

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

MIG welding can be performed as short, spray or pulsed arc. Short arc is preferably used for thin gauges, both for horizontal and positional welding. Spray arc increases the deposition rate

Welding with pulsed arc gives excellent possibilities for a good result in varying plate thicknesses in all positions. The highest flexibility using pulsed arc is achieved with $\varnothing 0.045''$ (1.14 mm) wire.

WELDING DATA

	\varnothing (inch)	\varnothing (mm)	Current (A)	Voltage (V)
Short arc	0.035''	0.89	110–140	19–22
Spray arc	0.035''	0.89	160–220	25–29
	0.045''	1.14	200–270	26–30
	1/16''	1.60	250–330	29–32
Pulsed arc	0.045''	1.14	$I_{peak} = 350\text{--}450\text{ A}$ $I_{bkg} = 50\text{--}150\text{ A}$ Freq = 80–120 Hz	

For further recommendations, please contact Avesta Welding

Shielding gas recommendations

Ar + 2% O₂ or Ar + 2–3% CO₂.

The addition of O₂ or CO₂ provides good arc stability. Welding can also be performed using an addition of 30% helium (He), which will increase the energy of the arc. The fluidity is hereby improved and the weld is generally wider. The welding speed can therefore be increased. Addition of He will increase the blackening slightly.

Gas flow rate: 25-34 ft³/hour (12–16 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	0.40	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}	420 N/mm ²	61 ksi
Tensile strength, R _m	630 N/mm ²	91 ksi
Elongation, A ₅	31 %	31 %
Impact strength, KV +20°C	85 J	63 ft-lb
Hardness	200 Brinell	–

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

Heat input: Max. 50.8k J/in (2.0 kJ/mm)

Heat treatment: Generally none. In special cases quench annealing at 1952°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 inter crystalline corrosion in chlorine containing environments than ASTM 316L. Intended for severe service conditions, e.g. in dilute hot acids.

Approvals: CWB