

# SANDVIK 4LR11 BILLETS

TIETOLOMAKE

Sandvik 4LR11 is an austenitic stainless chromium-nickel steel with a low carbon content.

## STANDARDS

- 304L
- S30403
- 1.4301/1.4307
- 1.4301
- 2333
- Z6CN18-09
- 304S31

## Product standards

- EN 10088-3
- ASTM A-314

Suitable for production of flanges etc. acc. to ASTM A-182

## Certificates

Status according to EN 10 204 3.1

## CHEMICAL COMPOSITION (NOMINAL) %

C	Si	Mn	P	S	Cr	Ni	Mo	Others
≤0.030	0.4	1.7	≤0.040	≤0.025	18.5	8.5	-	-

## FORMS OF SUPPLY

### Sizes and tolerances

Round-cornered square, as well as round billets, are produced in a wide range of sizes according to the following tables. Larger sizes offered on request.

### Surface conditions

#### Square billets

Unground, spot ground or fully ground condition.

#### Round billets

Peel turned or black condition.

### Square billets

Size	Tolerance	Length
mm	mm	m
80	+/-2	4 - 6.3
100, 114, 126, 140, 150	+/-3	4 - 6.3
160, 180, 195, 200	+/-4	4 - 6.3
>200 - 350	+/-5	3 - 5.3

Sizes and tolerances apply to the rolled/forged condition.

### Peel turned round billets

Size	Tolerance	Length
mm	mm	m
75 - 200 (5 mm interval)	+/-1	max 10
>200 - 450	+/-3	3 - 8

### Unground round billets

Size	Tolerance	Length
mm	mm	m
77 - 112 (5 mm interval)	+/-2	max 10
124, 134	+/-2	max 10
127, 147, 157	+/-2	max 10
142, 152, 163	+/-2	max 10
168, 178, 188	+/-2	max 10
183, 193	+/-2	max 10

### Other products

- Hollow bar

### MECHANICAL PROPERTIES

For billets testing is performed on separately solution annealed and quenched test piece. The following figures apply on material in the solution annealed and quenched condition.

At 20°C (68°F)

#### Metric units

Proof strength		Tensile strength	Elong.	Contr.	HB
R <sub>p0.2</sub> <sup>a)</sup>	R <sub>p1.0</sub> <sup>a)</sup>	R <sub>m</sub>	A <sup>b)</sup>	Z	
MPa	MPa	MPa	%	%	
					approx.
≥205	≥230	515-680	≥45	≥50	170

#### Imperial units

Proof strength		Tensile strength	Elong.	Contr.	HB
R <sub>p0.2</sub> <sup>a)</sup>	R <sub>p1.0</sub> <sup>a)</sup>	R <sub>m</sub>	A <sup>b)</sup>	Z	
ksi	ksi	ksi	%	%	

					approx.
≥29.5	≥33.5	74.5-98.5	≥45	≥50	170

1 MPa = 1 N/mm<sup>2</sup>

a) R<sub>p0.2</sub> and R<sub>p1.0</sub> corresponds to 0.2% offset and 1.0% offset yield strength, respectively.

b) Based on  $L_0 = 5.65\sqrt{S_0}$ , where  $L_0$  is the original gauge length and  $S_0$  the original cross-section area.

The impact energy (Charpy V) at 20°C (68°F) is min 100 J (74 ft-lb).

## At high temperatures

### Metric units

Temperature	Proof strength		Tensile strength
	R <sub>p0.2</sub>	R <sub>p1.0</sub>	R <sub>m</sub>
°C	MPa	MPa	MPa
	min.	min.	min.
100	155	190	450
200	127	155	400
300	110	135	380
400	98	125	380
500	92	120	360

### Imperial units

Temperature	Proof strength		Tensile strength
	R <sub>p0.2</sub>	R <sub>p1.0</sub>	R <sub>m</sub>
°F	ksi	ksi	ksi
	min.	min.	min.
200	23.1	28.1	66.1
400	18.3	22.4	57.9
600	15.7	19.3	55.1
800	14.0	17.9	54.3
1000	13.1	17.4	48.9

Disclaimer: Recommendations are for guidance only, and the suitability of a material for a specific application can be confirmed only when we know the actual service conditions. Continuous development may necessitate changes in technical data without notice. This datasheet is only valid for Sandvik materials.