

DE - Brand:

PMD30

Special Steel

Chemical composition: (Typical analysis in %)

C	Cr	W	Mo	V	Co		
1,30	4,20	6,40	5,00	3,10	8,50		

Steel properties:

Powder-metallurgical high-speed steel with high Co-content, very fine carbide distribution, segregation free, good thermal stability, very good grindability.

Applications:

Machining tools, milling cutters, thread cutting tools for tough to machine materials, precision blanking tools, stamping or deep drawing dies.

Condition of delivery:

Soft annealed to max. 300 HB

Physical properties:

Thermal expansion coefficient	$\left[\frac{10^{-6} \cdot \text{m}}{\text{m} \cdot \text{K}} \right]$	20-100°C	20-200°C	20-300°C	20-400°C
		10,9	11,1	11,4	11,5
Thermal conductivity	$\left[\frac{\text{W}}{\text{m} \cdot \text{K}} \right]$	20°C	350°C	700°C	
		24,4	28,0	27,4	

Heat treatment:

Soft annealing
Annealing only in neutral atmosphere

Temperature	Cooling	Hardness
870 - 900°C	furnace	max. 300 HB

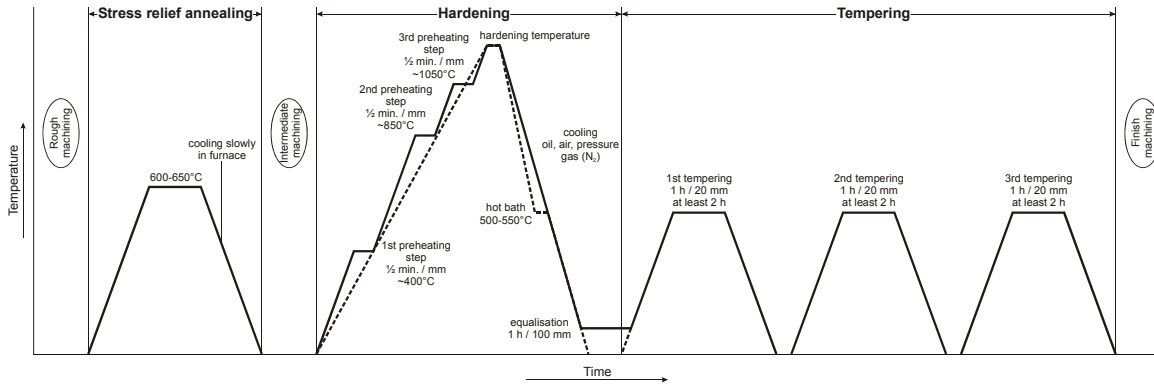
Stress relief annealing

Temperature	Cooling	
600 - 650°C	furnace	

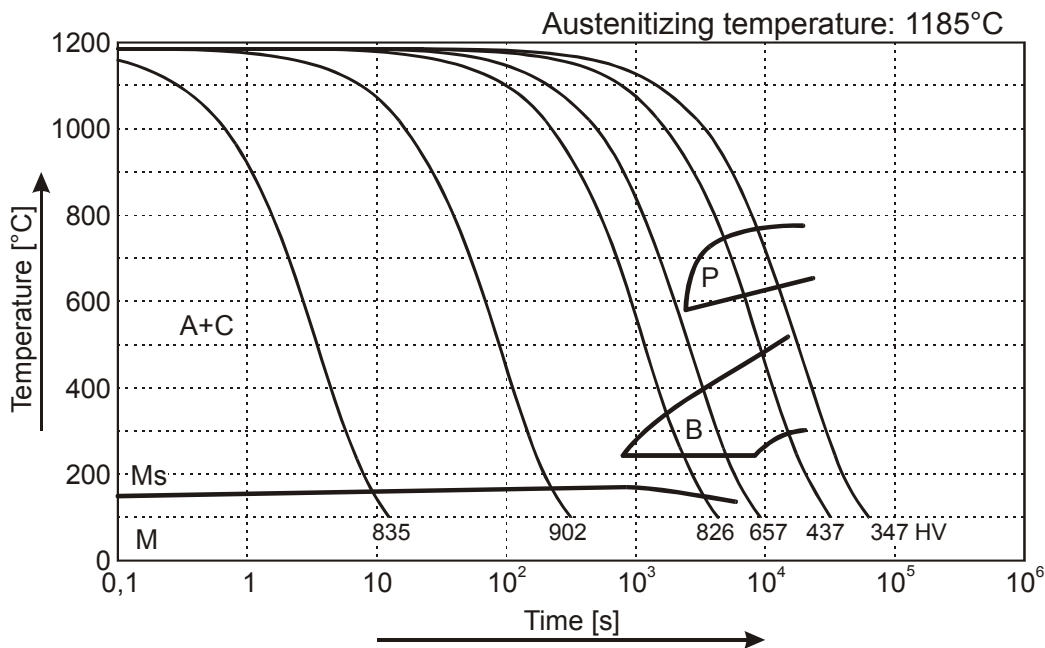
Hardening

Temperature	Cooling	Tempering
1100 - 1190°C	oil, pressure gas (N ₂), air or hot bath 500 - 550°C	see tempering diagram

(PMD30) Thermal Cycle Diagram



Continuous Cooling Transformation Diagram (CCT)



DE-Brand PMD30 has to be tempered minimum three times with 540-560°C in any case.

Reference values for hardness after tempering three times, according to the austenitizing temperature (all datas ± 1 HRc).

Tempering temperature	Austenitizing temperature			
	1100°C	1130°C	1160°C	1190°C
500°C	65,5 HRc	66,0 HRc	67,0 HRc	67,0 HRc
520°C	65,5 HRc	66,5 HRc	67,0 HRc	68,0 HRc
540°C	65,0 HRc	66,0 HRc	67,0 HRc	67,5 HRc
560°C	63,5 HRc	64,5 HRc	65,0 HRc	66,0 HRc
580°C	62,0 HRc	63,0 HRc	64,0 HRc	64,5 HRc
600°C	60,0 HRc	61,0 HRc	61,5 HRc	62,5 HRc

Remarks: All technical information is for reference only.