RADHIKA ALLOYS

H-11 | 1.2343 | SKD-6

Tool Steel H11 is a chromium-based steel alloy from the “H” family of steels according to the AISI classification system. H11 is one of the most commonly used alloys from this group, thanks to the outstanding impact toughness.

CHEMICAL COMPOSITION

W.nr	EQUIVALENT			C	Si	Mn	S	P	Cr	Mo	V
	JIS	DIN	AISI/ASTM								
1.2343	SKD6	X38CrMoV5-1	H-11	0.33-0.41	0.80-1.20	0.25-0.50	<0.03	<0.03	5.00-5.50	1.10-1.40	0.30-0.50

PROPERTIES

Physical Properties	Metric	Imperial
Density	7.81 g/cm^3	0.282 lb/in^3
Melting point	1427°C	2600°F
Mechanical Properties	**Metric**	**Imperial**
Hardness, Rockwell C (air cooled from 982°C, 45 mins)	52.5	52.5
Hardness, Rockwell C (air cooled from 1010°C, 45 mins)	56	56
Hardness, Rockwell C (air cooled from 1038°C, 45 mins)	57	57
Modulus of elasticity	207 GPa	30000 ksi
Modulus of elasticity (@538°C/1000°F)	159 GPa	23000 ksi
Modulus of elasticity (@204°C/400°F)	190 GPa	27500 ksi
Charpy impact (V-notch; air cooled from 1010°C;535°C temper temperature)	13.6 J	10.0 ft-lb
Charpy impact (V-notch; air cooled from 1010°C;650°C temper temperature)	27.1 J	20.0 ft-lb
Charpy impact (V-notch; air cooled from 1010°C;370°C temper temperature)	33.9 J	25.0 ft-lb
Machinability (1% carbon steel)	75.0 - 80.0%	75.0 - 80.0%
Poisson's ratio	0.27-0.30	0.27-0.30
Properties	**Metric**	**Imperial**
Thermal expansion (@20-100ºC/68-212ºF)	11.9 x 10^{-6}/ºC	6.63 µin/in°F
Thermal conductivity (@100ºC/212ºF)	42.2 W/mK	292.9 in/hr.ft^2.°F

Heat Treatment

H11 tool steels are preheated to 816°C (1500°F). Then the steels are directly heated by increasing the temperature to 1010°C (1850°F) followed by holding for 15 to 40 mins. The steels are then air-quenched.

Forging

H11 tool steels are forged at 1121°C (2050°F). For this type of steels, forging below 899°C (1650°F) is not preferable.

Cold Working

Cold working may be carried out on H11 tool steels using conventional methods.

Annealing

H11 tool steels are annealed at 871°C (1600°F) and slowly cooled at 4°C (40°F) in the furnace.

Tempering

Tempering is carried out on H11 tool steels at temperature ranging from 538 to 649°C (1000 to 1200°F) to obtain Rockwell C hardness of 54 to 38. Double tempering can also be performed in these steels every one hour at the preferred tempering temperature.

