

P20 Tool Steel (40CrMnNiMo8-6-4)

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

Applications: Plastic moulds, frames for plastic pressure dies, hydroforming tools.

Colour Code	Stocked Sizes	
 Red/Yellow	Condition of Delivery	Hardened & tempered, 900 - 1050 N/mm ²

Related Specifications

	Germany	DIN 1.2311
	USA	AISI P20

Chemical Composition

	%
Carbon	0.40
Manganese	1.50
Chromium	1.90
Molybdenum	0.20

Physical Properties

Thermal expansion coefficient	$\left[\frac{10^{-6} \text{ m}}{\text{m K}} \right]$	20-100°C	20-200°C	20-300°C	20-400°C
		12,1	12,7	13,2	13,6
Thermal conductivity	$\left[\frac{\text{W}}{\text{m K}} \right]$	20°C	350°C		
		39,6	39,2		

Heat Treatment

Soft Annealing

Temperature	Cooling	Hardness
710 - 740°C	furnace	max 235 HB

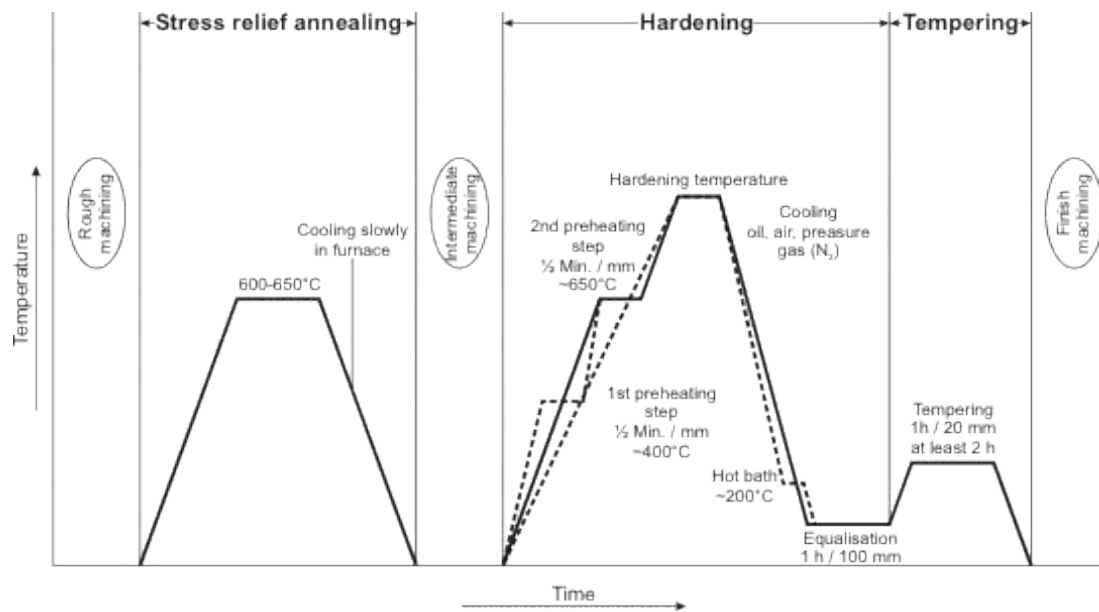
Stress Relief Annealing

Temperature	Cooling
500 - 550°C	furnace

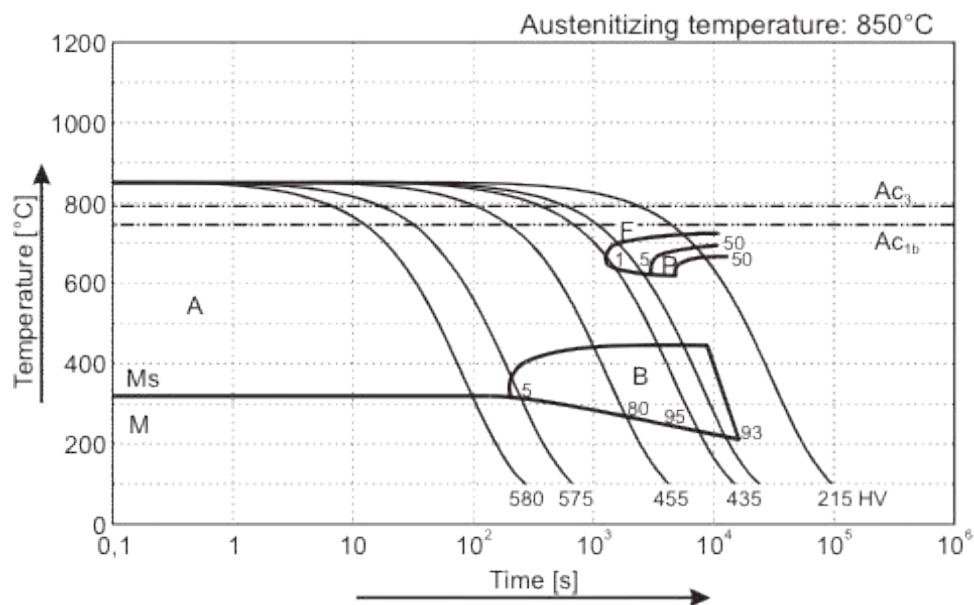
Hardening

Temperature	Cooling	Tempering
830 - 870°C	oil or hot bath 180 - 220°C	see tempering diagram

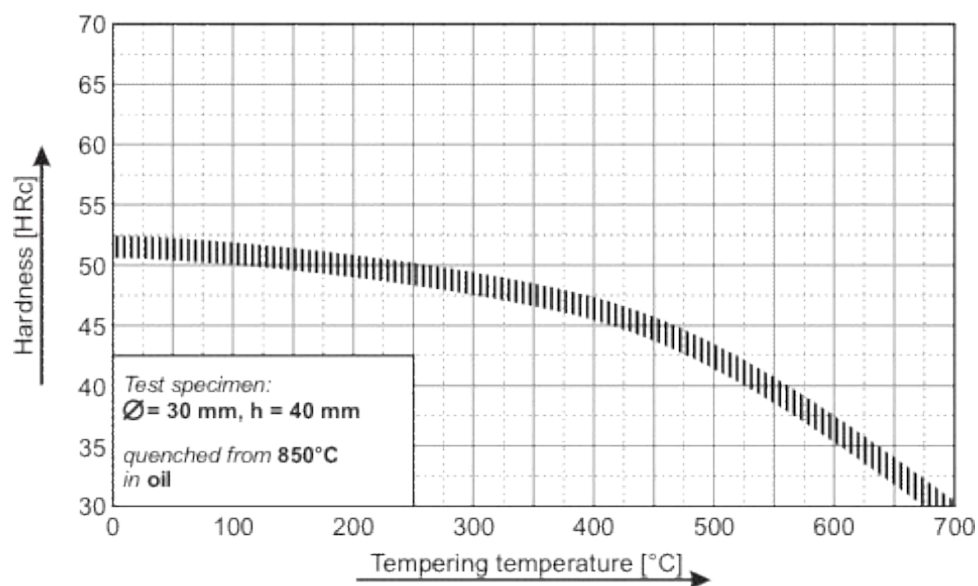
Thermal Cycle Diagram



Continuous Cooling Transformation Diagram (CCT)



Tempering Diagram



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