

S1 Tool Steel (100MnCrW4)

Cold work steel with very good toughness, dimensionally stable, impact resistant, high hardening capacity.

Applications: Cold shear knives, paper and wood cutting knives, cutting tools for plates up to 10 mm, ejector pins, air hammers.

Colour Code	Stocked Sizes	
 Yellow/Blue	Condition of Delivery	Soft annealed to max. 229 HB

Related Specifications

	Germany	DIN 1.2550
	USA	AISI S1

Chemical Composition

		%
	Carbon	0.60
	Tungsten	2.00
	Chromium	1.00
	Vanadium	0.15

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
		10,9	11,5	12,0	12,4
Thermal conductivity	$\left[\frac{\text{W}}{\text{m K}} \right]$	20°C	350°C		
		31,9	29,6		

Heat Treatment

Soft Annealing

	Temperature	Cooling	Hardness
	740 - 760°C	furnace	max 229 HB

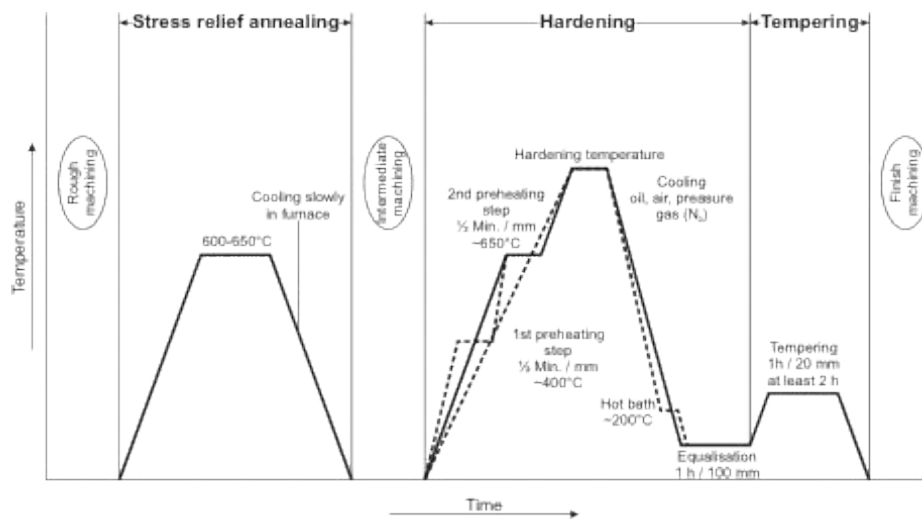
Stress Relief Annealing

	Temperature	Cooling
	600 - 650°C	furnace

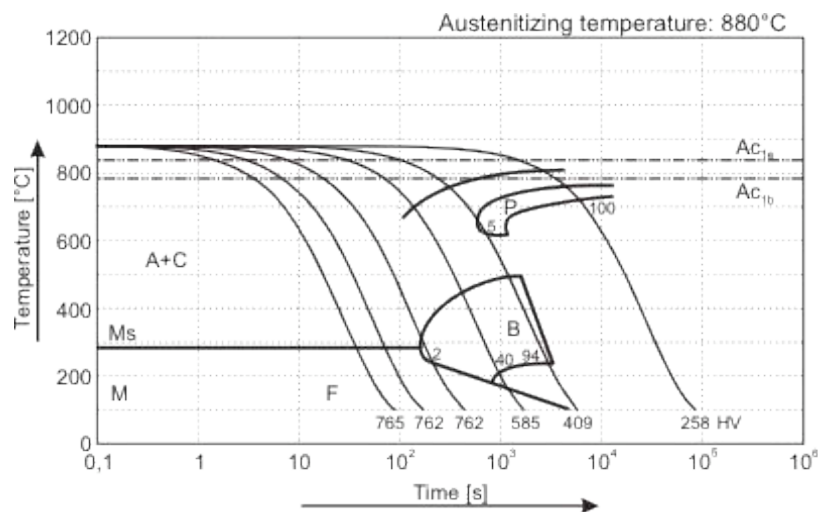
Hardening

	Temperature	Cooling	Tempering
	860 - 900°C	oil or hot bath 180 - 220°C	see tempering diagram

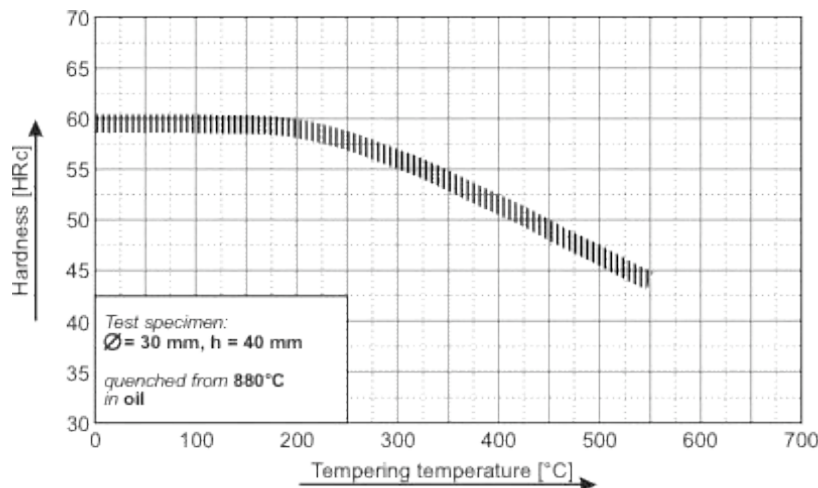
Thermal Cycle Diagram



Continuous Cooling Transformation Diagram (CCT)



Tempering Diagram



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