Avesta Welding

P12

For welding steels such as Outokumpu	EN	ASTM	BS	NF	SS
254 SMO®	1.4547	S31254	–	–	2378
20-25-6	1.4529	N08926	–	–	–
Also for welding stainless steels and nickel base alloys to low-alloy and mild steel.					

Standard designations

EN ISO 18274 G Ni Cr 22 Mo 9 Nb
AWS A5.14 ERNiCrMo-3

Characteristics and welding directions

AVESTA P12 is a nickel base alloy designed for welding 6Mo-steels such as Outokumpu 254 SMO. The consumable is also suitable for welding nickel base alloys such as Inconel 625 and Incoloy 825 and for dissimilar welds between stainless or nickel base alloys and mild steel.

Welding of fully austenitic and nickel base steels should be performed taking great care to minimise the heat input, interpass temperature and dilution with parent metal.

Welding data

	Diameter mm	Current A	Voltage V
Short arc	0.80	60 – 100	20 – 22
Spray arc	1.00	170 – 210	24 – 28
	1.20	180 – 220	25 – 29
Pulsed arc	1.20	I_{peak} = 300 – 380 A I_{bkg} = 90 – 120 A Freq = 90 – 110 Hz	

Shielding gas

Welding is best performed using pulsed arc with a shielding gas of pure argon or Ar + 30% He + 2.5% CO_2.
Gas flow rate 12 – 16 l/min.

Chemical composition, wire (typical values, %)

C	Si	Mn	Cr	Ni	Mo	Nb	Fe
0.01	0.10	0.1	22.0	65.0	9.0	3.6	<1.0

Ferrite 0 FN

Mechanical properties	Typical values (IIW)	Min. values EN ISO 18274
Yield strength $R_{p0,2}$	480 N/mm²	420 N/mm²
Tensile strength R_m	750 N/mm²	700 N/mm²
Elongation A_5	42 %	30 %
Impact strength KV		
+20°C	170 J	
–40°C	150 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: Fully austenitic.

Scaling temperature: Approx. 1100°C (air).

Corrosion resistance: Excellent resistance to general, pitting and intercrystalline corrosion in chloride containing environments.

Approvals

• CE • TÜV