

O1 TOOL STEEL (100MNCRW4)

O1 toolsteel is a medium alloyed cold work steel with good hardening capacity, high wear resistances, dimensionally stable during heat treatment.

Applications: Cutting and punching tools, shear knives, thread rolling tools, measuring instruments.

Colour Code	Stocked Sizes	
	Rounds	20 mm - 222 mm Dia
	Condition of Delivery	
	Soft annealed to max. 230 HB	

Related Specifications

Germany	DIN 1.2510
USA	AISI O1

Chemical Composition

	%
Carbon	0.95
Manganese	1.10
Chromium	0.60
Tungsten	0.60
Vanadium	0.10

Physical Properties

Thermal expansion coefficient	$\left[\frac{10^{-6} \text{ m}}{\text{m K}} \right]$	$\frac{20-100^{\circ}\text{C}}{12,0}$	$\frac{20-200^{\circ}\text{C}}{12,6}$	$\frac{20-300^{\circ}\text{C}}{13,1}$	$\frac{20-400^{\circ}\text{C}}{13,5}$
Thermal conductivity	$\left[\frac{\text{W}}{\text{m K}} \right]$	$\frac{20^{\circ}\text{C}}{33,4}$	$\frac{350^{\circ}\text{C}}{32,1}$		

Heat Treatment

Soft Annealing

Temperature	740 - 770°C
Cooling	furnace
Hardness	max 230 HB

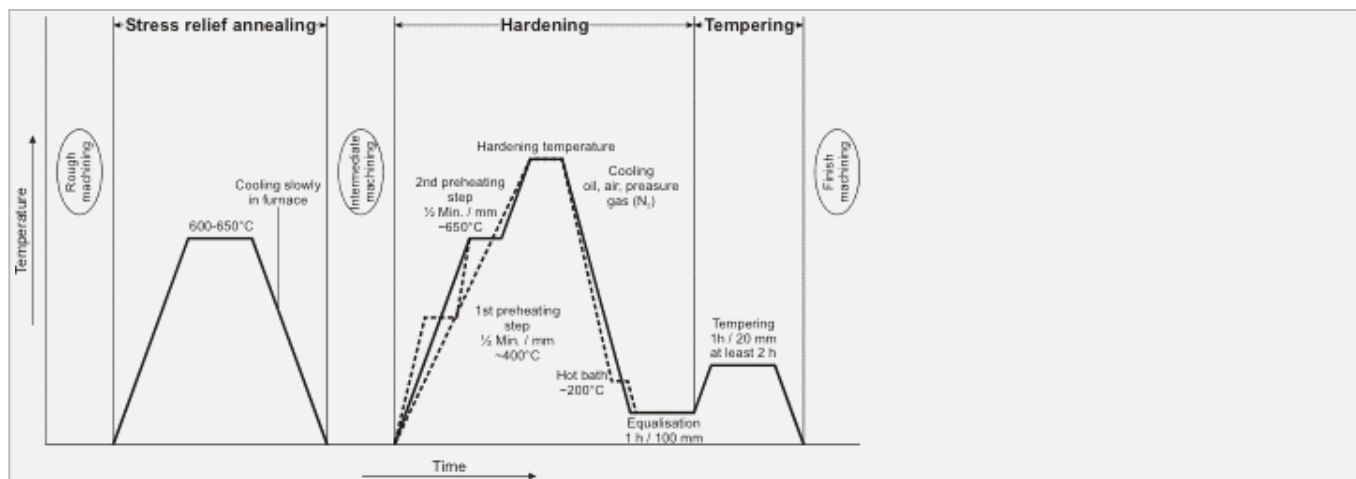
Stress Relief Annealing

Temperature	600 - 650°C
Cooling	furnace

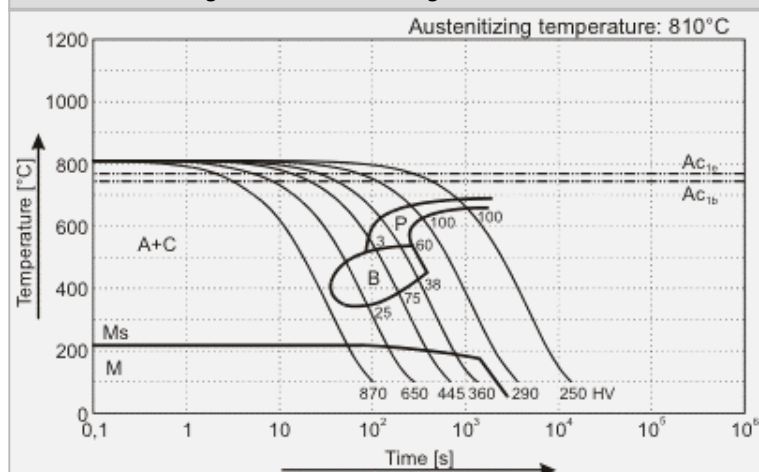
Hardening

Temperature	790 - 820°C
Cooling	oil or hot bath 180 - 220°C
Hardness	see tempering diagram

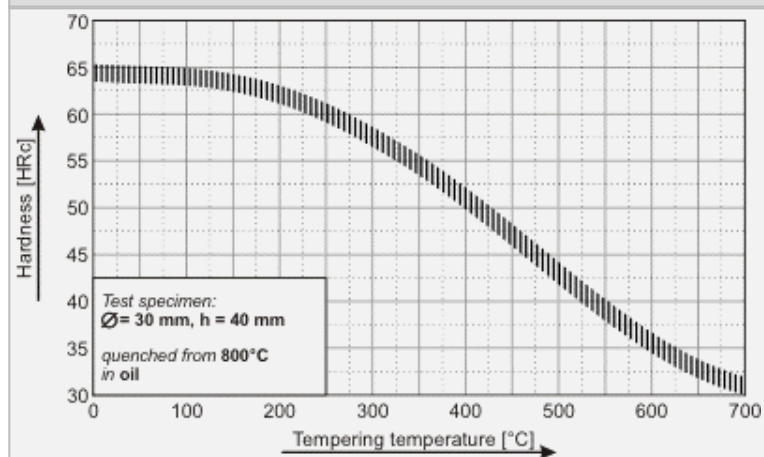
Thermal Cycle Diagram



Continuous Cooling Transformation Diagram (CCT)



Tempering Diagram



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