RADHIKA ALLOYS

D3 | 1.2080 |SKD-1

THIS is a 12% chrome compound steel.
D3 cold work steel has high wear resistance against abrasive and adhesive wear because of the high volume of hard carbides in the steel matrix, medium toughness, dimensionally stable, high compressive strength, not secondary hardenable.

D3 cool works is oil-extinguished; however little segments can be gas extinguished after austenitization utilizing vacuum. Thus, instruments made with type D3 cold work device steel have a tendency to be brittle during hardening.

CHEMICAL COMPOSITION

W.nr	EQUIVALENT			C	Si	Mn	S	P	Cr
	JIS	DIN	AISI/ASTM						
1.2080	SKD1	X210Cr12	D3	1.90-2.20	0.01-0.60	0.20-0.60	<0.03	<0.03	11.00-13.00

PROPERTIES

Physical Properties	Metric	Imperial
Density	7.7 x 1000 kg/m^3	0.278 lb/in^3
Melting point	1421°C	2590°F

Mechanical Properties	Metric	Imperial
Izod impact unnotched	28.0 J	20.7 ft-lb
Poisson's ratio	0.27-0.30	0.27-0.30
Elastic modulus	190-210 GPa	27557-30457 ksi

Thermal Properties		Conditions	
		T (°C)	Treatment
Thermal expansion	12 x 10-6/ºC	20-100	-

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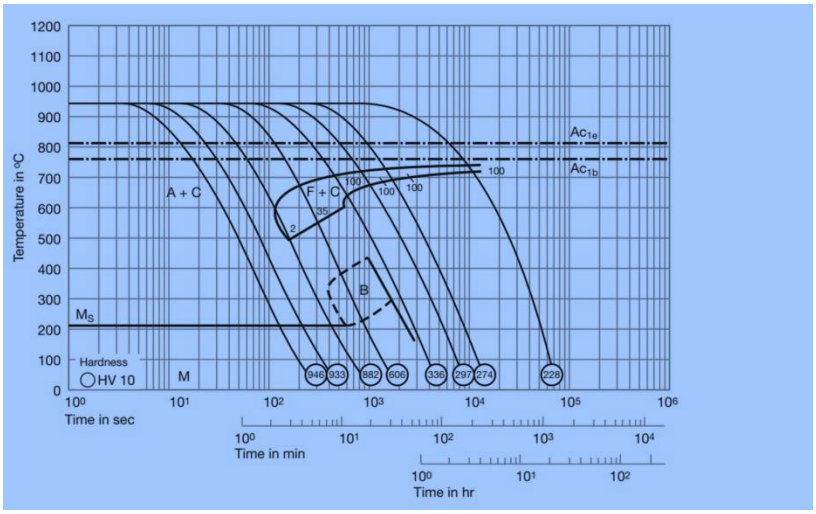
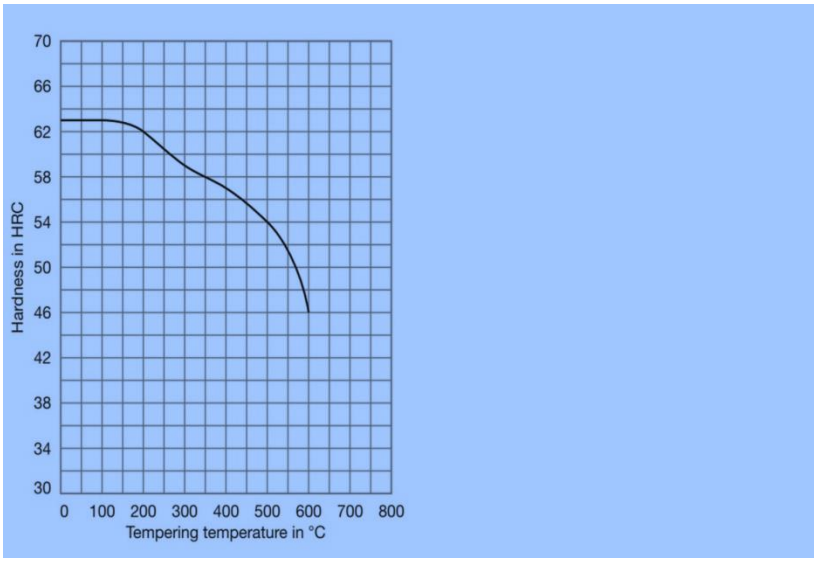
HEAT TREATMENT

TREATMENT	TEMPERATURE	HOLDING TIME (HT)	COOLING	HARDNESS
Annealing	Heat to 800 – 840 °C	Min. H.T. for 2 minute /mm	Furnace	MAX250
Stress relieving	Heat to 650 – 700 °C	Min. H.T. for 2 minute /mm	Furnace	-
Hardening	Heat to 930 – 960 °C and 950 - 980 °C	Min. H.T. for 1 minute /mm	Air, oil (up to 30mm thickness)	64

Time-temperature transformation diagram



Tempering diagram



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APPLICATION

Typical applications for D3 Steel:

- Blanking and forming dies
- Forming rolls
- Press tools
- Punches
- Bushes