

Quality	11SMnPb30	Free-cutting Steel	<i>Technical card Lucefin Group rev. 2018</i>
According to standards	ISO 683-4 : 2018		
Number	1.0718		

Chemical composition

C%	Si% ^{a)}	Mn%	P%	S%	Pb%	Product deviations are allowed
max	max		max			
0,14 ± 0.02	0,05 ± 0.01	0,90-1,30 ± 0.04	0,11 ± 0.02	0,27-0,33 ± 0.03	0,20-0,35 +0.03 -0.02	

^{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	(HB 180 max)	680 cooling 20 °C/h to 300 then air (HB 150 max)	(880-950)	(770-810)	(180-200)
Normalizing +N	Direct hardening	Direct hardening	Stress-relieving +C+SR	Pre-heating welding	Stress-relieving after welding
900 air	880 water	890 oil or polymer	600-650 furnace cooling	not recommended	

Mechanical properties

Hot-rolled natural forming condition ISO 683-4: 2018 Testing at room temperature (longitudinal)				Hot-rolled quenched and tempered			
size mm	R	HBW		R	R _{p 0.2}	A%	HBW
from to	N/mm ²	max		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 10277: 2018 Values valid also for +C+G						Hot-rolled Peeled +SH Values valid also for +SH+G			
size mm		Testing at room temperature (longitudinal)				Testing at room temperature (longitudinal)			
from	to	R ^{a)}	R _{p 0.2} ^{a)}	A%	HB	R	R _{p 0.2}	A%	HB
		N/mm ²	N/mm ² min	min	for inform.	N/mm ²	N/mm ² min	min	
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

Melting Temperature	1500-1540 °C
Thermal Expansion	10 ⁻⁶ • K ⁻¹ 11.0
Modulus of Elasticity long.	GPa
Specific Heat Capacity	J/(Kg•K) 440
Thermal Conductivity	W/(m•K) 55
Density	Kg/dm ³ 7.85
Specific Electric Resistivity	Ohm•mm ² /m 0.12
°C	20 100

EUROPE	ITALY	CHINA	GERMANY	FRANCE	U.K.	RUSSIA	USA
EN	UNI	GB	DIN	AFNOR	B.S.	GOST	AISI/SAE
11SMnPb30	CF 9SMnPb28	Y15Pb	9SMnPb28	S250Pb		(AS14)	12L14