

Material Code:

**AISI P20**

DE - Brand:

**MCM**

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

C	Mn	Cr	Mo				
0,40	1,50	1,90	0,20				

**Steel properties:**

Plastic mould steel that is usually supplied in a quenched and tempered condition. Good machinability, better polishability, compared to AISI P20+S (1.2312). Similar to 1.2311.

**Applications:**

Plastic moulds, frames for plastic pressure dies, hydro-forming tools.

**Condition of delivery:**

Quenched and tempered, 280 - 325 HB  
(950 - 1100 MPa according to DIN EN ISO 18265 Table A.1)

**Physical properties:**

Thermal expansion coefficient	$\left[ \frac{10^{-6} \cdot \text{m}}{\text{m} \cdot \text{K}} \right]$	$\frac{68-212^{\circ}\text{F}}{12,1}$	$\frac{68-392^{\circ}\text{F}}{12,7}$	$\frac{68-572^{\circ}\text{F}}{13,2}$	$\frac{68-752^{\circ}\text{F}}{13,6}$
Thermal conductivity	$\left[ \frac{\text{W}}{\text{m} \cdot \text{K}} \right]$	$\frac{68^{\circ}\text{F}}{34,5}$	$\frac{662^{\circ}\text{F}}{34,2}$		

**Heat treatment:**

Soft annealing

Temperature	Cooling	Hardness
1310 - 1365°F	furnace	max. 235 HB

Stress relief annealing

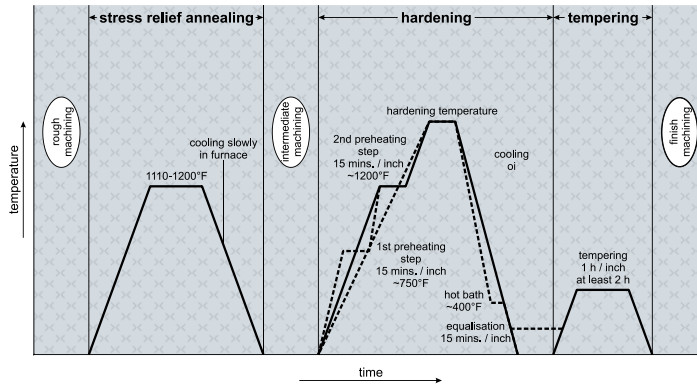
The recommendation 930 - 1020°F is valid for quenched and tempered condition. In the soft annealed condition stress relieving between 1110 - 1200°F is possible.

Temperature	Cooling	
930 - 1020°F	furnace	

Hardening

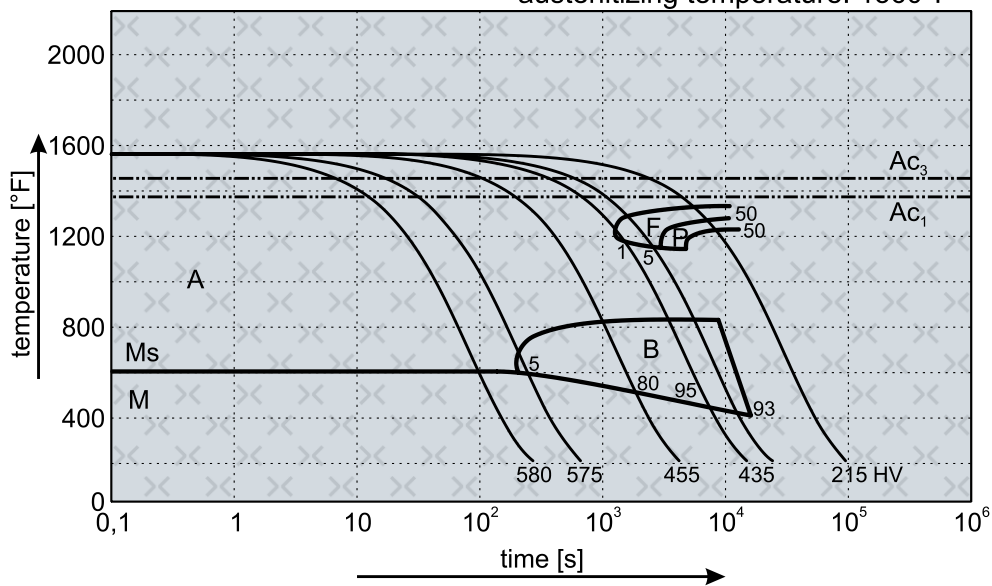
Temperature	Cooling	Tempering
1525 - 1600°F	oil or hot bath 355 - 430°F	see tempering diagram

## (AISI P20) Thermal Cycle Diagram

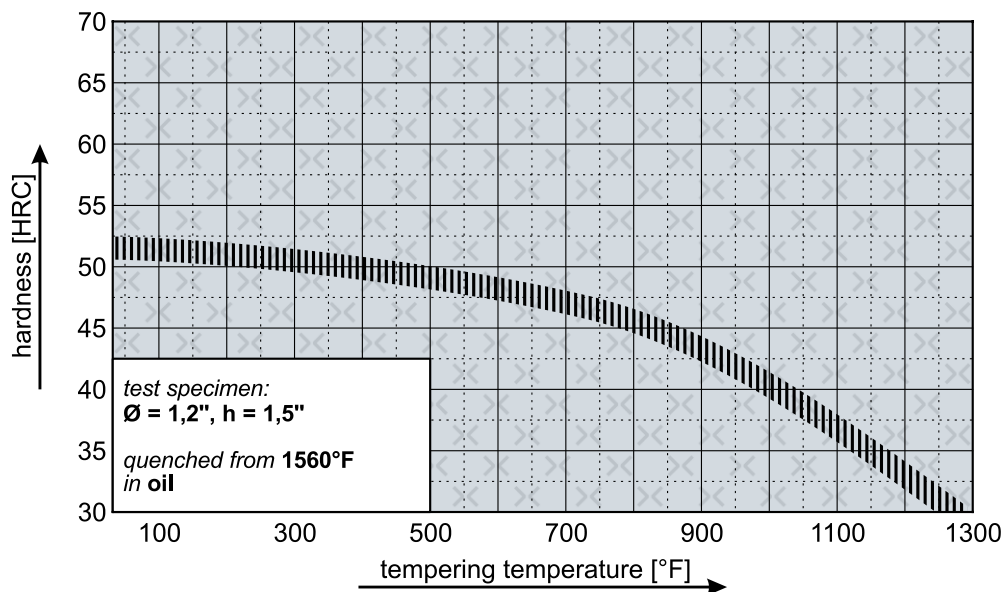


## Continuous Cooling Transformation Diagram (CCT)

austenitizing temperature: 1560°F



## Tempering Diagram



Remarks: All technical information is for reference only.