

Material No.: Code:  
**1.2162 21MnCr5**

DE - Brand:  
**EPM2**

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

C	Mn	Cr					
0,21	1,30	1,20					

**Steel properties:**

Case hardening steel, in soft condition suitable for hobbing, good polishability in hardened condition.

**Applications:**

Machine components with high surface hardness and tough core, plastic moulds, guidepillars.

**Condition of delivery:**

Soft annealed to max. 217 HB

**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	13,3	13,8
Thermal conductivity	$\left[ \frac{\text{W}}{\text{m} \cdot \text{K}} \right]$	20°C	350°C	700°C	
		40,0	37,5	33,5	

**Heat treatment:**

Soft annealing

Temperature	Cooling	Hardness
670 - 710°C	furnace	max. 217 HB

Stress relief annealing

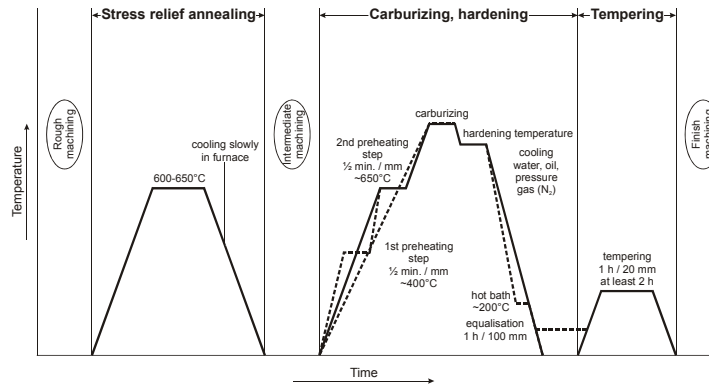
Temperature	Cooling	
600 - 650°C	furnace	

Hardening

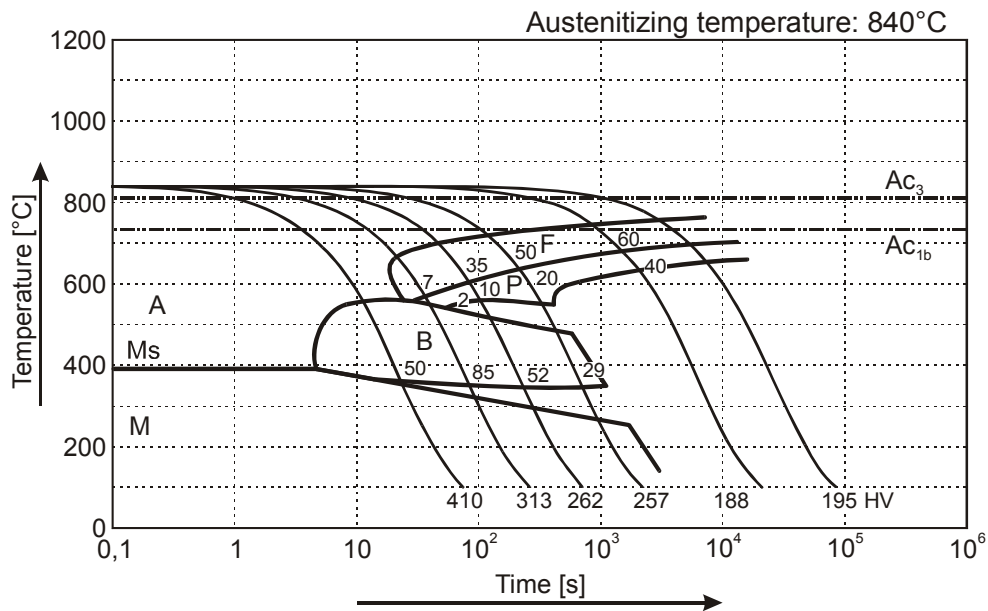
Carburizing	Intermediate annealing	Austenitizing temperature	Cooling	Tempering
870 - 950°C	620 - 650°C	810 - 840°C	oil or hot bath 180 - 220°C	see tempering diagram

## (1.2162) Thermal Cycle Diagram

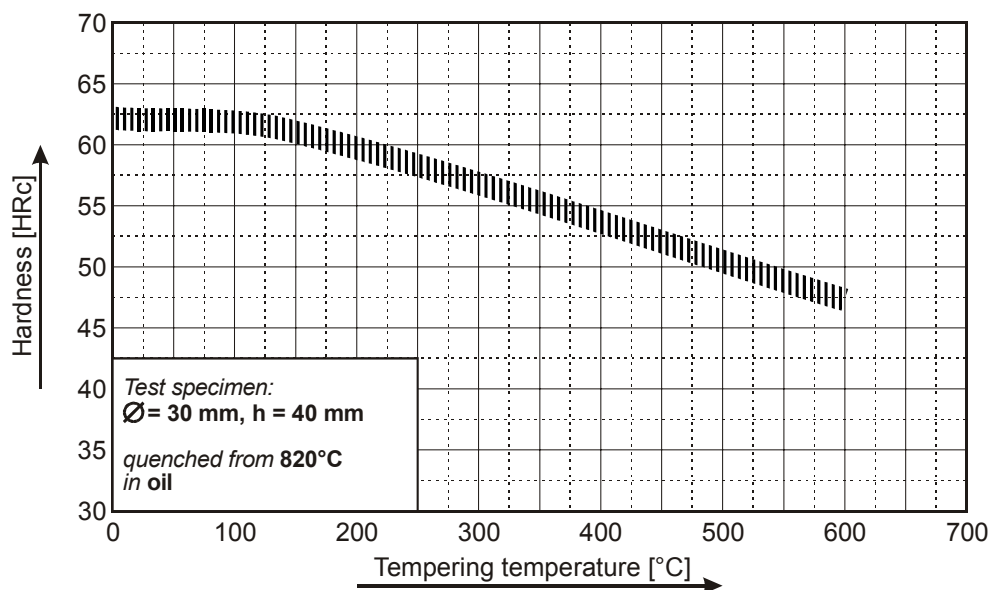
In certain cases intermediate annealing or isotherm transformation may be useful depending on the tool or component. Please contact us.



## Continuous Cooling Transformation Diagram (CCT) (core area)



## Tempering Diagram (for carburized surface)



Remarks: All technical information is for reference only.