

Quality		11SMn30Bi		Free-cutting Steel		<i>Technical card</i>			
According to standards		ISO 683-4 : 2018				Trafilix Industries			
Number						rev. 2025			
Chemical composition									
C%	Si% ^{a)}	Mn%	P%	S%	Bi%				
max	max		max						
0,14	0,05	0,90-1,30	0,11	0,27-0,33	0,03-0,2	Product deviations are allowed			
± 0.02	+ 0.01	± 0.04	+ 0.02	± 0.03	+0.005				
^{a)} Since silicon has an adverse effect on machinability, it is not intentionally added to specified limits, but if the formation of special oxide is guaranteed, a Si-content of 0,10% to 0,40% can be agreed.									
Temperature °C									
Hot-forming	Natural state +U	Soft annealing +A	Carburizing	Hardening on carburized surface	Stress-relieving +SR				
1250-950		680	(880-950)	(770-810)	(180-200)				
	(HB 180 max)	air (HB 150 max)							
Normalizing +N	Direct hardening	Direct hardening	Stress-relieving +C+SR	Pre-heating welding	Stress-relieving after welding				
900	880	890 oil or	600-650		not recommended				
air	water	polymer	furnace cooling						
Mechanical properties									
Hot-rolled natural forming condition ISO 683-4: 2018					Hot-rolled quenched and tempered				
Testing at room temperature (longitudinal)									
size mm		R	HBW						
from	to	N/mm ²	max	R	Rp 0.2	A%	HB		
				N/mm ²	N/mm ² min	min			
5	10	380-570	169	Not suitable for heat treatment					
10	16	380-570	169						
16	40	380-570	169						
40	63	370-570	169						
63	100	360-520	154						
Cold-drawn +C EN ISO 683-7:24					Hot-rolled Peeled +SH				
Values valid also for +C+G					Values valid also for +SH+G				
size mm		Testing at room temperature (longitudinal)			Testing at room temperature (longitudinal)				
		R ^{a)}	Rp 0.2 ^{a)}	A%	HB	R	Rp 0.2	A%	HBW
over	to	N/mm ²	N/mm ² min	min	<i>for inform.</i>	N/mm ²	N/mm ² min	min	max
5 ^{b)}	10	510-810	440	6	154-243	-	-	-	-
10	16	490-760	410	7	149-226	-	-	-	-
16	40	460-710	375	8	139-218	380-570	-	-	169
40	63	400-650	305	9	119-200	370-570	-	-	169
63	100	360-630	245	9	104-192	360-520	-	-	154
^{a)} for flats and special sections, yield point can be – 10% and tensile strength can be ± 10%									
^{b)} for thickness < 5 mm, mechanical properties should be agreed before order placement									
Effect of cold-working (hot-rolled +C). Approximate values									
R	N/mm ²	438	530	536	559	561	576	579	633
Reduction	%	4	8	9	13	14	18	19	23
EUROPE	ITALY	CHINA	GERMANY	FRANCE	U.K.	RUSSIA	USA		
EN	UNI	GB	DIN	AFNOR	B.S.	GOST	AISI/SAE		
11SMn30	CF 9SMn28	Y15	9SMn28	S250	230M07		1215		