

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
Overalloyed electrode used for surfacing unalloyed steel, joint welding stainless steel to unalloyed steel and for welding clad material. Also suitable for use with certain high temperature steels.					

* Obsolete national standards, replaced by EN 10088.

Characteristics

AVESTA 309 AC/DC has a rutile acid-type coating and is designed for welding with either AC or positive pole DC.

AVESTA 309 is a high-alloy 23 Cr 13 Ni wire which, due to its somewhat higher carbon content compared to 309L, offers a slightly improved creep resistance, which makes it suitable for welding high temperature steels such as ASTM 309S.

AVESTA 309 may also be used for dissimilar welding between mild steel and stainless steels. It has a composition which, under normal welding conditions, ensures a crack resistant weld metal with a ferrite content of min. 3%.

Welding directions

When welding stainless steel to unalloyed or low-alloy 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.

Weld deposit data at maximum welding current

Diam. mm	Length mm	N	B	H	T	Metal recovery, approx. %
2.5	300	0.60	82	1.02	43	119
3.25	350	0.61	43	1.58	52	114
4.0	350	0.63	29	2.07	61	112

Packaging data

Diam. mm	Length mm	Weight/ capsule, kg	Approx. No. of electrodes/ capsule	Weight/ carton, kg
2.5	300	3.63	183	10.89
3.25	350	4.10	107	12.30
4.0	350	4.10	74	12.30

Approvals: CWB

Standard designations

AWS A5.4 E309-17

Typical analysis % (All weld metal)

C	Si	Mn	Cr	Ni
0.05	0.8	1.0	24.0	13.5

Ferrite 15 FN DeLong

Mechanical properties

	Typical values (IIV)	Min. values EN 1600
Yield strength, R _{p0.2}	435 N/mm ²	– N/mm ²
Tensile strength, R _m	580 N/mm ²	550 N/mm ²
Elongation, A ₅	30 %	30 %
Impact strength, KV +20°C	45 J	
Hardness approx.	210 Brinell	

Welding data

DC+ or AC	Diam., mm	Current, A
	2.5	50– 80
	3.25	80–120
	4.0	100–160

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: Primarily designed for high temperature applications with service temperatures up to 1000°C. The resistance to intercrystalline corrosion is somewhat limited due to the high carbon content.

Welding positions

Ø 2.5–3.25 Ø 4.0

