

Quality	SAE 1045
According to standards	ASTM A 576-90b: 2000 Hot-rolled
	ASTM A311/A 311M: 2004 Cold-drawn

Chemical composition

C%	Si%	Mn%	P%	S%	Deviations allowed for analysis product
			max	max	
0,43-0,50	a)	0,60-0,90	0,030	0,050	
± 0.03		± 0.03	+ 0.008	+ 0.008	

NOTE: : if fine grain min. 5 is specified in the order, Al 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	Quenching	Tempering	Stress-relieving
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 250	PWHT 550 furnace cooling

Mechanical properties

Hot-rolled ASTM A 183-03. Use only as reference

diameter mm	Testing at room temperature (longitudinal)					
>	≤	R	Rp 0.2	A%	C%	HB
		N/mm ² min	N/mm ² min	min	min	min
all		565	310	16	40	165
all		760	550	12	25	226

+U untreated
+QT quenched and tempered

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

diameter mm	Testing at room temperature (longitudinal)					
>	≤	R	Rp 0.2	A%	C%	HB
		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**

diameter mm	Testing at room temperature (longitudinal)					
>	≤	R	Rp 0.2	A%	C%	HB
		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

diameter mm	Testing at room temperature (longitudinal)					
>	≤	R	Rp 0.2	A%	C%	HB
		N/mm ² min	N/mm ² min	min	min	min
19	32	585	505	12	45	170

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