



# E STEEL SDN BHD (891338-A)

NO 3, Lorong Sungai Puloh 7/KU 6,  
Kawasan Perindustrian Sungai Puloh, 42100 Selangor D.E  
Tel : 03-3292 8686 / 32928666 / 32928777  
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## 1.2510, 100MnCrW4, O1, SKS3, DF2, DF3

2510 with chromium-manganese content possessed good machinability, mechanical wear resistance and edge holding quality. Vanadium-Wolfram content reduces high working temperature wear and retention of temper temperature.

DIN	AISI	JIS	Chemical Composition												
			C	Si	Mn	P	S	Co	Cr	Mo	Ni	V	W	Cu	
1.2510	O1	SKS3	0.90 to 1.05	0.15 to 0.35	1.00 to 1.20	≤ 0.035	≤ 0.035	-	0.15 to 0.35	-	-	0.05 to 0.15	0.50 to 0.70	-	

### Relevant Steel Specification of AISI O1 Tool Steel

Country	USA	German	Japan
Standard	ASTM A681	<u>DIN EN ISO 4957</u>	<u>JIS G4404</u>
Grades	O1	1.2510/100MnCrW4	SKS3

### ASTM O1 Tool Steel Mechanical Properties

Properties	Metric	Imperial
Hardness, Brinell (soft annealed -delivery condition)	190	190
Hardness, Rockwell C (tempering temp 300-1200°F)	34.0-64.0	34.0-64.0
Elastic modulus (hardened to 62 HRC)	193 GPa	28000 ksi
Elastic modulus (@399°C/750°F, hardened to 62 HRC )	172 GPa	25000 ksi
Elastic modulus (@191°C/375°F, hardened to 62 HRC)	186 GPa	27000 ksi
Compressive yield strength (0.2%, hardened to 50 HRC)	1350 MPa	196000 psi
Compressive yield strength (0.2%, hardened to 55 HRC)	1800 MPa	261000 psi
Compressive yield strength (0.2%, hardened to 60 HRC)	2150 MPa	312000 psi
Compressive yield strength (0.2%, hardened to 62 HRC)	2200 MPa	319000 p

### Properties :

General purpose oil hardening medium alloyed cold work tool steel with minimum size change, high impact strength and hardenability, good edge holding, abrasion resistance and machinability properties, dimensionally stable during heat treatment, high surface hardness and sufficient toughness after hardening and tempering.



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### **Applications :**

Cutting, blanking, punching and stamping tools and dies up to 6 mm sheet thickness, thread cutting tools, chasers, cold forming tools, arbors, drill bushings, collets, drawing punches, machine knives for the wood, paper and metal working industries, woodworking tools, cold trimming dies, shaping wheels, measuring tools and gauges, milling cutters, drills, reamers, taps, broaches, calipers, profile rollers, coining tools, industrial blades, moulds for the plastics industry, knurling tools, medium run blanking dies, cold working mandrels, master engraving rolls and taps, guide rails, plug gages.

### **Heat treatment**

Stress relieving Temperature : Approx. 650 °C in the annealed state  
Duration : 1 hour per 50 mm wall thickness  
Soft annealing Temperature : 750 °C  
Duration : 1 hour per 25 mm wall thickness  
Hardening Temperature : 830 °C  
Duration : 1 minute per mm wall thickness  
Quenching hardness Max. 64 HRC in oil, hot bath or vacuum  
Tempering Temperature : See tempering curve  
Duration : 1 hour per 25 mm wall thickness  
Cooling : Air  
Working hardness 58–62 HRC