

Quality	1.4034 DE	Martensitic	<i>Technical card 2018</i>
Number	(1.4034)	Stainless Steel	<i>Lucefina Group</i>

Chemical composition

C%	Si%	Mn%	P%	S%	Cr%	
0,43-0,46	max 1,00	max 1,00	max 0,040	0,018-0,026	12,5-14,5	EN 10088-3: 2014
± 0.02	+ 0.05	+ 0.03	+ 0.005	+ 0.005	± 0.15	

Product deviations are allowed

Non-metallic inclusions K3 max 50, only for oxides; DIN 50602 standard

Carbide structure max CZ 7.1; SEP 1520 standard

Temperature °C

Melting range	Hot-forming	Recrystallization +RA	Soft annealing +A	MMA welding – AWS electrodes
1480-1470	1050-930	not suitable	800-750 750 slow cooling to 600, then air	<i>pre-heating</i> 250-200 <i>annealing after w.</i> 750-700
Globular annealing (Spheroidized) +AC	Quenching +Q	Tempering +T	Stress-relieving +SR	<i>joint with steel</i>
800 cooling furnace to 600, then air (HB max 210)	1030-980 oil / air	650-600 fast cooling in air	200 air (HRC 52)	carbon CrMo alloyed stainless E70 xx E8016-B 2 E309-E308 <i>cosmetic welding</i> E420

Chemical treatment - Pickling (10 - 15% HNO₃) + (0,5 -1,05% HF) hot or cold

Mechanical properties (reference values: steel X46Cr13 No. 1.4034)

Heat-treated material EN 10088-3: 2014 in conditions 1C, 1E, 1D, 1X, 1G, 2D

size	Testing at room temperature					
mm	R	Rp 0.2	A%	Kv ₂ +20 °C	HBW ^{a)}	a) for information only
from to	N/mm ²	N/mm ² min	min	J min	max	
	800 max	-	-	-	245	+A annealed material
160	850-1000	650	10	12	-	+QT850 quenching and tempering

Bright bars of heat-treated material EN 10088-3: 2014 in conditions 2H, 2B, 2G, 2P

size	Testing at room temperature						
mm	R	HBW ^{a)}		R	Rp 0.2	A%	Kv ₂ +20 °C
from to	N/mm ² max	max		N/mm ²	N/mm ² min	min	J min
10 ^{b)}	950	305		900-1150	700	7	-
10	950	305		900-1150	700	7	-
16	900	280		850-1100	650	8	12
40	840	260		850-1000	650	8	12
63	800	245		850-1000	650	10	12
	+A annealed material			+QT850 quenched and tempered			

a) for information only

b) in the range of 1 mm ≤ d < 5 mm, values are valid only for rounds – the mechanical properties of non round bars of < 5 mm of thickness have to be agreed at the time of request and order

Forged

size	Testing at room temperature					
mm	R	Rp 0.2	A%	Kv +20 °C	HB ^{a)}	
from to	N/mm ²	N/mm ² min	min	J min	max	
	-	-	-	-	245	+A annealed material

a) for information only

Table of tempering values at room temperature on rounds of Ø 10 mm after quenching at 1000°C in oil

R	N/mm ²	1800	1700	1700	1690	1680	1640	1300	1000	840	750
Rp 0.2	N/mm ²	1400	1320	1300	1300	1290	1250	1000	700	600	550
A	%	6	8	8	9	9	10	11	13	16	16
Kv	J	14	20	18	14	12	12	14	20	28	40
Tempering °C		200	300	350	400	450	500	550	600	650	700

Effect of **cold-working** (hot-rolled +A+C). Approximate values

R	N/mm ²	650	750	755	760	770	795	805	835	900	930	960
Reduction %		0	5	6	8	10	15	18	20	25	30	36

