

318-Si/SKNb-Si

For welding steels such as Outokumpu	EN	ASTM	BS	NF	SS
4571	1.4571	316Ti	320S31	Z6 CNDT 17-12	2350

Standard designations

EN ISO 14343 W 19 12 3 Nb Si

Characteristics and welding directions

AVESTA 318-Si/SKNb-Si is used for welding titanium and niobium stabilised steels of type 17 Cr 11 Ni 2.5 Ti or similar providing improved high temperature properties, e.g. creep resistance, compared to low-carbon non-stabilised materials. 318-Si/SKNb-Si shows better properties than 316L-Si/SKR-Si at elevated temperatures and is therefore recommended for applications where service temperatures exceed 400°C.

Welding data

Diameter, mm	Current, A	Voltage, V
1.60	80 – 110	10 – 12
2.00	100 – 130	14 – 16
2.40	130 – 160	16 – 18
3.20	160 – 200	17 – 19

Shielding gas

Ar (99.95%) or Ar with an addition of 20 – 30% helium (He) or 1 – 5% hydrogen (H₂). Gas flow rate 4 – 8 l/min.

Chemical composition, wire (typical values, %)

C	Si	Mn	Cr	Ni	Mo	Nb
0.04	0.85	1.3	19.0	12.0	2.6	>12xC
Ferrite	10 FN	DeLong				
	7 FN	WRC-92				

Mechanical properties

	Typical values (IIW)	Min. values EN ISO 14343
Yield strength R _{p0,2}	520 N/mm ²	350 N/mm ²
Tensile strength R _m	690 N/mm ²	550 N/mm ²
Elongation A ₅	31 %	25 %
Impact strength KV		
+20°C	110 J	
Hardness	220 Brinell	

Interpass temperature: Max. 100°C.

Heat input: Max. 1.5 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: The corrosion resistance corresponds to that of ASTM 316Ti, i.e. good resistance to general, pitting and intercrystalline corrosion.

Approvals

- CE
- DB
- TÜV