

309L

For welding steels such as Outokumpu	EN	ASTM	BS	NF	SS
AVESTA 309L is primarily used when joining non-molybdenum-alloyed stainless and carbon steels and for surfacing unalloyed or low-alloy steels.					

Standard designations

EN ISO 14343 S 23 12 L
AWS A5.9 ER309L

Characteristics and welding directions

AVESTA 309L is a high-alloy 24 Cr 14 Ni wire primarily intended for dissimilar welding between stainless and mild steel and for surfacing low-alloy steels.

The chemical composition obtained when surfacing is from the very first run equivalent to that of ASTM 304. One or two layers of 309L are usually combined with a final layer of 308L, 316L or 347.

Welding data

Diameter, mm	Current, A	Voltage, V
2.00	250 – 350	28 – 32
2.40	300 – 400	29 – 33
3.20	350 – 500	29 – 33

Welding flux: AVESTA Flux 801, 805 or 807.

Corrosion resistance: Superior to type 308L filler. When surfacing on mild steel a corrosion resistance equivalent to ASTM 304 is obtained at the very first layer.

Approvals

- DNV

Chemical composition, wire (typical values, %)

C	Si	Mn	Cr	Ni
0.02	0.40	1.8	23.5	14.0
Ferrite	11 FN 10 FN	DeLong WRC-92		

Chemical composition, all weld metal (typical values in combination with flux, %)

Flux	C	Si	Mn	Cr	Ni	FN ¹⁾
801	0.02	0.8	1.0	24.0	13.5	15
805	0.02	0.5	1.2	24.5	13.5	14
807	0.02	0.5	1.2	23.5	14.0	11

¹⁾ According to DeLong.

Mechanical properties

Typical values (IIW) in combination
with flux

	801	805
Yield strength $R_{p0,2}$	410 N/mm ²	400 N/mm ²
Tensile strength R_m	580 N/mm ²	550 N/mm ²
Elongation A_5	36 %	36 %
Impact strength KV +20°C	70 J	100 J

Interpass temperature: Max. 150°C.

Heat input: Max. 2.0 kJ/mm.

Heat treatment: Generally none.

For constructions that 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 5 – 15% ferrite.

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