

Classification

EN ISO 14343-A	AWS A5.9
G 23 12 L Si	ER309LSi

Characteristics and typical fields of application

Avesta 309L-Si is a high-alloy 23 Cr 13 Ni wire primarily intended for surfacing of low-alloy steels and dissimilar welding between mild steel and stainless steels, offering a ductile and crack resistant weldment. The chemical composition, when surfacing, is equivalent to that of ASTM 304 from the first run. One or two layers of 309L are usually combined with a final layer of 308L, 316L or 347.

Structure: Austenite with 5 – 10 % ferrite.

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

Corrosion resistance:

Superior to type 308L. When surfacing on mild steel a corrosion resistance equivalent to ASTM 304 is obtained at the first bead.

Base materials

Avesta 309L-Si is primarily used when surfacing unalloyed or low-alloy steels and when joining non-molybdenum-alloyed stainless and carbon steels.

Typical analysis of the solid wire (wt.-%)

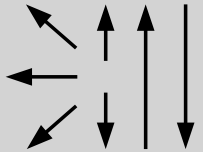
	C	Si	Mn	Cr	Ni	Ferrite
wt.-%	0.02	0.8	1.8	23.5	13.5	9 FN (WRC-92)

Mechanical properties of all-weld-metal

Heat treatment	Yield strength $R_{p0.2}$	Tensile strength R_m	Elongation ($L_0=5d_0$)	Impact work ISO-V KV J	Hardness
	MPa	MPa	%	+20 °C	Brinell
u	400	600	32	110	200

u untreated, as welded – Shielding gas Ar + 2 – 3 % CO₂

Operating data

	Polarity DC (+)	Shielding gas: Ar + 2 – 3 % CO ₂ Ar + 2 % O ₂ Gas flow rate: 12 – 16 l/min	Ø (mm) 0.8 1.0 1.2
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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. Heat input: Max. 2.0 kJ/mm.

Approvals

CE, DB, TÜV