

Quality	30CrNiMo8	Quenching and Tempering Steel	<i>Technical card</i> Lucefin Group rev. 2024
According to standards	ISO 683-2: 2018		
Number	1.6580		

Chemical composition

C%	Si% a)	Mn%	P% max	S% max	Cr%	Mo%	Ni%	Cu% max	
0,26-0,34 ± 0.03	0,10-0,40 ± 0.03	0,50-0,80 ± 0.04	0,025 + 0.005	0,035 + 0.005	1,80-2,20 ± 0.10	0,30-0,50 ± 0.04	1,80-2,20 ± 0.07	0,40 + 0.05	Product deviations are allowed
a) Steels may be supplied with a lower silicon content. In this case, alternative means of deoxidation shall be used									

Temperature °C

Hot-forming	Normalizing +N	Quenching +Q	Quenching +Q	Tempering +T	Stress-relieving +SR
1050-880	870-880 air	860 oil or polymer	830 water	540-660 air	50° under the temperature of tempering
Soft annealing +A	Isothermal annealing +I	Natural state +U	End quench hardenability test	Pre-heating welding	Stress-relieving after welding
650-700 cool. 10 °C/h to 600, then air (HB max 248)	780-800 cool. 50/h to 650 after air (HB 180-242)	- (HB max 370)	845 water	300 Ac1 720	550 furnace cooling Ac3 770 Ms 310 Mf 100

Mechanical properties

30CrNiMo8 1.6580 Hot-rolled mechanical properties in **quenched and tempered** condition ISO 683-2: 2018

size d / t		Testing at room temperature (longitudinal)					
mm		R	R _{p 0.2}	A%	Z%	Kv _{2 +20 °C}	HBW
from	to	N/mm ²	N/mm ² min.	min.	min.	J min.	for information
	16/8	1030-1230	850	12	40	-	
16/8	40/20	1030-1230	850	12	40	30	
40/20	100/60	980-1180	800	12	45	35	
100/60	160/100	980-1180	800	12	50	45	
160/100	250/160	930-1130	750	12	50	45	

d = diameter t = thickness

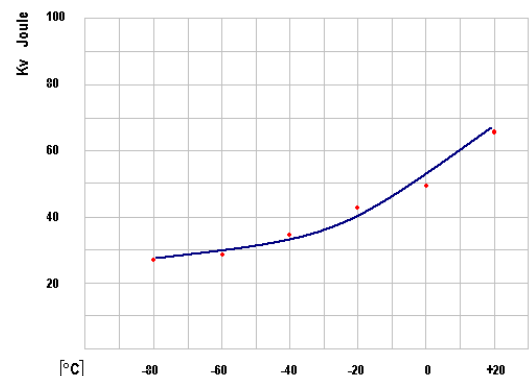
Table of tempering values obtained at room temperature on rounds of Ø 10 mm after quenching at 850 °C in oil

HB		426	404	381	347	275	240
HRC		45	43	41	37	28	23
R	N/mm ²	1500	1400	1290	1150	920	800
R_{p 0.2}	N/mm ²	1350	1250	1090	960	780	640
A	%	10.0	10.0	11.0	14.0	16.0	18.0
Z	%	42	45	48	50	52	52
Kv	J	20	50	60	75	80	92
Tempering at °C		450	500	550	600	650	700

Transition-curve; LUCEFIN experience

Kv values obtained on hot-rolled 32 mm round
Quenched and tempered (induction) R = **1260** N/mm²
R_{p 0.2} = **1110** N/mm² – A% = **11,8** – Z% = **59**

°C	J	average		
		J	Lat. Exp. mm	Shear %
+20	58 – 72 - 68	66	0,62	50
0	53 – 46 - 49	49	0,42	40
-20	44 – 44 - 45	42	0,34	20
-40	31 – 32 - 35	33	0,27	10
-60	28 – 28 - 27	28	0,25	10
-80	28 – 26 - 26	27	0,16	10



