

Quality	100Cr6	Bearing Steel	<i>Technical card</i>
According to standards	ISO 683-17: 2014		Lucefin Group
Number	1.3505		rev. 2018

Chemical composition

C%	Si%	Mn%	P%	S%	Cr%	Mo%	Al%	Cu%	Product deviations are allowed
0,93-1,05	0,15-0,35	0,25-0,45	max 0,025	max 0,015	1,35-1,60	max 0,10	max 0,050	max 0,30	
± 0.03	± 0.03	± 0.04	+ 0.005	+ 0.005	± 0.05	± 0.03	+ 0.010	+0.03	

The oxygen content max 0,0015 at the discretion of the manufacturer

Temperature °C

Hot-forming	Quenching ¹⁾	Quenching ²⁾	Tempering ^{1) 2)}	Stress relief annealing +SR	x) stress relief annealing is suggested to be carried out after machining and before final heat treatment			
1050-900	+Q heating up to 650, pause, then 800-830 water	+Q 830-870 oil/ polymer salt bath 500-550 salt bath 180-200	+T 150-300 air	600-650 x) furnace cooling				
Isothermal annealing +I	Spheroidized annealing +AC		Recrystallization annealing +RA	Pre-heating welding	Stress-relieving after welding			
800 rapid cooling to 720, pause, then air (HB max 220)	770-780 cooling 15-20 °C/h to 730 pause, then 10 °C/h to 600 then 40 °C/h to 300 then air (HB max 207)		750-760 furnace cooling to 300, then air		not recommended			
					Ac1	AcM	Ms	Mf
					755	850	300	85

Hardness in the globular annealed and cold-worked state (hot rolled +AC+C) can be HB 241 max

Mechanical properties

Table of tempering values obtained at room temperature on round of Ø 10 mm after quenching at 840 °C in oil

HV ₃₀	832	800	772	746	674	633	577	528	471	434
HRC	65	64	63	62	59	57	54	51	47	44
R N/mm ²	-	-	2400	2500	2420	2300	2100	1900	1650	1410
Tempering °C	50	100	150	200	250	300	350	400	450	500

Hardening depth from surface to core (0) on round tempered at 850 °C in oil. Hardness values expressed in HRC

mm	20	15	10	5	0	5	10	15	20
Ø 20	-	-	65	64	64	64	65	-	-
Ø 30	-	64	62	59	58	59	62	64	
Ø 40	62	57	52	50.5	50	50.5	52	57	62

Evolution of the austenitic **grain size** as a function of the material heating temperature

Grain size	8 - 9	7 - 8	7	6	4 - 5	4
Temperature °C	830	850	900	950	1000	1050

Thermal Expansion	10 ⁻⁶ • K ⁻¹	►	11.4	14.7	Hardenability test. Hardening at 840 °C
Modulus of Elasticity long.	GPa		210		
Modulus of Elasticity tang.	GPa		80		
Poisson Number	ν		0.30		
Specific Heat Capacity	J/(Kg•K)		475		
Thermal Conductivity	W/(m•K)		46.6		
Density	Kg/dm ³		7.81		
Specific Electric Resist.	Ohm•mm ² /m		0.22		
Electrical Conductivity	Siemens•m/mm ²		4.55		
°C			20	100	

The symbol ► indicates temperature between 20 °C and 100 °C, 20 °C and 700 °C

Data under fatigue with low cycle number. Values for quenched and tempered material

Cyclic yield strength, σ_y' MPa	Cyclic strength exponent, n'	Cyclic strength coefficient, K' , MPa	Fatigue strength coefficient, σ_f' , MPa	Fatigue strength exponent, b
1324	0,15	3403	2642	- 0,09