

<b>Quality</b>	<b>100CrMo7</b>	Supply conditions:
According to standards	<b>ISO 683-17: 2001</b>	Annealed
Number	<b>1.3537 B5</b>	

## Chemical composition

C%	Si%	Mn%	P% max	S% max	Cr%	Mo%	Cu% max	Al% max	Deviations allowed for analysis product
0,93-1,05	0,15-0,35	0,25-0,45	0,025	0,015	1,65-1,95	0,15-0,30	0.30	0.050	
± 0.03	± 0.03	± 0.04	+ 0.005	+ 0.005	± 0.05	± 0.03	+0.03	+0.010	

Product deviations are allowed

## Temperature °C

Hot-forming	Pre-heating	Quenching	Tempering	Stress-relieving <sup>x)</sup>	<sup>x)</sup> Stress-relieving must be done after machining and before final heat treatment
1100-850	400 stop in furnace, then 850	850 oil or polymer salt bath 500-550	150-220 air	600-650 furnace cooling	
Soft annealing	Isothermal Annealing +AC		+AC+C Annealed cold-drawn	Pre-heating welding	Stress-relieving after welding
730 air	800 furnace cooling to 720, then furnace to 600, then air (HB max 217)		(HB max 251)	not recommended <b>Ac1 start</b> <b>Ac1 end</b> <b>Ms</b>	not recommended <b>Mf</b>
				755   785   200	-10 subcooling

## Mechanical properties

**Table of tempering** values at room temperature on round of Ø 10 mm after quenching at 850 °C in oil

HB	739	739	722	670	615	595	613	512	482	432	415	344	286	253
HRC	65	65	64	61	58	57	56	52	50	46	44.5	37	30	25
R	N/mm <sup>2</sup>		2000	2400	2430	2300	2150	1950	1770	1610	1450	1240	1000	840
R <sub>p0.2</sub>	N/mm <sup>2</sup>		1800	2050	2150	2090	1960	1810	1650	1500	1350	1150	900	750
A	%								3.0	4.6	6.4	9.0	12.5	16.5
C	%								15	20	30	38	44	52
K	Mesnager J		4	7	8	8	10	13	18	24	32	44	60	
Tempering at °C	50	100	150	200	250	300	350	400	450	500	550	600	650	700

**HRC** from the surface to the core for diameter Ø quenched in oil at 850 °C

Hardness variations highlight the mass effect

mm	0	5	10	15	20	25	30	35	40	45	50	Hardening in oil on round of Ø 20 mm												
												°C	HRC											
Ø 20	66	66	65.5												800	62								
Ø 30	65.5	65.5	65.5	65												820	64							
Ø 40	65.5	65.5	65.5	65	65												840	65.5						
Ø 50	65.5	64	62	61	60.5	60.5												850	66					
Ø 60	64.5	63	58.5	54	52	51.5	51												860	66				
Ø 80	62.5	58	50.5	47.5	46	45	44.5	44	43.5												880	66		
Ø 100	61	56	49	46.5	45	44.5	43.5	43	42.5	42.5	42.5												900	65

## Cold-work tool steels

- suitable for the manufacturing of large-sized tools, due to its good hardening penetration
- it is supplied in annealed bars (HB max 220), forged or rolled
- during heat treatment, adequate measures should be taken to limit decarburization
- often used for manufacturing bearings
- applications: *heavy collars, swirl and ring-roll mills*