

DIN - Material - No. 1.2367
Code X38CrMoV5-3

Comparable standards

Chemical composition	C	Si	Mn	Cr	Mo	V
(Typical analysis %)	0.38	0.40	0.45	5.0	2.95	0.50

Steel properties Excellent high temperature strength and wear resistance. Good tempering resistance. High hardenability and toughness. Tools can be water cooled.

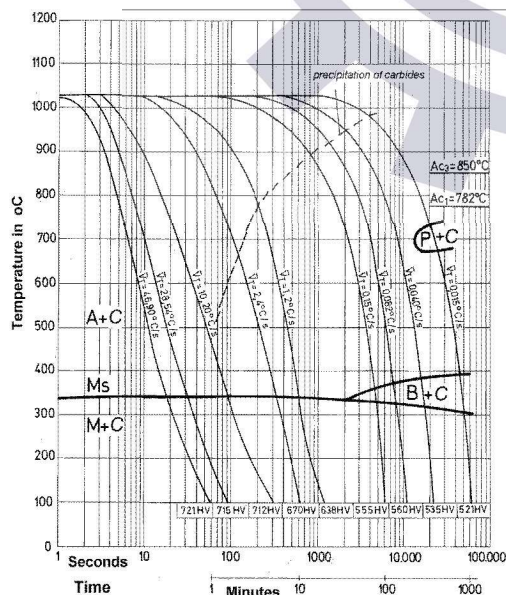
Physical properties	Thermal conductivity W/(m.K)	20	500	600°C				
		25	28.5	29.3				
	Density g/cm ³	20	7.83					
	Coefficient of linear thermal expansion							
	10 ⁻⁶ °C ⁻¹	20-100	20-200	20-300	20-400	20-500	20-600	20-700°C
		11.5	12.0	12.2	12.5	12.9	13.0	13.2

Applications Wear resisting tools, forging dies, pressure die casting dies, pressing tools and extrusion dies for light and heavy metals, mandrels. For the highest requirements we recommend UTOPM07 ESR EFS.

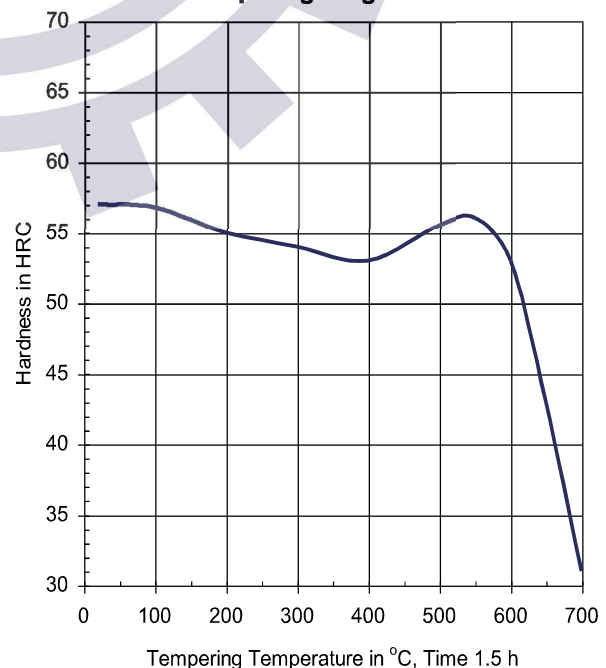
Stress Relieving Holding at approx 650°C for one hour.

Heat treatment	Soft annealing°C		Cooling		Hardness HB					
	800 - 840		furnace		max. 235					
	Hardening from°C		in		Hardness after quenching HRC					
	1030 - 1080		oil, air, thermal bath ca. 500 - 550°C		53 - 57					
Tempering °C		100	200	300	400	500	550	600	650	700
HRC		57	55	54	53	55.5	56	53	43	31
N/mm²		2140	1980	1910	1845	2010	2050	1845	1360	995

