Avesta 318/SKNb

TIG rod, high-alloyed

Classification

EN ISO 14343-A	AWS A5.9
W 19 12 3 Nb	ER318

Characteristics and typical fields of application

Avesta 318/SKNb is used for welding titanium and niobium stabilized 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-stabilized materials. 318/SKNb shows better properties than 316L/SKR at elevated temperatures and is therefore recommended for applications where service temperatures exceed 400°C. Avesta Welding also supplies a 318 type wire with high silicon content (0.85 %) named 318-Si/SKNb-Si. The higher silicon content will improve the fluidity of the melt pool slightly.

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.

Base materials

Outokumpu 4571, ASTM 316Ti, EN 1.4571

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

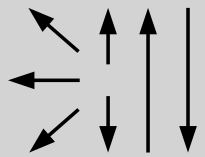
	C	Si	Mn	Cr	Ni	Mo	Nb	Ferrite
wt.-%	0.04	0.4	1.3	19.0	12.0	2.6	> 12xC	8 FN (DeLong)

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	520	690	31	110	220

u untreated, as welded – Shielding gas Ar 99,5 %

Operating data



Polarity	Shielding gas	ø (mm)
DC (+)	Ar 99,5 % or Ar + 20 – 30 % He	1.0
	Ar + 1 – 5 % H_2	1.6
	Gas flow rate: 4 – 8 l/min	2.0

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

Interpass temperature: Max. 100 °C.

Heat input: Max. 1.5 kJ/mm.

Approvals

TÜV, CE