

Quality	60WCrV8	Supply conditions:	<i>Technical card</i>
According to standards	UNI EN ISO 4957: 2002	Annealed HB max 229	Lucefin Group
Number	1.2550		rev. 2018

Chemical composition

C%	Si%	Mn%	P% max	S% max	Cr%	V%	W%
0,55-0,65	0,70-1,00	0,15-0,45	0,030	0,030	0,90-1,20	0,10-0,20	1,70-2,20
± 0.03	± 0.05	± 0.04	+ 0.005	+ 0.005	± 0.05	± 0.02	± 0.07

Product deviations are allowed

Temperature °C

Hot-forming	Stress-relieving after machining and before quenching	Pre-heating	Quenching	Tempering
1050-900	650 furnace cooling to 350, then air	400 pause, then ▲	+Q ▲ 870-900 oil or polymer	+T 180-250 calm air minimum 2 cycles
Soft annealing +A	Isothermal annealing +I	End quench hardenability test	Pre-heating welding	Stress-relieving after welding
750 calm air (HB max 229)	820 furnace cooling 22 °C/h to 740, then furnace cooling to 700, then air (HB 220- 230)		250-300 Ac1 Ac3 770 820	630 furnace cooling Ms Mf 270 50

Max. hardness values of annealed and **cold-drawn** material: HB 249
the symbol ▲ indicates the temperature rise to °C ▲

Mechanical and physical properties

Table of tempering on round of 25 mm after quenching at 890 °C in oil											
HB	697	688	679	654	634	605	577	543	482	455	400
HRC	62.5	62	61.5	60	59	57.5	56	54	50	48	43
R N/mm ²	-	-	-	-	2420	2285	2160	2010	1760	1640	1390
Tempering at °C	50	100	150	200	250	300	350	400	450	500	600
Thermal expansion	10 ⁻⁶ · K ⁻¹		►	11.0	12.5	13.0	13.5	14.0			
Modulus of elasticity long.	GPa			210							
Modulus of elasticity tang.	GPa			80							
Specific heat capacity	J/(Kg·K)			460							
Thermal conductivity	W/(m·K)			25.0							
Density	Kg/dm ³			8.0							
Specific electric resist.	Ohm·mm ² /m			0.30							
Electrical conductivity	Siemens·m/mm ²			3.3							
°C	20		100	200	300	400	500				

The symbol ► indicates temperature between 20 °C and 100 °C, 20 °C and 200 °C ...

Europe	Germany	China	Japan	India	R. of Korea	Russia	USA
EN	DIN	GB	JIS	IS	KS	GOST	AISI/SAE
60WCrV8	60WCrV7	6CrW2Si				6ChW2S	A681 S1

Cold-work tool steels

- indeformable during heat treatment; it can be case hardened
- it is also used in the *hot die sector*, where temperatures do not exceed 500 °C
- during hot transformation, temperature risings should be very slow, breakpoint at 700 °C for a period of time required to homogenize the entire section, break at the transformation temperature for the minimum time required to reach the core and, at the end of the transformation, very slow cooling, either in a furnace or in a pit
- the furnaces used for the quality heat treatment (quenching) should have a controlled atmosphere.
- applications: *shears, punch tools, drawing punches, minting dies, timber tools, saw blades gang punch, etc.*

60WCrV8 1.2550*Lucefin Group*

ASM Vol. 1 Nominal room-temperature mechanical properties of 1.2550 steel

Condition	Tensile strength N/mm ²	Yield strength N/mm ²	Elongation %	Reduction %	Hardness HB	Charpy unnotched J
Annealed	690	415	24	52	216	
Quenching	Tempering					
	205 °C	2070			605	249
925 °C	315 °C	2025	4	12	543	233
oil	425 °C	1790	5	17	490	203
	540 °C	1680	9	23	448	230
	650 °C	1345	12	37	390	