

DIN - Material - No.

1.2343

Code

X38CrMoV5-1

Comparable standards

AISI: H11, EU: X37CrMoV5 1

Chemical composition

(Typical analysis %)

C	Si	Mn	Cr	Mo	V
0.37	1.0	0.38	5.15	1.30	0.40

Steel properties

Hot work tool steel. Deep hardening response. High hot tensile strength. Good combination of toughness, hardness and wear resistance. Good thermal conductivity and resistance to softening and to cracking. 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°C							
	7.75							
Coefficient of linear thermal expansion								
10 ⁻⁶ °C ⁻¹	20-100	20-200	20-300	20-400	20-500	20-600	20-700	20-800°C
	9.8	12.5	13.0	13.2	13.5	13.7	13.8	14.0

Applications

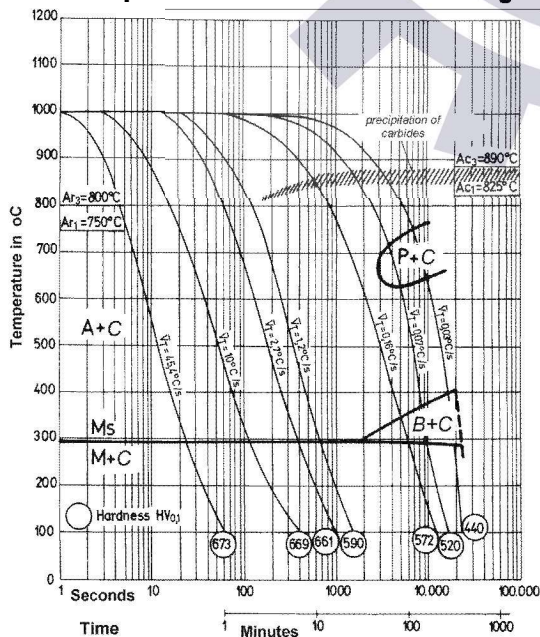
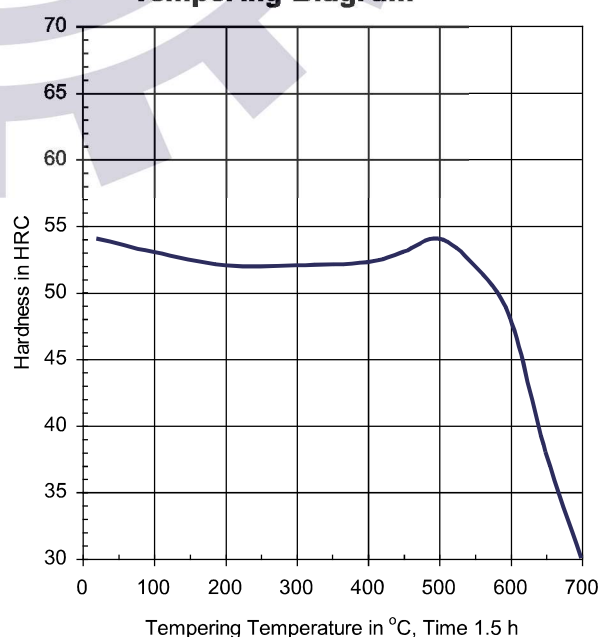
H11 is often used for highly stressed structural parts such as aircraft landing gear. Tools for hot forging of light metal. Pressure die casting tools. Dies, mandrels, punchers, knives, moulds. This grade can be water cooled. For the highest requirements we recommend UTOPM01 ESR EFS.

Stress Relieving

Holding at approx 650°C for one hour.

Heat treatment

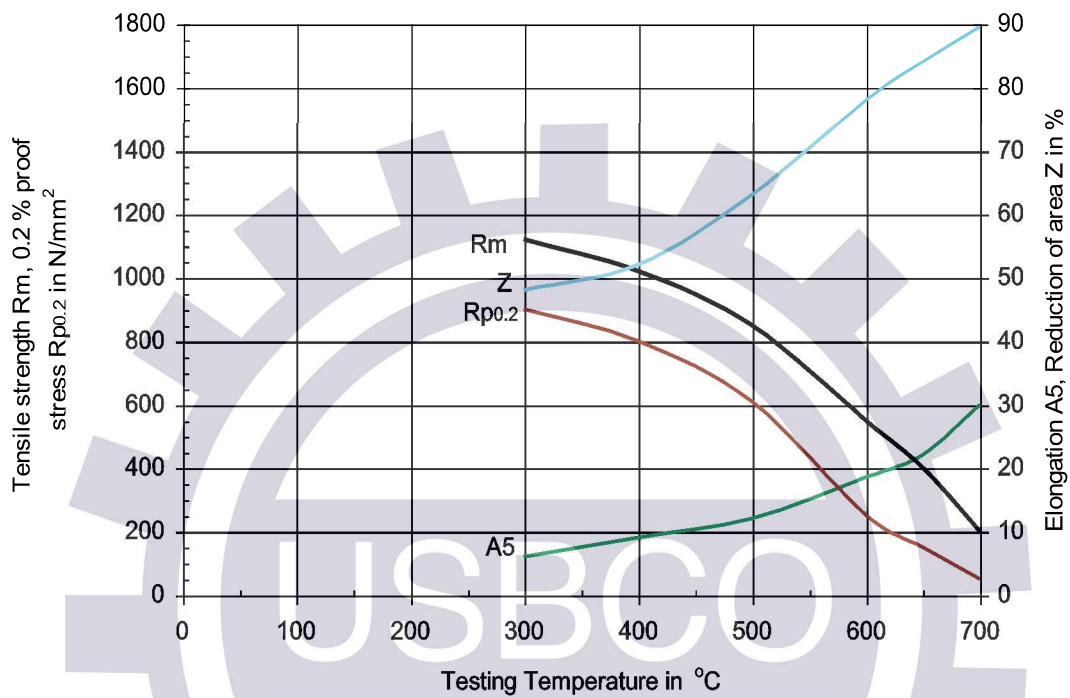
Soft annealing °C	Cooling	Hardness HB
800 - 840	furnace	max. 229
Hardening from °C	in	Hardness after quenching HRC
1000 - 1040	oil, air, thermal bath ca. 500 - 550°C	50 - 56
Tempering °C	HRC	N/mm ²
100	53	1845
200	52	1790
300	52	1790
400	52	1790
500	54	1910
550	52	1790
600	48	1570
650	38	1200
700	30	970

Time - Temperature - Transformation - Diagram

Tempering Diagram


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Mechanical properties at elevated temperature

hardened and tempered on 1270 N/mm²



hardened and tempered on 1570 N/mm²

