

<b>Quality</b>	<b>C25E</b>	<b>Quenching and Tempering Steel</b>	<i>Technical card Lucefin Group rev. 2024</i>
According to standards	<b>ISO 683-1: 2018</b>		
Number	<b>1.1158</b>		

### Composizione chimica

C%	Si% a)	Mn%	P% max	S% max	Cr% max	Mo% max	Ni% max	Cu% max	
0,22-0,29 ± 0.02	0,10-0,40 ± 0.03	0,40-0,70 ± 0.04	0,025 + 0.005	0,035 ± 0.005	0,40 +0.05	0,10 +0.03	0,40 +0.03	0,30 +0.05	Product deviations are allowed
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		
				<b>AC1</b>	<b>AC3</b>	<b>Ms</b>	<b>Mf</b>

### Mechanical properties

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

size d / t		Testing at room temperature (longitudinal)					
mm		<b>R</b>	<b>Re<sub>H</sub></b> a)	<b>A%</b>	<b>Z%</b>	<b>Kv<sub>2</sub></b>	<b>HB</b> for information
from	to	N/mm <sup>2</sup> min	N/mm <sup>2</sup> min.	min.	min	J min.	min
16/16	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		<b>R</b>	<b>Re<sub>H</sub></b> a)	<b>A%</b>	<b>Z%</b>	<b>Kv<sub>2</sub></b>	<b>HB</b>
oltre	fino a	N/mm <sup>2</sup>	N/mm <sup>2</sup> min	min.	min.	J min	for information
16/8	16/8	550-700	370	19	-	35	159-214
16/8	40/20	500-650	320	21	-	35	152-200

a) Re<sub>H</sub> upper yield strength or, if no yield phenomenon occurs, Rp<sub>0.2</sub> 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

<b>HB</b>		198	178	172	159	154
<b>R</b>	N/mm <sup>2</sup>	640	600	580	550	510
<b>Rp<sub>0.2</sub></b>	N/mm <sup>2</sup>	390	370	350	320	300
<b>A</b>	%	18	20	20	20	20
<b>Z</b>	%	45	50	52	58	60
<b>+T at</b>	<b>°C</b>	<b>450</b>	<b>500</b>	<b>550</b>	<b>600</b>	<b>650</b>

**C25E 1.1158 – C25R 1.1163 EN ISO 683-7:24**
**Lucefin Group**

<b>Cold-drawn +C</b> <sup>c)</sup>						Hot-rolled and <b>Peeled +SH</b> <sup>d)</sup>			
size mm		Testing at room temperature (longitudinal)				Testing at room temperature (longitudinal)			
		<b>R</b>	<b>Rp 0.2</b>	<b>A%</b>	<b>HBW</b>	<b>R</b>	<b>Rp 0.2</b>	<b>A%</b>	<b>HBW</b>
from	to	N/mm <sup>2</sup>	N/mm <sup>2</sup> min	min	for inform.	N/mm <sup>2</sup>	N/mm <sup>2</sup> min	min	
5 <sup>b)</sup>	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

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

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

<sup>c)</sup> Values valid also for +C+QT

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

size mm		Testing at room temperature						
		<b>R</b>	<b>Rp 0.2</b>	<b>A%</b>	<b>A%</b>	<b>Kv</b>	<b>Kv</b>	<b>HB</b>
from	to	N/mm <sup>2</sup> min	N/mm <sup>2</sup> 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						
		<b>R</b>	<b>Rp 0.2</b>	<b>A%</b>	<b>A%</b>	<b>Kv</b>	<b>Kv</b>	<b>HB</b>
oltre	fino a	N/mm <sup>2</sup> min	N/mm <sup>2</sup> 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
<b>min</b>	No indications are shown in the														
<b>max</b>	reference standards														

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