

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
Overalloyed electrode for surfacing unalloyed steel, joint welding non-molybdenum alloyed stainless steel to unalloyed steel and for welding clad material.					

* Obsolete national standards, replaced by EN 10088.

Characteristics

AVESTA 309L is an overalloyed electrode intended for welding stainless steel unalloyed or low-alloy steels. It has a rutile-acid type coating and is designed for welding with either AC or positive polarity DC.

AVESTA 309L has a composition that, under normal welding conditions, ensures a crack resistant weld metal.

AVESTA 309L can also be used for welding some high temperature steels. Always consult expertise.

Welding directions

When welding stainless steel to unalloyed or low-alloyed steels, it is advisable/necessary to reduce the dilution of the weld as much as possible. Welding should therefore be performed with a limited heat input and appropriate bevel angle.

Welding to primer-coated sheet should be avoided, as there is a significant risk of pore formation. The paint should therefore be removed from all surfaces that are likely to be exposed to temperatures above 500°C.

Packaging data

Diam. mm	Length mm	Weight/ capsule, kg	Approx. No. of electrodes/ capsule	Weight/ carton, kg
2.00	300	1.70	134	10.20
2.5	300	3.63	189	10.89
3.25	350	4.10	116	12.30
4.0	450	5.40	77	16.20
5.0	450	5.40	52	16.20

Approvals

CWB, DB, DNV, TÜV.

Standard designations

EN 1600 E 23 12 L R
AWS A5.4 E309L-17

Typical analysis % (All weld metal)

C	Si	Mn	Cr	Ni
0.02	0.8	0.8	23.0	13.0

Ferrite 15 FN DeLong

Mechanical properties	Typical values (IIW)	Min. values EN 1600
Yield strength, R _{p0.2}	450 N/mm ²	320 N/mm ²
Tensile strength, R _m	550 N/mm ²	510 N/mm ²
Elongation, A ₅	35 %	25 %
Impact strength, KV		
+20°C	50 J	
-40°C	45 J	
Hardness approx.	210 Brinell	

Welding data

DC+ or AC	Diam., mm	Current, A
	2.0	30– 60
	2.5	45– 80
	3.25	70–120
	4.0	90–160
	5.0	150–220

Interpass temperature: Max. 150°C.

Heat input: Max. 2.0 kJ/mm.

Heat treatment: Generally none. For constructions, which include low-alloy steels in mixed joints, a stress-relieving annealing stage may be advisable. However, this type of alloy may be susceptible to embrittlement-inducing precipitation in the temperature range 550–950°C. Always consult the supplier of the parent metal or seek other expert advice to ensure that the correct heat treatment process is carried out.

Structure: Austenite with 10–15% ferrite.

Scaling temperature: Approx. 1000°C (air).

Corrosion resistance: Superior to 308L. When surfacing mild steel a corrosion resistance equivalent to that of ASTM 304 is obtained already in the first bead.

Welding positions

