

P12-0^{Nb}

For welding steels such as Outokumpu	EN	ASTM	BS	NF	SS
254 SMO®	1.4547	S31254	–	–	2378
20-25-6	1.4529	N08926	–	–	–

Standard designations

EN ISO 18274 G Ni Cr 22 Mo 9
AWS A5.14 ERNiCrMo-20

Characteristics and welding directions

AVESTA P12-0^{Nb} is a nickel base alloy designed for welding 6Mo-steels such as Outokumpu 254 SMO.

AVESTA P12-0^{Nb} produces a fully austenitic weld metal that due to the absence of niobium is almost free from secondary phases. This gives extremely good ductility with superior impact strength even at low temperatures. The tensile strength is somewhat lower than standard P12.

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
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% CO₂.
Gas flow rate 12 – 16 l/min.

Chemical composition, wire

(typical values, %)

C	Si	Mn	Cr	Ni	Mo	W	Nb	Fe
0.01	0.10	0.1	22.0	65.0	9.0	2.8	<0.1	<1.0

Ferrite 0 FN

Mechanical properties

	Typical values (IIW)	Min. values EN ISO 18274
Yield strength $R_{p0,2}$	380 N/mm ²	420 N/mm ²
Tensile strength R_m	630 N/mm ²	700 N/mm ²
Elongation A_5	36 %	30 %
Impact strength KV		
+20°C	240 J	
-70°C	220 J	
Hardness	210 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 with extra low content of secondary phases.

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

Corrosion resistance: Excellent resistance to general, pitting and intercrystalline corrosion in chloride containing environments which makes the consumable perfect for sea water and offshore applications etc.

Approvals

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