

KALCAP - Oil Hardening Tool Steel (AISI01 / SKS3)



Equivalent Grade

Country	USA	German	Japan
Standard	ASTM A681	DIN EN ISO 4957	JIS G4404
Grade	O1	1.2510/100MnCrW4	SKS3

Chemical Composition

	Element	C	Mn	Si	Cr	V	W	P	S
AISI 01	Min	0.85	1.00	0.10	0.40		0.40		
	Max	1.00	1.40	0.50	0.70	0.30	0.60	0.03	0.03
JIS G4404/SKS3	Min	0.90	0.90	-	0.50	-	0.50		
	Max	1.00	1.20	0.35	1.00	-	1.00	0.03	0.03

Characteristics

- Good machinability.
- Good dimensional stability during hardening treatment.
- Good combination of high surface hardness and toughness after hardening and tempering.

Application

O1 steels are mainly used for short run tooling for cold forming dies, blanking dies, and cutting tools operating at ambient temperature.

Blanking, forming, and trim dies, gages, slitting cutters, punches, bolster dies, knock-out pins, thread roll dies, bending dies, plastic mold dies, shims, cams, machine ways, stamps, machine parts, jigs, cutter templates, swaging dies etc

Heat Treatment

Annealing:

Heat at a rate not exceeding 160°C per hour to 800-820°C, and hold at temperature for 1 hour per inch (25.4mm) of maximum thickness, furnace cool at a rate not exceeding 28°C per/ hour to 550°C, then air cool

Annealed Hardness ~ 200-210 HBW

Stress Relief

Heat to slowly 660-680°C, hold as per 1" per 30 mm, then cool in still air.

Hardening

Preheat: Heat to 600-650°C, equalize and heat to 800-815°C at the rate 100°C/1 hr max, soak for 30 minutes per inch of thickness and quench in warm oil

Temper:

Temper immediately after hardening in range of 300 to 450° C for 2 hours per inch of thickness, air cool. Normally oil hardening steels need to be single tempered only however, double tempering may sometimes be preferred.