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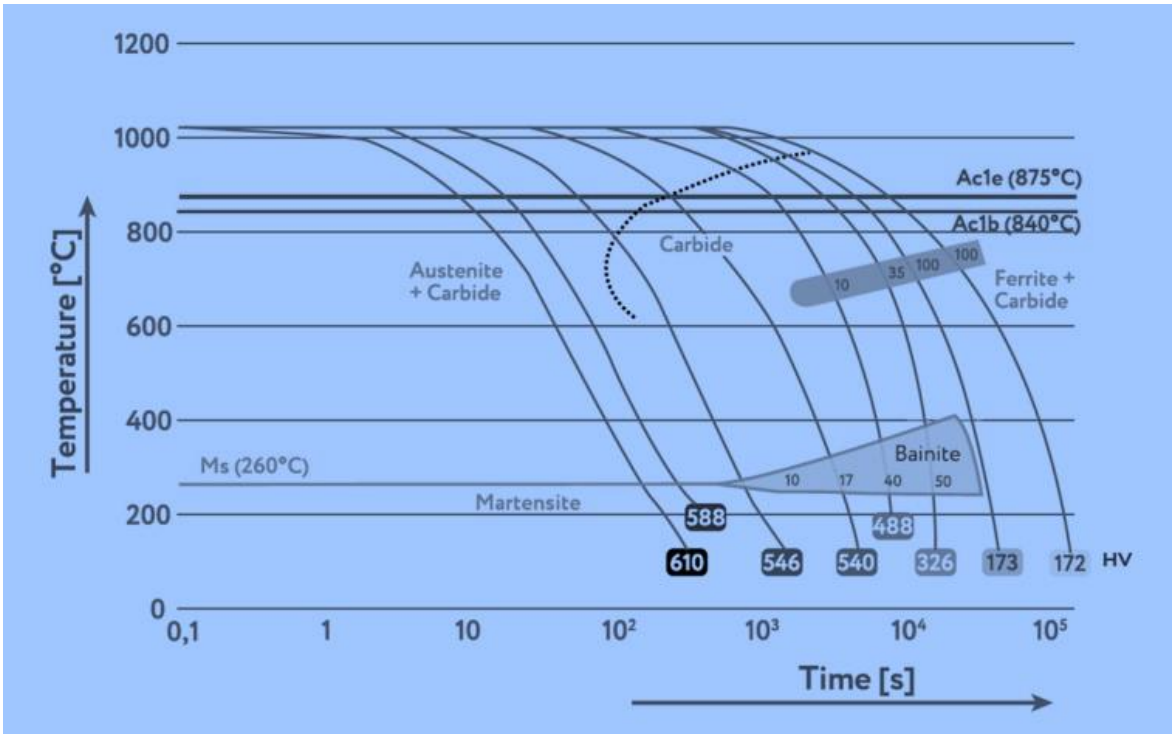
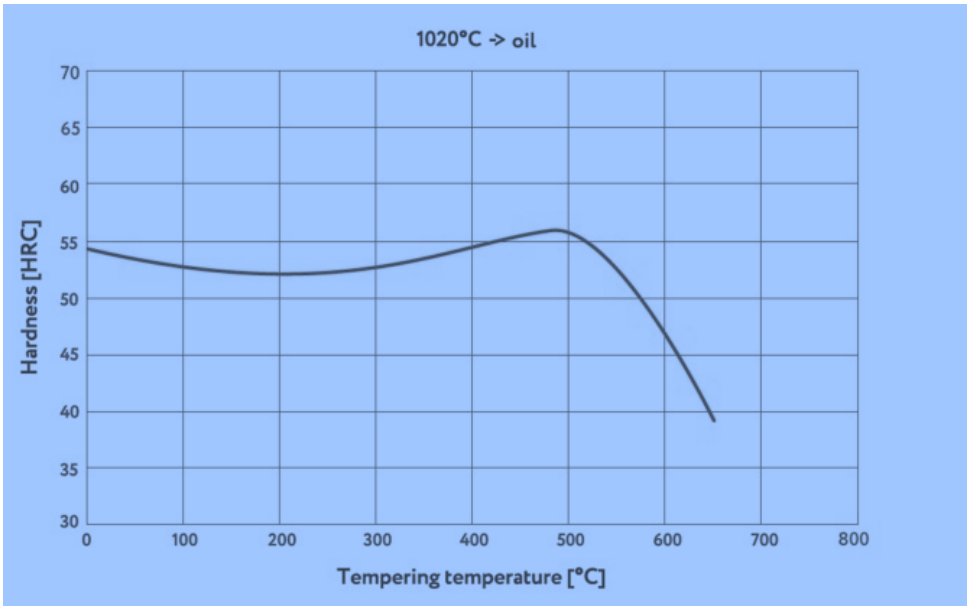
C.C.T. curve



Tempering curve



APPLICATION

• Dies for the pressure casting of light alloys.
• Wear resistance moulds for plastic processing.
• Dies for friction and mechanical presses for hot forming of steel, brass, aluminium and its alloys.
• Extrusion dies for aluminium processing.
• Hot work shear blades.