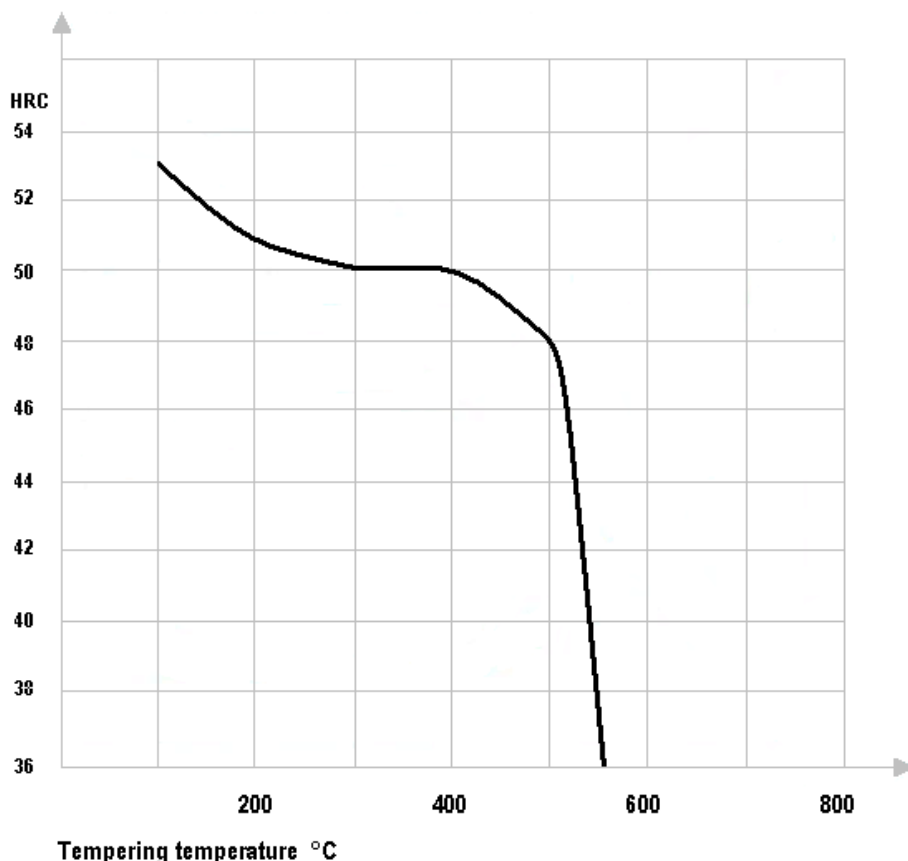
Thermal expansion	10 ⁻⁶ • K ⁻¹	▶	11.0	11.7	12.3
Modulus of elasticity	longitudinal GPa		206		
Poisson number	ν		0.235		
Electrical resistivity	Ω • mm ² /m		0.60		
Electrical conductivity	Siemens•m/mm ²		1.82		
Specific heat	J/(Kg•K)		460		
Density	Kg/dm ³		7.70		
Thermal conductivity	W/(m•K)		30		
Relative magnetic permeability	μ _r		700 ~		
°C			20	100	200 300 400 600

The symbol ▶ indicates temperatures between 20 °C and 200 °C, 20 °C and 400 °C

Corrosion resistance	Atmospheric	Chemical	x plastics, weak organic acids, petroleum, gasoline
Fresh water	<i>industrial</i> <i>marine</i>	<i>medium</i> <i>oxidizing</i> <i>reducing</i>	
x			
Magnetic	yes		
Machinability	good		
Hardening	by quenching		
Service temperature in air	continuous service up to 650 °C; intermittent service up to 750 °C		

Europe	USA	USA	China	Russia	Japan	India	Republic of Korea
EN	UNS	ASTM	GB	GOST	JIS	IS	KS

Tempering diagram



Heat treatments on 6 mm of thickness; approximate values

Quenching oil	Temper. °C	Hardness HRC
-	-	58
-	-	60
-	-	62
-	-	63
1000	180	54
1020	180	57
1040	180	59
1060	180	60

Approximate values obtained on 16 mm rounds quenched at 1000 °C in oil