DE - Brand:

Special Steel

PMD52

Chemical composition:
(Typical analysis in %)

C	Cr	W	Mo	V	Co		
1,60	4,80	10,00	2,30	5,10	7,90		

Steel properties:

Powder-metallurgical high-speed steel with high W- and Co-content, very fine carbide distribution, high hardness and wear resistance at elevated temperatures (increased compared to PMD30), homogenous microstructure within whole cross-section, very good grindability.

Applications:

Machining tools, milling cutters, thread cutting tools for tough machinable materials (high-strength steel or non-metallic material), precision blanking tools, stamping or deep-drawing dies.

Condition of delivery:

Soft annealed to max. 300 HB

Physical properties:

		68-212°F	68-482°F	68-932°F	68-1292°F
Thermal expansion coefficient	$\left[\frac{10^{-6} \cdot m}{m \cdot K}\right]$	10,0	10,8	11,3	11,6

		68°F
Thermal conductivity	$\left[\frac{W}{m \cdot K}\right]$	24,0

Heat treatment:

Soft annealing
Annealing only in neutral atmosphere

Temperature	Cooling	Hardness
1470 - 1545°F	furnace	max. 300 HB

Stress relief annealing

Temperature	Cooling	
1110 - 1200°F	furnace	

Hardening

Temperature	Cooling	Tempering
2010 - 2265°F	oil, pressure gas (N_2), air or hot bath 930 - 1020°F	see tempering table

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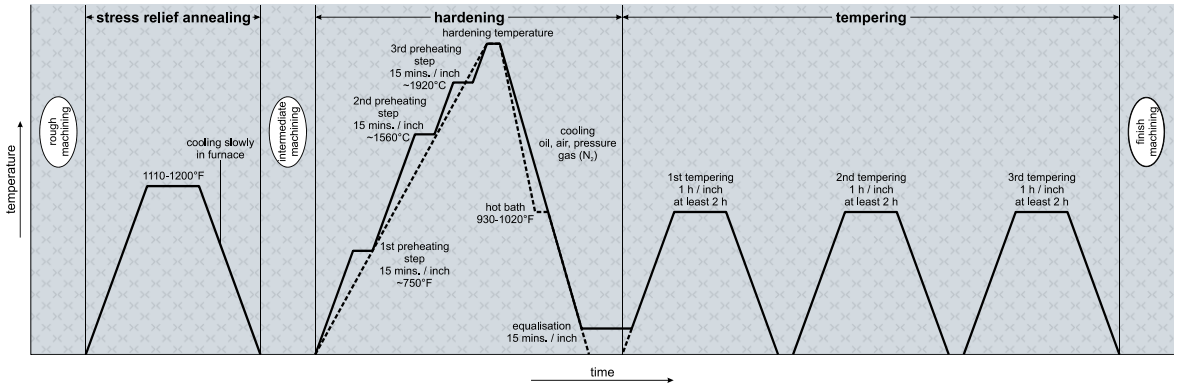
(PMD52) Thermal Cycle Diagram



DE-Brand PMD52 has to be tempered minimum three times in any case.

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

Tempering temperature	Austenitizing temperature			
	2010°F	**2100°F**	**2190°F**	**2265°F**
1005°F	63,0 HRC	66,0 HRC	67,0 HRC	68,0 HRC
1040°F	62,0 HRC	65,0 HRC	66,0 HRC	67,0 HRC
1075°F	61,0 HRC	63,0 HRC	65,0 HRC	66,0 HRC
1110°F	60,0 HRC	61,0 HRC	63,0 HRC	65,0 HRC