Quality	**25CrMo4**	*Technical card*
According to standards	**EN 10083-3: 2006**	***Lucefin Group***
Number	**1.7218**	

Chemical composition

C%	**Si%** max	**Mn%**	**P%** max	**S%** max	**Cr%**	**Mo%**	
0,22-0,29	0,40	0,60-0,90	0,025	0,035	0,90-1,20	0,15-0,30	Product deviations are allowed
± 0.02	+ 0.03	± 0.04	+ 0.005	+ 0.005	± 0.05	± 0.03	

For 25CrMoS4 n° 1.7213, S% 0.020-0.040 product deviations ± 0.005

Temperature °C

Hot-forming	**Normalizing**	**Quenching**	**Quenching**	**Tempering**	**Stress-relieving**
1050-850	890 air	880 oil or polymer	840 water	540-680 air	50° under the temperature of tempering

Soft annealing	**Natural state**	**End quench hardenability test**	**Pre-heating welding**	**Stress-relieving after welding**
680-720 cooling 15 °C/h to 600, then air (HB max 212)	(HB~ 270)	850 water	200-300	550 furnace cooling

Ac_1	**Ac_3**	**Ms**	**Mf**
750	800	380	165

Mechanical properties

Hot-rolled mechanical properties for **quenched and tempered** condition EN 10083-3: 2006

size d / *t* mm		Testing at room temperature (longitudinal)					
		R	**Rp** 0.2	**A**%	**C**%	**Kv**	***HB***
from	to	N/mm²	N/mm² min.	min.	min.	J min.	*for information*
	16/*8*	900-1100	700	12	50		*271-331*
16/*8*	40/*20*	800-950	600	14	55	50	*240-286*
40/*20*	100/*60*	700-850	450	15	60	50	*213-253*
100/*60*	160/*100*	650-800	400	16	60	45	*200-240*

d = diameter *t* = *thickness*

Table of tempering values obtained at room temperature after quenching at 840 °C in water

HB		294	279	247	216
HRC		31	29	24	
R	N/mm²	960	930	830	700
Rp 0.2	N/mm²	770	680	600	540
A	%	14	14.5	16	20
C	%	58	64	66	70
Tempering at **°C**	**400**	**500**	**550**	**600**	**650**

Mechanical properties at high temperatures on quenched and tempered material EN 10269: 2001

minimum 0.2 % proof strength at … **°C** temperature

Ø ≤ 100 mm	435	428	420	412	392	363	333	304	275	235
100 - 150 mm	414	403	393	382	372	344	324	294	265	226
Temperature **°C**	**50**	**100**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**

25CrMoS4 n° 1.7213 EN 10277-5: 2008 *Lucefin Group*

Cold-drawn + quenched and tempered +C +QT						Hot-rolled annealed + **peeled-reeled** +A +SH			
size mm		Testing at room temperature (longitudinal) [e]							
		R	**Rp** 0.2	**A**%	***HB***	**R**	**Rp** 0.2	**A**%	**HB**
from	to	N/mm²	N/mm² min	min	*for inform.*	N/mm²	N/mm² min	min	max
5 [b]	10								
10	16								
16	40	800-950	600	14	*240-286*				212
40	63	700-850	450	15	*213-253*				212
63	100	700-850	450	15	*213-253*				212

[e] values valid also for +C+QT+SL

[b] for thickness < 5 mm, mechanical properties should be agreed before order placement

Hot-rolled, quenched and tempered, **cold-drawn** +QT +C						Hot-rolled annealed + **cold-drawn** +A +C			
size mm		Testing at room temperature (longitudinal) [c] [e]							
		R	**Rp** 0.2	**A**%	***HB***	**R**	**Rp** 0.2	**A**%	**HB**
from	to	N/mm²	N/mm² min	min	*for inform.*	N/mm² min	N/mm² min	min	max
5 [b]	10	900-1100	700	9	*271-331*				270
10	16	900-1100	700	9	*271-331*				260
16	40	800-1000	600	10	*240-298*				255
40	63	700-900	520	11	*213-271*				250
63	100	700-900	450	12	*213-271*				250

[c] for flats and special sections, tensile strength (R) may differ by ± 10%

[e] values valid also for +QT+C+SL

[b] for thickness < 5 mm, mechanical properties should be agreed before order placement

Forged quenched and tempered 25CrMo4 n° 1.7218 EN 10250-3: 2001

d /*t* mm		Testing at room temperature						
		R	**Rp** 0.2	**A**% L	**A**% T	**Kv** L	**Kv** T	***HB***
from	to	N/mm² min	N/mm² min	min	min	J min	J min	*min*
	100/*70*	700	450	15	15	50	50	*213*
100/*70*	250/*160*	650	400	17	13	45	27	*200*
250/*160*	500/*330*	600	380	18	14	38	22	*178*

L = longitudinal T = tangential Q = radial d = diameter *t* = *thickness*

EN 10083-3: 2006 **Jominy test HRC** grain size 5 min.

mm distance from quenched extremity

	1.5	**3**	**5**	**7**	**9**	**11**	**13**	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	symbol
min	44	43	40	37	34	32	29	27	23	21	20	32	31	31	31	**H**
max	52	52	51	50	48	46	43	41	37	35	33					
min	47	46	44	41	39	37	34	32	28	26	24	23	22	22	22	**HH**
max	52	52	51	50	48	46	43	41	37	35	33	32	31	31	31	
min	44	43	40	37	34	32	29	27	23	21	20					**HL**
max	49	49	47	46	43	41	38	36	32	30	29	28	27	27	27	

Temperature	**Mod. of elasticity E** long.	**Thermal expansion**	**Specific heat capacity**	**Specific electric resistivity**	**Thermal conductivity**
Testing at **°C**	GPa	$10^{-6} \bullet K^{-1}$	J/(Kg•K)	Ohm•mm²/m	W/(m•K)
-100	217	10.5	423		
0	213	11.4	456		
20	212	11.5	461	0.254	41
100	207	12.1	479	0.3	42.7
200	199	12.7	499	0.369	42.8
300	192	13.2	517	0.451	41.6
400	184	13.6	536	0.545	39.9
500	175	14	558	0.654	37.8
600	164	14.4	587	0.778	35.6

Density +20 °C Kg/dm³	Physical properties according to DIN SEW 310 (08/1992) standard
7.83	

EUROPE EN	**ITALY** UNI	**CHINA** GB	**GERMANY** DIN	**FRANCE** AFNOR	**U.K.** B.S.	**RUSSIA** GOST	**USA** AISI/SAE
25CrMo4	25CrMo4	30CrMo	25CrMo4	25CD4	708M25	20ChM	4130

Reference data of strength for 1% (plastic) creep strain and creep rupture EN 10269				
	σ_1 N/mm²		σ_R N/mm²	
°C	10 000 h	100 000 h	10 000 h	100 000 h
420	274	221	387	308
430	258	203	364	281
440	242	186	338	253
450	226	171	311	226
460	210	155	283	200
470	195	141	255	178
480	180	127	226	157
490	163	112	200	136
500	147	98	176	118
510	130	83	153	100
520	115	69	133	82
530	98	54	114	66
540	81	39	95	51
550	64	25	79	36
σ_1 = permanent creep strain strength 1%			σ_R = creep rupture strength	