Avesta Welding

P16 basic

For welding steels such as Outokumpu	EN	ASTM	BS	NF	SS
4565	1.4565	S34565	–	–	–
654 SMO®	1.4652	S32654	–	–	–
–	–	N06059	–	–	–

Standard designations

EN ISO 14172 E Ni Cr 25 Mo 16
AWS A5.11 ENiCrMo-13

Characteristics

AVESTA P16 basic is a nickel base electrode with a chemical composition similar to Alloy 59. P16 is specially developed for welding Outokumpu 654 SMO and other highly alloyed, fully austenitic steels, providing superior resistance to pitting, crevice and stress corrosion cracking in chloride containing enviroments. Corrosion resistance is similar to or better than that of Alloy C-276 (ENiCrMo-4). P16 has a fully austenitic structure which makes it somewhat more sensitive to hot cracking than, for example, 316L. Welding should be performed taking great care about low heat input and interpass temperature.

Welding data

DC+	Diam. mm	Current, A
	2.5	50 – 80
	3.25	80 – 120
	4.0	100 – 160

Weld deposit data at maximum welding current

Electrode diam. mm	length mm	N	B	H	T	Metal recov. ~ %
2.5	300	0.63	87	0.90	46	109
3.25	350	0.56	45	1.07	74	104
4.0	350	0.62	31	1.60	74	102

Typical analysis % (All weld metal)

C	Si	Mn	Cr	Ni	Mo
0.01	0.15	0.2	23.5	bal.	15.5

Ferrite 0 FN

Mechanical properties	Typical values (IIW)	Min. values EN ISO 14172
Yield strength $R_{p0.2}$	550 N/mm²	350 N/mm²
Tensile strength R_m	780 N/mm²	690 N/mm²
Elongation A_5	35 %	27 %
Impact strength KV		
+20°C	60 J	
–40°C	40 J	
Hardness approx.	220 Brinell	

Interpass temperature: Max. 100°C.

Heat input: Max. 1.5 kJ/mm.

Heat treatment: Generally none (in special cases quench annealing at 1150 – 1200°C).

Structure: Fully austenitic.

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

Corrosion resistance: Superior resistance to pitting and crevice corrosion (CPT>80°C, ASTM G48-A).

Approvals

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Welding positions

Ø 2.5–3.25 Ø 4.0