

347-Si/MVNB-Si

For welding steels such as Outokumpu	EN	ASTM	BS	NF	SS
4541	1.4541	321	321S31	Z6 CNT 18-10	2337
–	1.4550	347	347S31	Z6 CNNb 18-10	2338

Standard designations

EN ISO 14343 G 19 9 Nb Si
AWS A5.9 ER347Si

Characteristics and welding directions

AVESTA 347-Si/MVNB-Si is used for welding titanium and niobium stabilised steels of type 19 Cr 10 Ni Ti or similar, providing improved high temperature properties, e.g. creep resistance, compared to low-carbon non-stabilised materials. 347-Si/MVNB-Si is therefore primarily used for applications where service temperatures exceed 400°C.

Welding data

	Diameter mm	Current A	Voltage V
Short arc	0.80	90 – 120	18 – 22
	1.00	110 – 140	19 – 22
Spray arc	1.00	160 – 220	25 – 29
	1.20	200 – 270	26 – 30
	1.60	250 – 330	27 – 32
Pulsed arc	1.20	$I_{peak} = 350 - 450$ A $I_{bkg} = 50 - 150$ A Freq = 80 – 120 Hz	

Shielding gas

Ar + 2% O₂ or 2 – 3% CO₂.
Gas flow rate 12 – 16 l/min.

Chemical composition, wire (typical values, %)

C	Si	Mn	Cr	Ni	Nb
0.05	0.85	1.2	19.5	10.0	>12xC
Ferrite	10 FN 7 FN	DeLong WRC-92			

Mechanical properties	Typical values (IIW)	Min. values EN ISO 14343
Yield strength R _{p0,2}	430 N/mm ²	350 N/mm ²
Tensile strength R _m	620 N/mm ²	550 N/mm ²
Elongation A ₅	36 %	25 %
Impact strength KV		
+20°C	100 J	
–40°C	90 J	
Hardness	210 Brinell	

Interpass temperature: Max. 150°C.

Heat input: Max. 2.0 kJ/mm.

Heat treatment: Generally none. 347 type wire can be used for cladding, which normally requires stress relieving at around 590°C. Such a heat treatment will reduce the ductility at room temperature. Always consult expertise before performing post-weld heat treatment.

Structure: Austenite with 5 – 10% ferrite.

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

Corrosion resistance: 347-Si/MVNB-Si is primarily intended for high temperature service or constructions that should be heat treated. However, the corrosion resistance corresponds to that of 308H, i.e. good resistance to general corrosion.

Approvals

- CE
- DB
- TÜV