

DE - Brand:

WP4X

Special Steel

Chemical composition: (Typical analysis in %)

C	Cr	Mo	V	W	Co	Nb	
0,50	4,20	2,00	1,00	1,50	+	+	

Steel properties:

Special hot work tool steel, high strength and toughness at elevated temperature, very fine carbide distribution in the matrix, improved wear resistance for warm/hot forging applications compared to standard hot work steels. Good erosion resistance in die casting application.

Applications:

Punches and dies for hot and warm forging applications, insert pins for die casting.

Condition of delivery:

Soft annealed to max. 241 HB

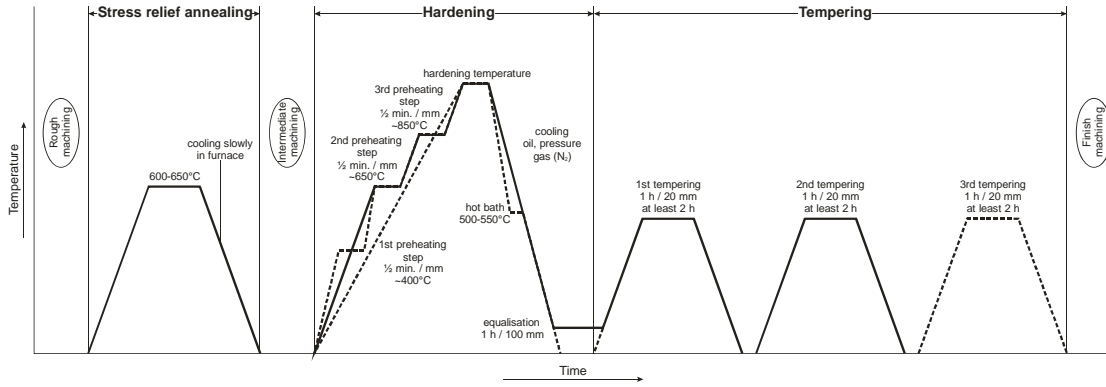
Physical properties:

Thermal expansion coefficient	$\left[\frac{10^{-6} \cdot \text{m}}{\text{m} \cdot \text{K}} \right]$	20-100°C	20-300°C	20-500°C
		11,6	12,0	13,0
Thermal conductivity	$\left[\frac{\text{W}}{\text{m} \cdot \text{K}} \right]$	20°C	200°C	400°C
		27,1	28,2	29,2

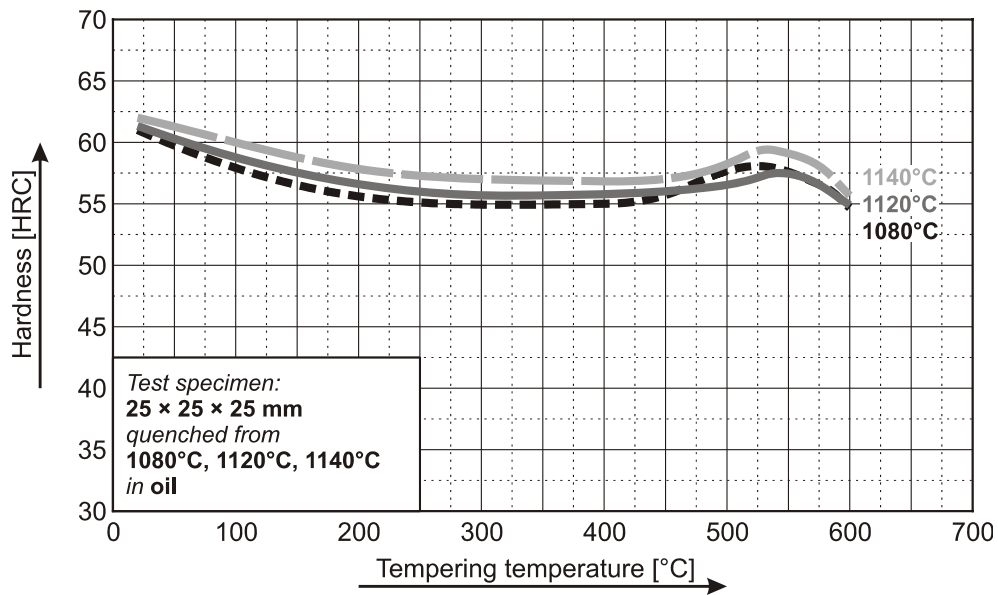
Heat treatment:

Soft annealing	Temperature	Cooling	Hardness
	800-880°C	furnace	max. 241 HB
Stress relief annealing	Temperature	Cooling	
	600-650°C	furnace	
Hardening	Temperature	Cooling	Tempering
	1080-1140°C	oil, pressure gas (N ₂)	see tempering diagram

(WP4X) Thermal Cycle Diagram



Tempering Diagram



Remarks: All technical information is for reference only.