

O2 - W.1.2842

O2-is a widely used cold working tool steel.

O2 is a cold working tool steel, it combines an easy heat treatment process, great dimension stability good machinability and easy to sharp and keep the edge in case of knives. This grade is delivered annealed at around 220 HB.

STANDARDS

ASTM. A681 AISI : O2

Din W.1.2842 (90MnCrV8)

This grade is typically used for:
> Cooking knives, hunting knives

> blades, shears, punch, cutting rings, jaws

> Support plates or backing plates

> rails, sliding rails....

PROPERTIES

CHEMICAL ANALYSIS -% WEIGHT

Typical values

Analysis in %		C	Si	Mn	V	Cr	Others	S	P
O2	Min	0.85	0.10	1.80	0.05	0.20			
	Max	0.95	0.40	2.20	0.20	0.50		<0.030	<0.030
	Typ	0.90	0.30	2.00	0.15	0.50		<0.030	<0.030

MECHANICAL PROPERTIES

Typical values for plates air quenched and tempered (thickness 45 mm - 1.8").

Density 7.85 g/cm³

	Elastic Modulus	
	GPa	KSI
O2	210	30

PHYSICAL PROPERTIES

Thermal conductivity W m ⁻¹ K ⁻¹	Thermal expansion coefficient 10 ⁻⁶ °C ⁻¹ /10 ⁻⁶ °K ⁻¹		
100°C 212°F	20-100°C 68-212°F	20-200°C 68-392°F	20-500°C 68-932°F
33	12.2	13.2	14.7

PLATE PROCESSING

METALLURGICAL PROPERTIES

O2 has an excellent hardenability resulting in good uniformity of hardness and microstructure.

Suitable for PVD Coating or Hard chrome plating.

Internal soundness:

All plates are ultrasonically tested according to NFA 04305 Class C.- ASTM A 578-S9 2mm flat bottom hole

Flatness: 3mm/m

HEAT TREATMENT

> **Heat up** to 790°C-820°C with a 30 min holding time at austenizing temperature.

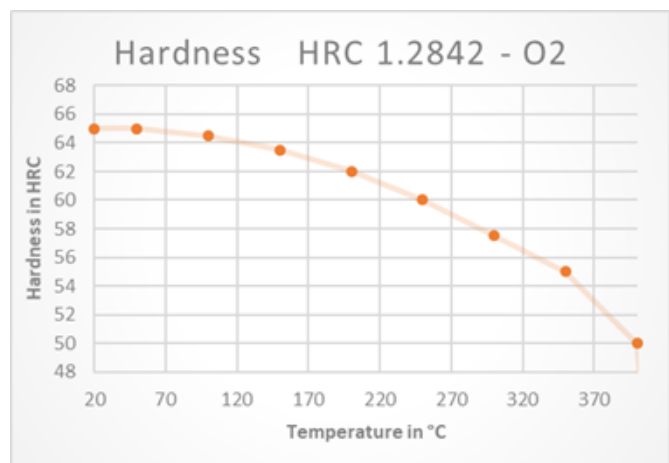
> **Then quench immediately** in oil at 80°C or salt bath at 180°C-220°C .

Hardness after quenching 64 HRC

Tempering : Heat O2 at least one hour min per 25 mm thick according desire final hardness. It is essential to make a double temper, heating temperature cycles 150°C to 250°C.

Annealing : 680°C-720°C at least 1+1 hours min per 25 mm thick.
Then cool down at a rate of 10/20°C per hour to 600°C, then cool in Air.

Tempering curve O2



Stress relieving : Heat O2 at 50°C below latest tempering temperature for a minimum of 2 hours, then slow cooling in furnace.

DELIVERY CONDITIONS

TYPICAL DELIVERY STAGES

O2 is delivered in annealed condition at around 220 HB

DIMENSIONAL PROGRAM

Thickness	Width
20 - 120 mm	1500 - 2500 mm

YOUR CONTACTS

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Technical data and information are to the best of our knowledge at the time of printing. However, they may be subject to some slight variations due to our ongoing research programme on steels. Therefore, we suggest that information be verified at time of enquiry or order. Furthermore, in service, real conditions are specific for each application. The data presented here are only for the purpose of description, and considered as guarantees when written formal approval has been delivered by our company. Further information may be obtained from the address opposite.