1.2714

Hot Work Tool Steel

TECHNICAL SHEET

1 Comparision Standards

W.Nr	DIN	JIS equivalent	AISI/SAE	AFNOR	BS	UNI
1.2714	56NiCrMoV7	-	~L6	~55NCD07-05	~224	(56NiCrMoV7KU)

2 Chemical Composition

C	Si	Mn	P (max)	S (max)	Cr	Mo	Ni	V	Supply Condition	Supply Hardness (HB)
0.50-0.60	0.10-0.40	0.60-0.90	0.03	0.03	0.80-1.20	0.35-0.55	1.50-1.80	0.05-0.15	Q & T	360 - 400

3 Main Characteristics and Applications

1.2714 is a Ni-Cr-Mo alloy known for its high hardenability and toughness. It offers excellent resistance to repeated impacts, good resistance to thermal shocks, and solid wear resistance.

Applications:

- Forging Dies
- Hot Mill Rolls
- Hammer and Press Forging Dies
- Very Hard Cold Work Dies and Punches
- Shear Blades

It is recommended to use die blocks treated to different hardness levels based on the cavity depth, following the guidelines provided below.

Cavity Depth (mm)	HRC	R(N/mm²)
20	39 ÷ 43	1200/1350
50	36 ÷ 42	1100/1320
100	32 ÷ 38	980/1170

Before beginning machining, preheat the tools to a temperature range of 250-300°C.

4 Production Route

EAF - LF - VD - Forging - Heat treatment QT

5 Physical Properties (Reference Values)

	20°C	100°C	250°C	500°C
Thermal expansion coefficient (10-6/K)	12.1	12.4	12.9	14.0
Thermal Conductivity (W/mk)	36.7	36.9	39.3	35.7
Young modulus (Kn/mm2)	212	208	197	175

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SandeepEnterprises STEEL SOLUTIONS

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6 Heat Treatment

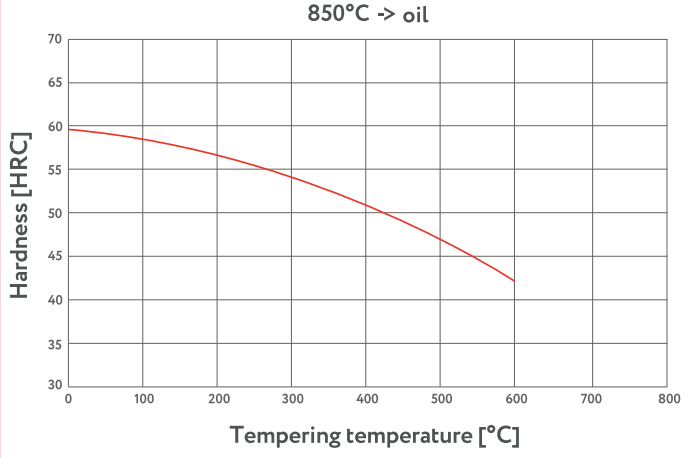
TREATMENT	TEMPERATURE	HOLDING TIME (HT)	COOLING	COMMENTS
Annealing	Heat to 700 - 720 °C	Min. H.T. for 2 minute /mm	Air or Furnace	To achieve a hardness below 240 HB (23 HRC) and enhance machinability
Stress relieving	Heat to 600 - 650 °C (Max 30°C below tempering Temperature)	Min. H.T. for 2 minute /mm	Air or Furnace	It is recommended to eliminate the residual stresses induced by mechanical working after machining
Hardening	Initial preheating to 350 - 450 °C Second preheating to 650 - 750 °C Heat to hardening temperature 850 - 870 °C and hold at temperature	Min. H.T. for 1 minute /mm	Oil	-

The average hardness values that can be obtained with hardening in oil in the range 840 - 920°C are given below:

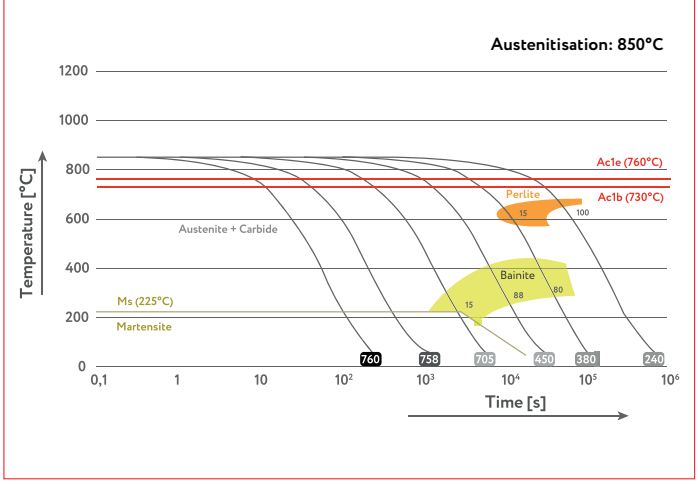
°C	840	860	880	900	920
HRC	57	58	59	59.5	60

Tempering	Heat to 550 - 630 °C	Min. H.T. for 3 minute /mm	Air or Furnace	To be performed after hardening, conduct a second tempering at a temperature no more than 30 °C below the initial tempering temperature

7 Tempering Curve



8 C.C.T. Curve



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