

Quality	SAE 1045	Carbon Steel	<i>Technical card</i>
According to standards	ASTM A 576-17 Hot-rolled		Lucefin Group
	ASTM A311/A 311M: 2004 Cold-drawn		rev. 2018

Chemical composition

C%	Si%	Mn%	P%	S%	
0,43-0,50	a)	0,60-0,90	max	max	Product deviations are allowed
± 0.03		± 0.03	+ 0.008	+ 0.008	

NOTE: : if fine grain min. 5 is specified in the order, total aluminium content should be of not less than 0.020%

In case of a 0.15-0.35% lead addition, the steel is identified as 10L45

a) the following values are usually specified at the time of order placement: 0.10 max, 0.10-0.20, **0.15-0.35**, 0.20-0.40, 0.30-0.60

Temperature °C

Hot-forming	Soft annealing +A	Normalizing +N	Quenching +Q	Tempering +T	Stress-relieving +SR
1100-800	680-710 furnace cooling (HB max 190)	850-870 air	820-840 oil polymer or water	600-650 air	50° under the temperature of tempering
				Pre-heating welding	PWHT
				250	550 furnace cooling

Mechanical properties

Hot-rolled. Use only as reference

size mm	Testing at room temperature (longitudinal)						
	R	Rp 0.2	A%	Z%	Kv	HB	
from to	N/mm ² min	N/mm ² min	min	min	J min	min	
all dims.	565	310	16	40	-	-	+U untreated
all dims.	760	550	12	25	-	-	+QT quenched and tempered ASTM A 183-14
25 40	650-800	430	16	40	25	190-240	+QT quenched and tempered
40 100	630-780	370	17	45	25	185-235	+QT quenched and tempered

Normal draft **cold-drawn** and stress-relieved ASTM A311/A 311M: 2004 cl. **A**

size mm	Testing at room temperature (longitudinal)					
	R	Rp 0.2	A%	Z%	HB for information	
from to	N/mm ² min	N/mm ² min	min	min	min	
20	655	585	12	35	205	
20 30	620	550	11	30	195	
30 50	585	520	10	30	176	
50 75	550	485	10	30	162	

Heavy draft **cold-drawn** and stress-relieved ASTM A311/A 311M: 2004 cl. **B**

size mm	Testing at room temperature (longitudinal)					
	R	Rp 0.2	A%	Z%	HB for information	
from to	N/mm ² min	N/mm ² min	min	min	min	
20	795	690	10	25	239	
20 30	795	690	10	25	239	
30 50	795	690	10	25	239	
50 75	795	690	9	25	239	
75 102	725	620	7	20	224	

Normal draft **cold-drawn** and annealed. Use only as reference

size mm	Testing at room temperature (longitudinal)					
	R	Rp 0.2	A%	Z%	HB	
from to	N/mm ² min	N/mm ² min	min	min	min	
19 32	585	505	12	45	170	

USA	ITALY	CHINA	GERMANY	FRANCE	UK	RUSSIA	EUROPE
AISI/SAE	UNI	GB	DIN	AFNOR	B.S.	GOST	EN
1045	C45	45	Ck45	XC48H1	080M46	45	C45E