

## Steel grade

Material No.	PREMIUM W1
AISI	W1
Search for alternatives in the ABRAMS STEEL GUIDE	<a href="http://www.abrams-steelguide.com/alternatives/W1">www.abrams-steelguide.com/alternatives/W1</a>

## Shapes



Drill Rod [DR]  
Precision Round Bars  
L: 36"

## Chemical composition AISI W1 (reference value %)

C	Si	Mn	P	S	Cr	Mo	V	W
0.9 - 1.05	0.1 - 0.25	0.3 - 0.4	0 - 0.025	0 - 0.025	0 - 0.2	0 - 0.1	0 - 0.1	0 - 0.2

## Physical properties

Hardness (delivery condition)	max. 200 HB, annealed				
Tensile strength $R_m$ (as received condition)	approx. 97.9 KSI				
Working hardness	65 HRC				
Thermal expansion coefficient $10^{-6}m/(m \cdot K)$	68 - 212°F	68 - 392°F	68 - 572°F	68 - 752°F	68 - 932°F
	11.1	12.1	12.9	13.5	13.9
Thermal conductivity $W/(m \cdot K)$	45.0				

## Technical properties

W1 is a water-hardening tool steel with a moderate wear resistance that is easy to machine. Its high carbon content results in a keen cutting edge. In essence, W1 is a simple high carbon steel and can easily be hardened by heating and quenching in water.

## Applications

Cuttings tools, knives, razor blades, broaching tools, tools for screw cutting, embossing taps, cutlery, chisels, drawing dies, shafts, pins.

## Heat treatment

Soft annealing	Temperature	Cooling	Hardness
	1256 - 1328°F	Furnace	max. 180 HB
Hardening	Temperature	Quenching in	
	1400 - 1454°F	Water	66 HRC

