METALLURGICA VENETA
ACCIAI SPECIALI

Certified Company IQNet CSQ

1.2365

Quality	32CrMoV12-28	Supply conditions:
According to standards	UNI EN ISO 4957: 2002	Annealed
Number	**1.2365**	

Chemical composition

C%	Si%	Mn%	P% max	S% max	Cr%	Mo%	V%
0,28-0,35	0,10-0,40	0,15-0,45	0,030	0,020	2,70-3,20	2,50-3,00	0,40-0,70
± 0.02	± 0.03	± 0.04	+ 0.005	+ 0.005	± 0.10	± 0.10	± 0.04

Product deviations are allowed

Temperature °C

Hot-forming	Quenching	Tempering see table	Stress-relieving	Stress-relieving must be done after machining and before quenching
1050-900	I° heating up to 400, pause, then II° heating up to 800, pause, then 1030-1050 oil, polymer	immediately after quenching minimum 2 cycles	600-650 furnace cooling to 350, then air	

Soft annealing	Stress relieving [1]	Pre-heating welding	Stress-relieving after welding
780-800 furnace cooling max 25 °C/h to 600, then air (HB max 229)	50° under the temperature of tempering	350-380	[1]

Ac1	Ac3	Ms	Mf
800	900	320	100

Mechanical and physical properties

Tempering table after quenching at 1040 °C in oil.

HB	518	525	496	489	489	496	504	504	496	482	432	432	371
HRC	52.5	52	51	50.5	50.5	51	51.5	51.5	51	50	49	46	40
R N/mm²		1880	1820	1790	1790	1820	1850	1850	1820	1760	1700	1520	1250
Tempering at **°C**	**50**	**100**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**650**

Modulus of elasticity	long. GPa	215							176	165			
Modulus of elasticity	tang. GPa	82							68	63			
Thermal expansion	$10^{-6} \cdot K^{-1}$		12.0	12.5	12.7	13.0	13.2	13.4		13.7			
Thermal conductivity	W/(m•K)	30.0					30.1	29.7					
Specific heat capacity	J/(Kg•K)	460					550	590					
Specific electric resist.	Ohm•mm²/m	0.37					0.78	0.89					
Electrical conductivity	Siemens•m/mm²	2.70					1.28	1.12					
Density	Kg/dm³	7.88					7.69	7.65					
R hardened and tempered for	N/mm²	**1600**				1350	1150	900	700				
Rp 0.2	N/mm²					1100	950	700	580				
R hardened and tempered for	N/mm²	**1200**				1050	900	650	520				
Rp 0.2	N/mm²					850	730	480	360				
R hardened and tempered for	N/mm²	**900**	830	790	720	700	600	420		300			
Rp 0.2	N/mm²		630	630	610	580	550	400		280			
Testing at	**°C**	**20**	**100**	**200**	**300**	**400**	**500**	**600**	**650**	**700**			

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Tool steel for high-working temperatures

- chrome-molybdenum-vanadium alloyed steel
- high resistance to thermal shock and hot cracking
- good mechanical characteristics and toughness in hot condition
- good resistance to tempering
- excellent machinability
- if required, it is possible to carry out welding operation with TIG or MMA methods
- it can be nitrided in its final state; we recommend heat treating the component in the finish machined condition
- applications: *dies for aluminium die-casting, dies subject to low pressure, chill moulds for gravity casting, containers for die-casting presses, matrix for aluminium extrusion, extrusion press blocks,sleeves for extrusion presses, injection moulds*