Quality	**C25E**	**Quenching and Tempering Steel**	*Technical card*
According to standards	**ISO 683-1: 2018**		***Lucefin Group***
Number	**1.1158**		*rev. 2018*

Composizione chimica

C%	**Si%** [a]	**Mn%**	**P%** max	**S%** max	**Cr%** max	**Mo%** max	**Ni%** max	**Cu%** max	
0,22-0,29	0,10-0,40	0,40-0,70	0,025	0,035	0,40	0,10	0,40	0,30	Product deviations are allowed
± 0.02	± 0.03	± 0.04	+ 0.005	± 0.005	+0.05	+0.03	+0.03	+0.05	

Cr+Mo+Ni max 0.63%
For C25R n° 1.1163 S% 0.020-0.040 product deviation ± 0.005

Temperature °C

Hot-forming	**Normalizing +N**	**Tempra +Q**	**Quenching +Q**	**Tempering +T**	**Stress-relieving +SR**
1150-850	880-920 air	860 water	900 olio o polimero	550-660 air	50 under the temperature of tempering

Soft annealing +A	**Pre-heating welding**		**Stress-relieving after welding**	
700 air	not demanded		slow cooling	
	Ac_1	**Ac_3**	**Ms**	**Mf**

Mechanical properties

C25E – C25R Hot-rolled mechanical properties in **normalized** condition ISO 683-1: 2018

size d / *t*		Testing at room temperature (longitudinal)					
mm		**R**	**Re_H** [a]	**A%**	**Z%**	**Kv_2**	***HB** for information*
from	to	N/mm² min	N/mm² min.	min.	min	J min.	*min*
	16/*16*	470	260	22	-	-	*141*
16/*16*	100/*100*	440	230	23	-	-	*132*
100/*250*	100/*250*	-	-	-	-	-	-

C25E – C25R Hot-rolled mechanical properties in **quenched and tempered** condition ISO 683-1: 2018

size d / *t*		Testing at room temperature (longitudinal)					
mm		**R**	**Re_H** [a]	**A%**	**Z%**	**Kv_2**	***HB***
oltre	fino a	N/mm²	N/mm² min	min.	min.	J min	*for information*
	16/*8*	550-700	370	19	-	35	*159-214*
16/*8*	40/*20*	500-650	320	21	-	35	*152-200*

[a] Re_H upper yield strength or, if no yield phenomenon occurs, $Rp_{0.2}$ has to be considered

Table of tempering values obtained at room temperature on rounds of Ø 30 mm after quenching at 860 °C in water

HB		198	178	172	159	154
R	N/mm²	640	600	580	550	510
$Rp_{0.2}$	N/mm²	390	370	350	320	300
A	%	18	20	20	20	20
Z	%	45	50	52	58	60
+T at	**°C**	**450**	**500**	**550**	**600**	**650**

C25E 1.1158 **– C25R** 1.1163 EN 10277: 2018 *Lucefin Group*

Cold-drawn +C [c]						Hot-rolled and **Peeled** +SH [d]			
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/mm²	N/mm² min	min	*for inform.*	N/mm²	N/mm² min	min	
5 [b]	10	560-860	420	6	*162-258*	-	-	-	-
10	16	530-880	380	7	*156-264*	-	-	-	-
16	40	510-810	300	8	*154-243*	440-640	-	-	130-187
40	63	490-790	265	9	*148-238*	440-640	-	-	130-187
63	100	440-740	245	10	*130-226*	440-640	-	-	130-187

[b] For thickness < 5 mm, mechanical properties should be agreed before order placement
[c] Values valid also for +C+G
[d] Values valid also for +SH+G

Hot-rolled quenched and tempered and **Peeled** +QT+SH						Quenched and tempered and **Cold-drawn** +QT+C			
size mm		Testing at room temperature (longitudinal) [c]				Testing at room temperature (longitudinal)			
		R	**Rp** 0.2	**A**%	**Kv**₂ +20 °C	**R**	**Rp** 0.2	**A**%	**Kv**₂ +20 °C
from	to	N/mm²	N/mm² min	min	J min	N/mm²	N/mm² min	min	J min
5	10	-	-	-	-	-	-	-	-
10	16	-	-	-	-	-	-	-	-
16	40	500-650	320	20	45	-	-	-	-
40	63	-	-	-	-	-	-	-	-
63	100	-	-	-	-	-	-	-	-

[c] Values valid also for +C+QT

C25E 1.1158 **Forged** normalized UNI EN 10250-2: 2001

size mm		Testing at room temperature						
		R	**Rp** 0.2	**A%**	**A%**	**Kv**	**Kv**	***HB***
from	to	N/mm² min	N/mm² min	min (L)	J min (T)	J min (L)	J min (T)	*min*
	100	440	230	23	-	35	-	*132*
100	250	420	210	23	-	30	-	*125*
250	500	400	190	23	17	25	*15*	*119*
500	1000	390	180	22	16	20	*15*	*117*

C25E 1.1158 **Forged** quenched and tempered UNI EN 10250-2: 2001

size d / *t*		Prova di trazione in longitudinale e resilienza a +20 °C						
mm		**R**	**Rp** 0.2	**A%**	**A%**	**Kv**	**Kv**	***HB***
oltre	fino a	N/mm² min	N/mm² min	min (L)	J min (T)	J min (L)	J min (T)	*min*
	100/70	450	270	25	-	45	-	
100/70	*250/160*	410	220	25	18	38	25	
250/160	*500/330*	390	210	24	16	33	20	

d = diameter *t* = *thickness*

Jominy test HRC grain size 5 min.

mm distance from quenched end

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**13**	**15**	**20**
min	No indications are shown in the reference standards													
max														

EUROPE	**ITALY**	**SPAIN**	**GERMANY**	**FRANCE**	**UK**	**SWEDEN**	**USA**
EN	UNI	UNE	DIN	AFNOR	B.S.	SS	AISI/SAE
C25E	C25		Ck25	XC25	070M25		1025