30CrNiMo8 1.6580 EN ISO 683-7:24

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Hot-rolled, annealed and Cold-drawn +A+C						Hot-rolled, annealed and Peeled +A+SH			
size mm		Testing at room temperature (longitudinal)				Testing at room temperature (longitudinal)			
		R	Rp 0.2	A%	HBW	R	Rp 0.2	A%	HBW
from	to	N/mm ²	N/mm ² min	min		N/mm ²	N/mm ² min	min	
5	10	-	-	-	-	-	-	-	-
10	16	-	-	-	-	-	-	-	-
16	40	-	-	-	-	-	-	-	248
40	63	-	-	-	-	-	-	-	248
63	100	-	-	-	-	-	-	-	248

Hot-rolled, quenched and tempered and Cold-drawn +QT+C						Hot-rolled, quenched and tempered and Peeled +QT+SH			
size mm		Testing at room temperature (longitudinal)				Testing at room temperature (longitudinal) ^{e)}			
		R	Rp 0.2	A%	Kv₂	R	Rp 0.2	A%	Kv₂
from	to	N/mm ²	N/mm ² min	min	J min	N/mm ²	N/mm ² min	min	J min
5 ^{b)}	10	-	-	-	-	-	-	-	-
10	16	-	-	-	-	-	-	-	-
16	40	-	-	-	-	1030-1230	850	12	30
40	63	-	-	-	-	980-1180	800	12	35
63	100	-	-	-	-	980-1180	800	12	35

^{b)} for thickness < 5 mm, mechanical properties should be agreed before order placement

^{e)} values valid also for +C+QT

30CrNiMo8 1.6580 **Forged** quenched and tempered UNI EN 10250-3: 2001

size d / t		Testing at room temperature						
mm		R	Rp 0.2	A%	A%	Kv	Kv	HB min.
from	to	N/mm ²	N/mm ² min	min (L)	min (T)	J min (L)	J min (T)	for inform.
	250/160	900	700	12	8	45	22	271
250/160	500/330	850	630	12	8	45	22	253
500/330	990/660	800	590	12	8	40	20	240

L = longitudinal T = tangential
d = diameter t = thickness

ISO 683-2: 2018 **Jominy test HRC** grain size 5 min.

mm distance from quenched end																
	1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50	
min	48	48	48	48	47	47	47	46	46	45	45	44	44	43	43	H
max	56	56	56	56	55	55	55	55	55	54	54	54	54	54	54	
min	51	51	51	51	50	50	50	49	49	48	48	47	47	47	47	HH
max	56	56	56	56	55	55	55	55	55	54	54	54	54	54	54	
min	48	48	48	48	47	47	47	46	46	45	45	44	44	43	43	HL
max	53	53	53	53	52	52	52	52	52	51	51	51	51	50	50	

Thermal Expansion	10 ⁻⁶ · K ⁻¹ ▶	10.5	11.4	11.5	12.1	12.7	13.2	13.6	14.0	14.4
Mod. of Elasticity long.	GPa	217	213	212	207	199	192	184	175	164
Mod. of Elasticity tang.	GPa			81	79	76	73	70	67	62
Specific Heat Capacity	J/(Kg·K)	423	456	461	479	499	517	536	558	587
Thermal Conductivity	W/(m·K)			33.7	36.2	37.8	37.2	35.7	34.0	32.0
Density	Kg/dm ³			7.85						
Specific Electric Resistivity	Ohm·mm ² /m			0.309	0.354	0.418	0.505	0.609	0.727	0.867
Electrical Conductivity	Siemens·m/mm ²			3.24	2.82	2.39	1.98	1.64	1.37	1.15
°C		-100	0	20	100	200	300	400	500	600

Physical properties according to DIN SEW 310 (08/1992) standard.

The symbol ▶ indicates temperature between -100 °C and 0 °C, -100 °C and 20 °C ...

EUROPE	ITALY	CHINA	GERMANY	FRANCE	U.K.	RUSSIA	USA
EN	UNI	GB	DIN	AFNOR	B.S.	GOST	AISI/SAE
30CrNiMo8	30CrNiMo8		30CrNiMo8	30NCD8	823M30		A320L43