

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 W 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
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

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	Nb
0.05	0.85	1.2	19.5	10.0	>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	680 N/mm ²	550 N/mm ²
Elongation A ₅	33 %	25 %
Impact strength KV		
+20°C	110 J	
–40°C	100 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 of the weld 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 applications that should be heat treated. However, the corrosion resistance corresponds to that of 308H, i.e. good resistance to general corrosion.

Approvals

- CE
- TÜV