



AISI D3 HCHCR-D3 DIN 2080

X210Cr12

C 2.00 Si 0.40 Mn 0.35 Cr 12.0

Steel properties

D3 having properties of High Carbon 2% and High chromium 12 % tool steel with high wear resistance. Its supply condition is normally annealed to easy machining which recommended hardness is 57-58 HRC after making the dies & tools.

Standards

AISI D3 AFNOR Z200C12

Physical properties

Coefficient of thermal expansion at °C $10^{-6} \text{ m/(m} \cdot \text{K)}$	20 – 100	20 – 200	20 – 300	20 – 400	20 – 500	20 – 600	20 – 700
	10.7	11.6	12.3	12.6	12.9	13.2	13.3
Thermal conductivity at °C $\text{W/(m} \cdot \text{K)}$	20		350		700		700
	16.6		20.5		24.3		24.3

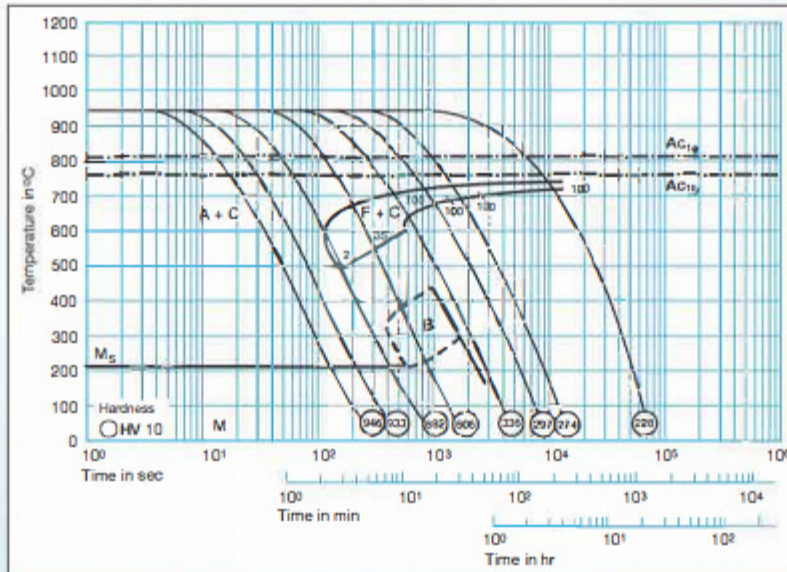
Applications

D3 is used in cold Dies & tooling application that required the achievement of high degree of accuracy in hardening & tempering, such as dies drawing, forming cold rolls, powder metal tooling and blanking and trimming dies, blanking dies for paper and plastics, shear blades , cold die punches , Ejector pins etc.

Heat treatment

Soft annealing °C 810 – 850	Cooling Furnace	Hardness HB max. 250
Stress-relief annealing °C approx. 670 – 720	Cooling Furnace	
Hardening °C 940 – 970 950 – 980	Quenching Oil Air (up to 30 mm thickness)	Hardness after quenching HRC 64.5 64.5
Tempering °C HRC	100 200 300 400 500 600	63.5 61.5 58 57.5 55 47

Time-temperature-transformation diagram



Tempering diagram

