

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
4438	1.4438	317L	2367	317S12	Z3 CND 19-15-04
4439	1.4439	317LMN	–	–	Z3 CND 18-14-05 Az

* Obsolete national standards, replaced by EN 10088.

CHARACTERISTICS

AVESTA 317L is designed for welding type 18 Cr 14 Ni 3 Mo austenitic stainless steels and similar. The enhanced content of Cr, Ni and Mo compared to 316L provides even better corrosion properties, particularly in acid chlorine containing environments.

WELDING DIRECTIONS

Welding is performed using direct current negative polarity (DC-). Welding can also be performed using pulsed current which can be advantageous when welding in positions and for the welding of thin gauges.

To obtain optimal corrosion resistance welding should be performed using a root gap of 0.08-0.1" (2–2.5 mm).

WELDING DATA

Ø (inch)	Ø (mm)	Current (A)	Voltage (V)
1/16"	1.60	80–110	10–12
3/32"	2.40	130–160	16–18
1/8"	3.20	160–200	17–19

For further recommendations, please contact Avesta Welding.

Shielding gas recommendations

The most frequently used shielding gas is pure argon (Ar) with a gas flow of 12-17 ft³/hour (6–8 l/min).

Addition of about 30% helium (He) or 1–5% hydrogen (H₂) will increase the energy of the arc. This will give a wider weld and a better fluidity of the melt pool. It is also advantageous because the welding speed can generally be increased why these kind of shielding gases are often used in automatic welding.

Welding tubes, pipes etc. often requires a purging gas protection. Common purging gases are pure Ar and Formier gas (90%N₂+10%H₂), with a flow of 20-42 ft³/hour (10–20 l/min).

Standard designations

EN 12072	19 13 4 L
AWS A5.9	ER317L

Chemical composition - Typical values, %

C	0.02	Cr	19.0
Si	0.4	Ni	13.5
Mn	1.7	Mo	3.5
Ferrite:	9 FN	DeLong	
	9 FN	WRC-92	

Mechanical properties – Typical values, IIW

	Typ. values	Typ. values
Yield strength, R _{p0.2}	440 N/mm ²	64 ksi
Tensile strength, R _m	630 N/mm ²	91 ksi
Elongation, A ₅	28 %	28 %
Impact strength, KV +20°C	100 J	74 ft-lb
Hardness	200 Brinell	–

Interpass temperature: Max. 300°F (150°C)

Heat input: Max. 38.1 kJ/in (1.5 kJ/mm)

Heat treatment: Generally none. In special cases quench annealing at 192°F (1050°C).

Structure: Austenite with 5–10% ferrite.

Scaling temperature: Approx. 1562°F (850°C) (air).

Corrosion resistance: Better resistance to general, pitting and intercrystalline corrosion in chlorine containing environments than ASTM 316L. Intended for severe service conditions, e.g. in dilute hot acids.

Approvals: CWB