

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	20 – 100	20 – 200	20 – 300	20 – 400	20 – 500	20 – 600	20 – 700
$10^{-6} \text{ m/(m} \cdot \text{K)}$	10.7	11.6	12.3	12.6	12.9	13.2	13.3

Thermal conductivity at °C
W/(m·K)

20	350	700
16.6	20.5	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

