METALLURGICA VENETA
ACCIAI SPECIALI

Certified Company

1.2550

Quality	60WCrV8
According to standards	UNI EN ISO 4957: 2002
Number	1.2550

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	1,70-2,2(
± 0.03	± 0.05	± 0.04	+ 0.005	+ 0.005	± 0.05	± 0.02	± 0.07

Deviations allowed for analysis product

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 ▲	▲ 870-900 oil or polymer	180-250 calm air minimum **2** cycles

Soft annealing	Isothermal annealing	End quench hardenability test	Pre-heating welding		Stress-relieving after welding	
750 calm air (HB max 229)	820 furnace cooling to 740, then furnace cooling to 700, then air (HB 220- 230)		250-300		630 furnace cooling	
			A_{C1}	A_{C3}	M_S	M_f
			770	820	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
N/mm²					2420	2285	2160	2010	1760	1640	1390
Tempering at **°C**	**50**	**100**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**600**

Thermal expansion	$10^{-6} \cdot K^{-1}$			11.0	12.5	13.0	13.5	14.0
Modulus of elasticity	longitudinal	GPa	210					
Modulus of elasticity	tangential	GPa	80					
R		N/mm²					1780	
Testing at **°C**			**20**	**100**	**200**	**300**	**400**	**500**

Specific heat capacity J/(Kg•K)	Density Kg/dm³	Thermal conductivity W/(m•K)	Specific electric resist. Ohm•mm²/m	Electrical conductivity Siemens•m/mm²
460	8.0	25	0.3	3.33

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 punchs, minting dies, timber tools, saw blades gang punch, etc.*