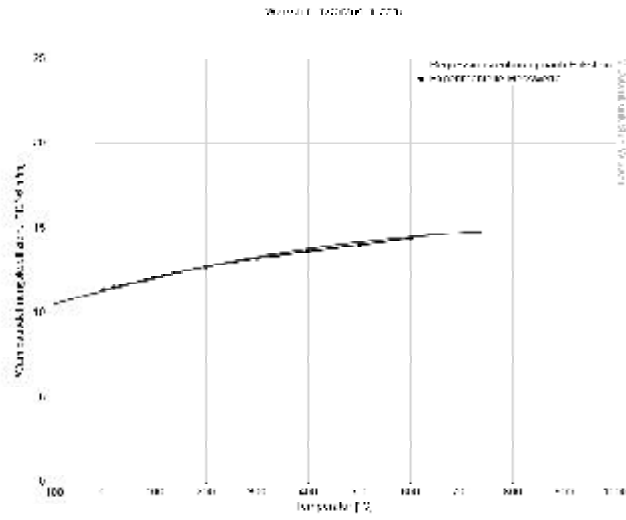
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www.shop.premium-steel.eu  
www.steel-guide.eu

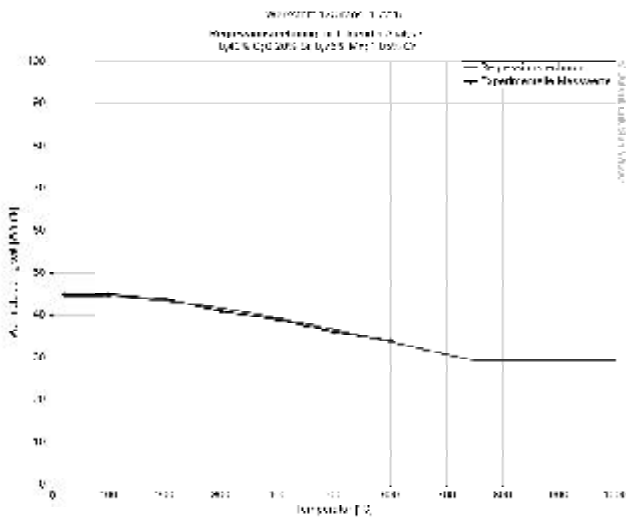
[www.premium-steel.eu/news](http://www.premium-steel.eu/news)



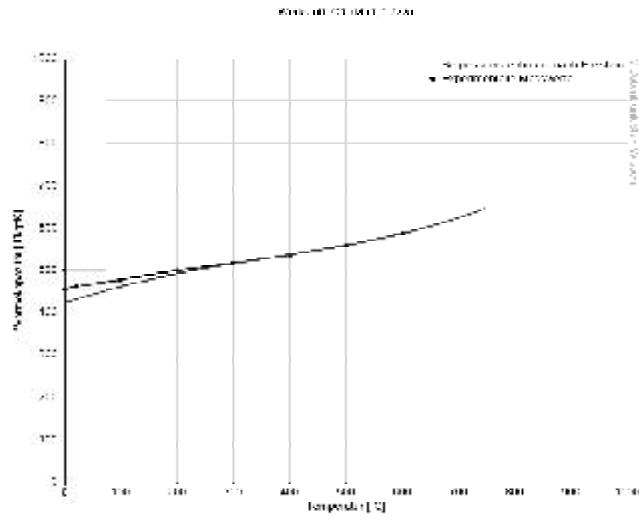
**Thermal expansion coefficient diagram**



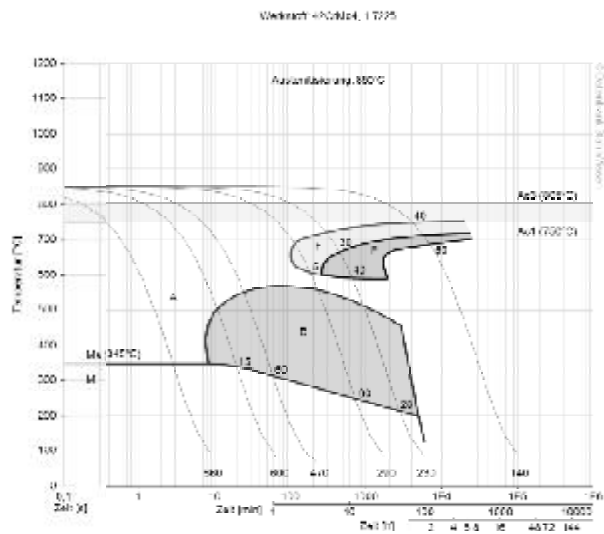
**Thermal conductivity diagram**



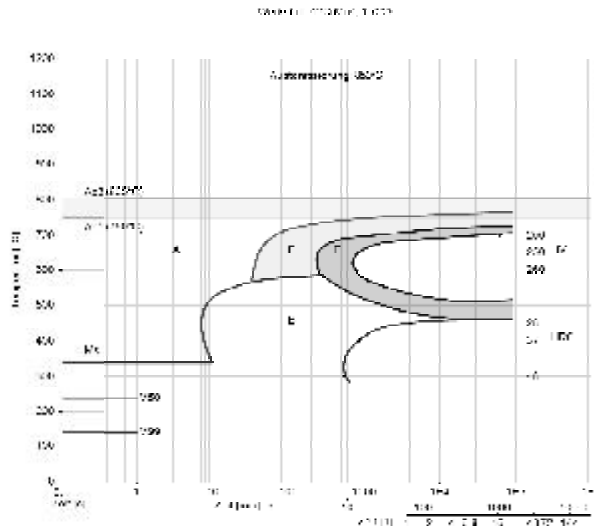
**Thermal capacity diagram**



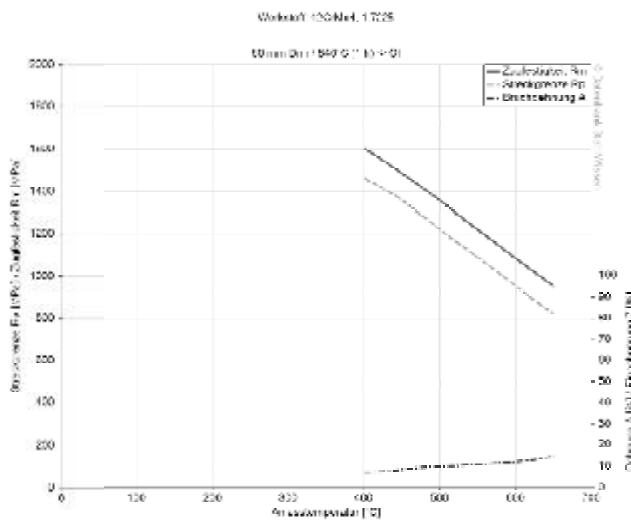
**Continuous ZTU-diagram**



## Isothermal ZTU-diagram



## Hardening and 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

