Alleima® 4LR61
Billets
Datasheet

Alleima® 4LR61 is a molybdenum-alloyed austenitic chromium-nickel steel with a low carbon content.

Standards

- ASTM: 316L
- UNS: S31603
- EN Number: 1.4401/1.4404
- W.Nr.: 1.4404/1.4401
- SS: 2347/2348
- AFNOR: Z3CND 17-11-02
- BS: 316S11/316S31

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	0.6	1.7	≤0.040	≤0.030	17	11.5	2.3	-

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

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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

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
$R_{p0.2}$ [a)]	$R_{p1.0}$ [a)]	R_m	A [b)]	Z	
MPa	MPa	MPa	%	%	
					approx.
≥205	≥240	515-690	≥40	≥50	170

Imperial units

Proof strength		Tensile strength	Elong.	Contr.	HB
$R_{p0.2}$ [a)]	$R_{p1.0}$ [a)]	R_m	A [b)]	Z	
ksi	ksi	ksi	%	%	
					approx.
≥29.5	≥35	74.5-100	≥40	≥50	170

1 MPa = 1 N/mm^2
a) $R_{p0.2}$ and $R_{p1.0}$ 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
	$R_{p.02}$	$R_{p1.0}$	R_m
°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

	$R_{p.02}$	$R_{p1.0}$	R_m
°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

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