Avesta Welding

316L-Si/SKR-Si

For welding steels such as Outokumpu	EN	ASTM	BS	NF	SS
4436	1.4436	316	316S33	Z7 CND 18-12-03	2343
4432	1.4432	316L	316S13	Z3 CND 17-12-03	2353
4429	1.4429	S31653	316S63	Z3 CND 17-12 Az	2375
4571	1.4571	316Ti	320S31	Z6 CNDT 17-12	2350

Standard designations

EN ISO 14343 W 19 12 3 L Si
AWS A5.9 ER316LSi

Characteristics and welding directions

AVESTA 316L-Si/SKR-Si is designed for welding austenitic stainless steel type 17 Cr 12 Ni 2.5 Mo or similar. The filler metal is also suitable for welding titanium and niobium stabilised steels such as ASTM 316Ti in cases where the construction is used at temperatures not exceeding 400°C. For higher temperatures a niobium stabilised consumable such as AVESTA 318-Si/SKNb-Si is required.

Welding data

Diameter, mm	Current, A	Voltage, V
1.00	50 – 70	9 – 11
1.20	60 – 80	9 – 11
1.60	80 – 110	10 – 12
2.00	100 – 130	14 – 16
2.40	130 – 160	16 – 18
3.20	160 – 200	17 – 19
4.00	180 – 240	18 – 20

Shielding gas

Ar (99.95%) or Ar with an addition of 20 – 30% helium (He) or 1 – 5% hydrogen (H_2). Gas flow rate 4 – 8 l/min.

Chemical composition, wire (typical values, %)

C	Si	Mn	Cr	Ni	Mo
0.02	0.85	1.7	18.5	12.0	2.6

Ferrite	9 FN	DeLong
	7 FN	WRC-92

Mechanical properties	Typical values (IIW)	Min. values EN ISO 14343
Yield strength $R_{p0,2}$	480 N/mm^2	320 N/mm^2
Tensile strength R_m	640 N/mm^2	510 N/mm^2
Elongation A_5	31 %	25 %
Impact strength KV		
+20°C	140 J	
–196°C	80 J	
Hardness	210 Brinell	

Interpass temperature: Max. 150°C.

Heat input: Max. 2.0 kJ/mm.

Heat treatment: Generally none (in special cases quench annealing at 1050°C).

Structure: Austenite with 5 – 10% ferrite.

Scaling temperature: Approx. 850°C (air).

Corrosion resistance: Excellent resistance to general, pitting and intercrystalline corrosion in chloride containing environments. Intended for severe service conditions, e.g. in dilute hot acids.

Approvals

• DB • DNV • TÜV