

Material No.: Code:  
**1.7225 42CrMo4**

DE - Brand:  
**M4S**

**Chemical composition:**  
 (Typical analysis in %)

C	Cr	Mo					
0,42	1,10	0,25					

**Steel properties:**

CrMo-alloyed steel, engineering steel supplied in quenched and tempered conditions. Good machinability.

**Applications:**

Components with high requirements on toughness, e.g. gear wheels, pinions, connecting rods, parts for mechanical engineering.

**Condition of delivery:**

Quenched and tempered

**Physical properties:**

Thermal expansion coefficient	$\left[ \frac{10^{-6} \cdot \text{m}}{\text{m} \cdot \text{K}} \right]$	20-100°C	20-200°C	20-300°C	20-400°C
		12,1	12,7	13,2	13,6
Thermal conductivity	$\left[ \frac{\text{W}}{\text{m} \cdot \text{K}} \right]$	20°C			
		45,1			

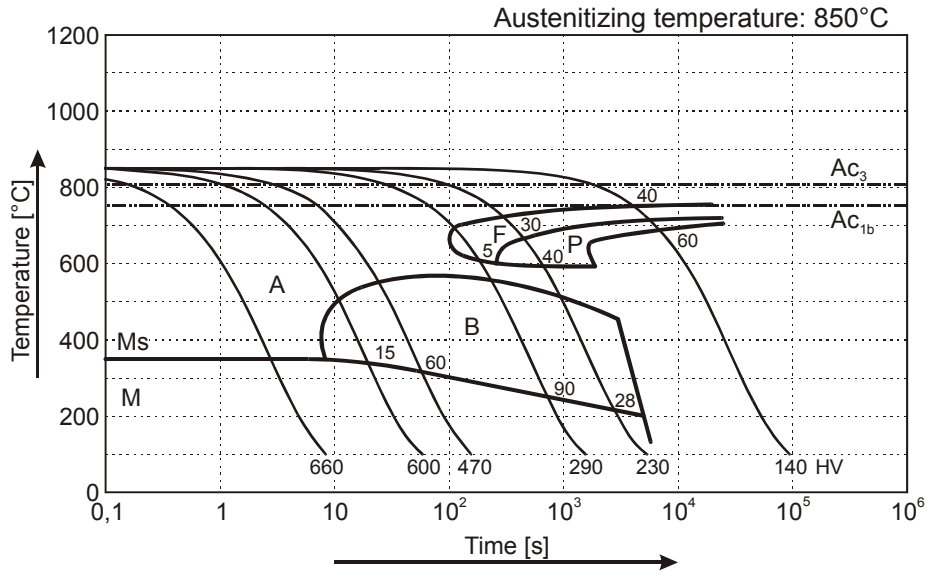
**Heat treatment:**

Soft annealing	<b>Temperature</b>	<b>Cooling</b>	<b>Hardness</b>
	680 - 720°C	furnace	max. 241 HB
Normalizing	<b>Temperature</b>	<b>Cooling</b>	
	850 - 880°C	air	
Hardening	<b>Temperature</b>	<b>Cooling</b>	<b>Tempering</b>
	820 - 860°C	oil, water	see tempering diagram