Time - Temperature - Transformation - Diagram



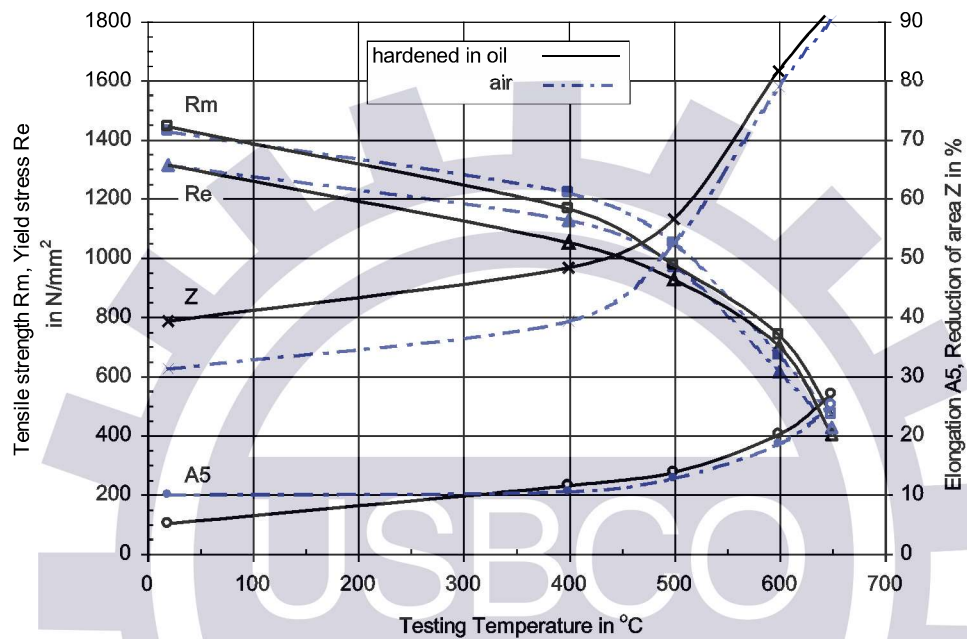
Tempering Diagram



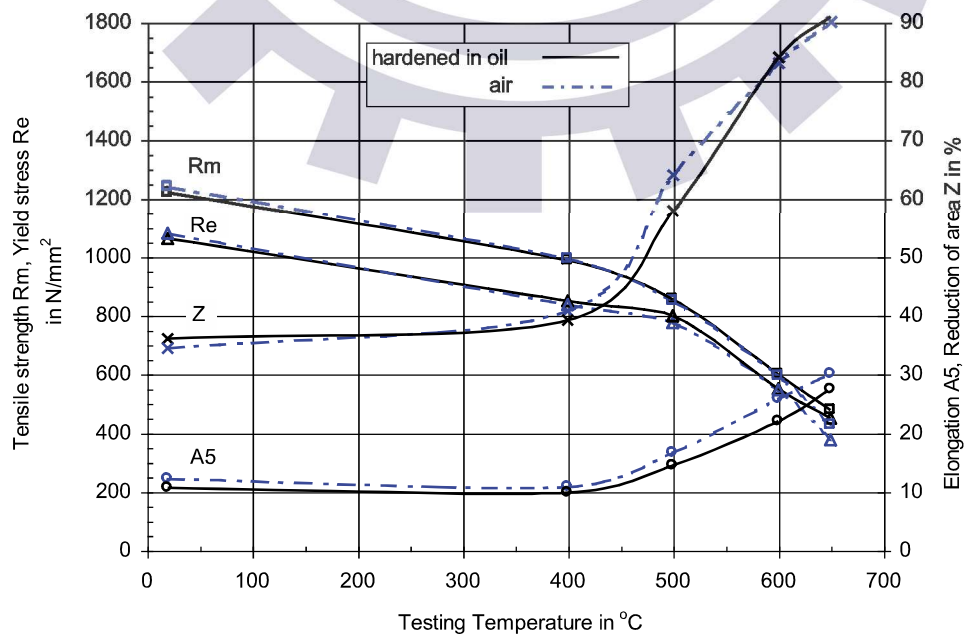
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Mechanical properties at elevated temperature

hardened and tempered on 1420 - 1440 N/mm²



hardened and tempered on 1220 - 1240 N/mm²



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Mechanical properties at elevated temperature

hardened and tempered on 1570 N/mm²

