

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 S 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 for the standard P12.

When welding fully austenitic and nickel base steels, great care should be taken to minimise the heat input, interpass temperature and dilution with parent metal.

Welding data

Diameter, mm	Current, A	Voltage, V
2.40	300 – 400	29 – 33

Welding flux: AVESTA Flux 805.

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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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	<0.1	<1.0

Ferrite 0 FN

Chemical composition, all weld metal (typical values in combination with flux, %)

Flux	C	Si	Mn	Cr	Ni	Mo	Nb	FN
805	0.01	0.3	0.1	23.0	Bal.	9.0	<0.1	–

Mechanical properties

Typical values (IIW) in combination
with flux 805

Yield strength $R_{p0,2}$	400 N/mm ²
Tensile strength R_m	630 N/mm ²
Elongation A_5	36 %
Impact strength KV	
+20°C	120 J
–70°C	110 J

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).