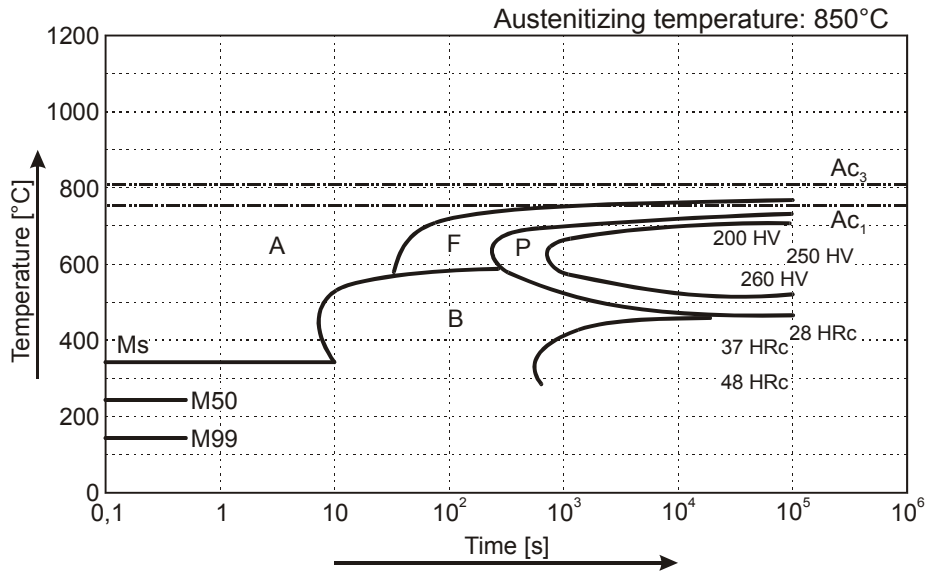
**Mechanical properties in quenched and tempered condition (DIN EN 10083-1, 10/96)**

<b>Diameter [mm]</b>	< 16	>16 - 40	>40 - 100	>100 - 160	>160 - 250
<b>Thickness t [mm]</b>	< 8	8<t<20	20<t<60	60<t<100	100<t<160
<b>Yield strength Re [N/mm<sup>2</sup>]</b>	min. 900	min. 750	min. 650	min. 550	min. 500
<b>Tensile strength Rm [N/mm<sup>2</sup>]</b>	1100 - 1300	1000 - 1200	900 - 1100	800 - 950	750 - 900
<b>Elongation A [%]</b>	min. 10	min. 11	min. 12	min. 13	min. 14
<b>Reduction of area Z [%]</b>	min. 40	Min. 45	min. 50	min. 50	min. 55
<b>Toughness CVN [J]</b>	min. 30	min. 35	min. 35	min. 35	min. 35

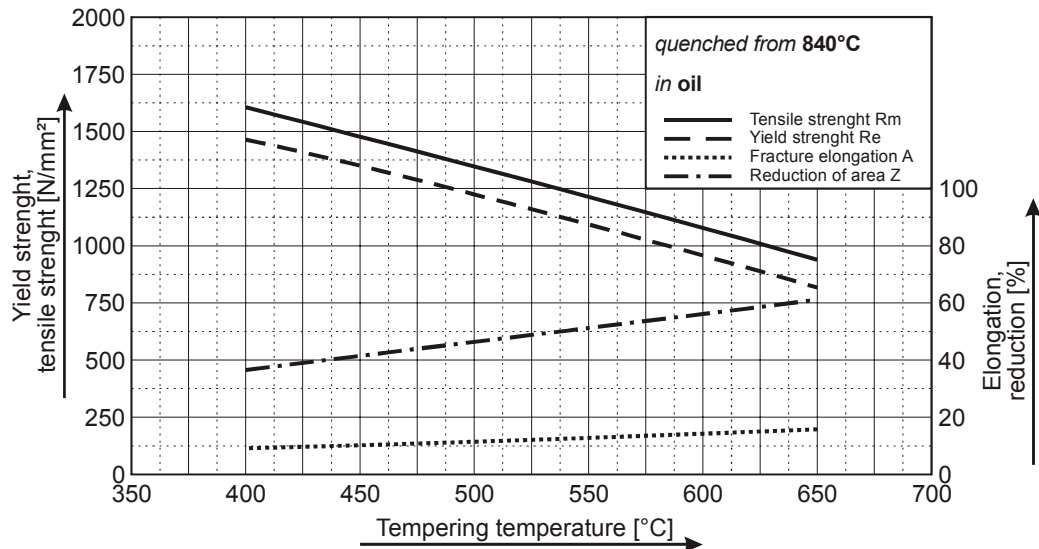
### (1.7225) Continuous Cooling Transformation Diagram (CCT)



### Time Temperature Transformation Diagram (TTT)



### Tempering Diagram



Remarks: All technical information is for reference only.