Steel grade

Material No.	PREMIUM 4140 / 4142
AISI	4140 / 4142
Search for alternatives in the ABRAMS STEEL GUIDE	**www.abrams-steelguide.com/alternatives/4140**

Shapes

$mart Flat Stock [$mart]
Standardized Precision Blanks
L: 12"
L: 24"

$mart Flat Stock Metric [$martM]
Standardized Precision Blanks Metric
L: 300 mm
L: 600 mm

Chemical composition AISI 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_m (as received condition)	approx. 104.4 KSI			
Working hardness	max. 48 HRC			
Thermal expansion coefficient 10^{-6}m/(m • K)	68 - 212°F	68 - 392°F	68 - 572°F	68 - 752°F
	11.1	12.1	12.9	13.5
Thermal conductivity W/(m • K)	68°F			
	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

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

Heat treatment

Soft annealing	**Temperature**	**Cooling**	**Hardness**
	1256 - 1328°F	Furnace	max. 217 HB
Hardening	**Temperature**	**Quenching in**	
	1526 - 1616°F	Oilorwater	

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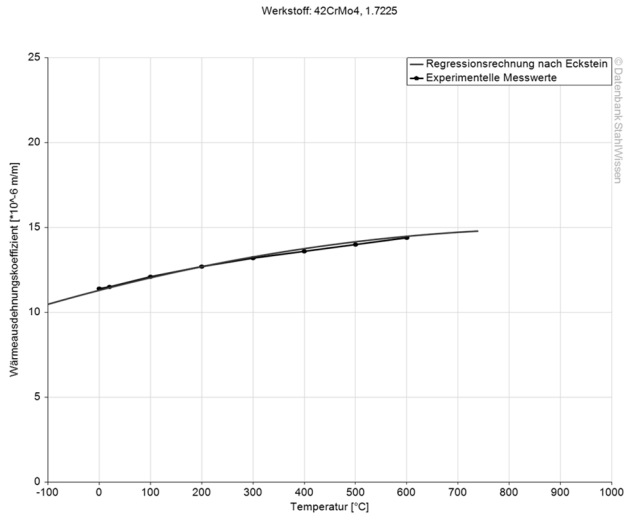
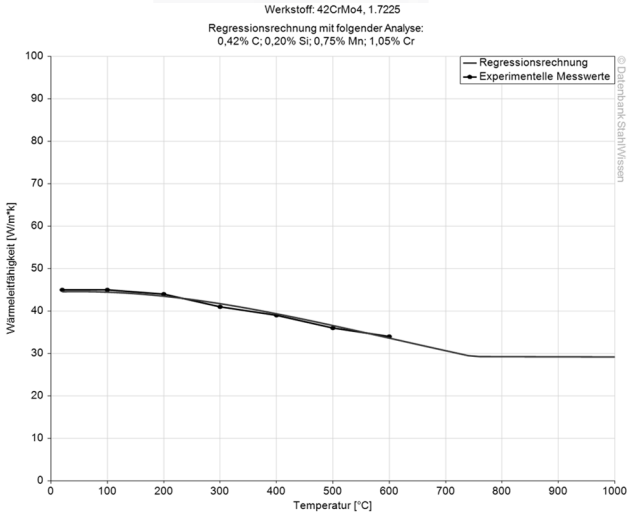
Thermal expansion coefficient diagram



Thermal conductivity diagram



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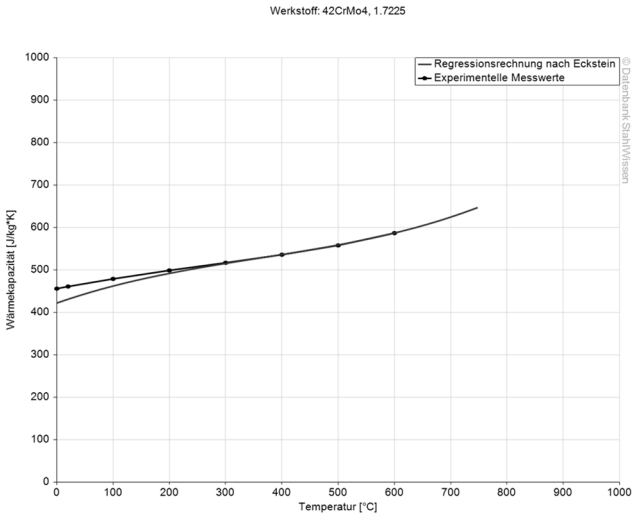
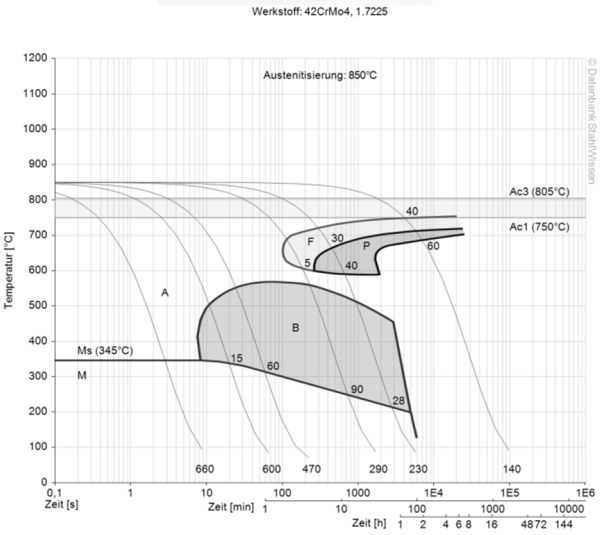
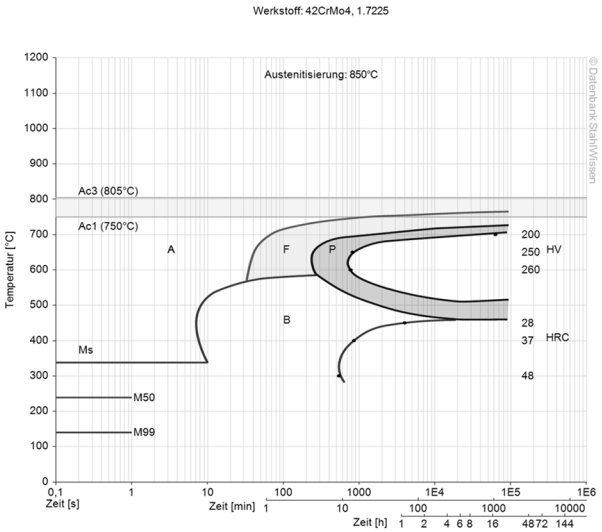
Thermal capacity diagram



Continuous ZTU-diagram



Isothermical ZTU-diagram



Hardening and tempering diagram