

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
4565	1.4565	S34565	–	–	–
654 SMO®	1.4652	S32654	–	–	–
–	–	NO6059	–	–	–

Also for welding nickel base alloys to stainless steels and mild steel.

* Obsolete national standards, replaced by EN 10088.

Characteristics

AVESTA P16 is a nickel base alloy designed for welding 7Mo-steels such as Outokumpu 654 SMO and similar, with the highest requirements on pitting and crevice corrosion resistance. The consumable is also suitable for the welding of nickel base alloys such as Inconel 625 and Incoloy 825 and for dissimilar welds between stainless or nickel base alloys and mild steel.

The chemical composition meets the requirements in AWS A5.11.

AVESTA P16 produces a fully austenitic weld metal with good properties at low temperatures. The resistance to hot cracking is better than for example the 625 types of consumables

Welding directions

When welding fully austenitic and nickel base steels, great care should be taken to minimise the risk of getting hot or solidification cracking. Heat input, interpass temperature and dilution with parent metal should be kept at a minimum.

The joint preparation should be designed with a root gap (generally 2-2.5 mm) to ensure full penetration and the lowest possible dilution with the base material. It is also essential to perform a good post weld cleaning, e.g. brushing followed by pickling of weld and heat affected zone.

Weld deposit data at maximum welding current

Diam. mm	Length mm	N	B	H	T	Metal recovery, approx. %
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

Packaging data

Diam. mm	Length mm	Weight/ capsule, kg	Approx. No. of electrodes/ capsule	Weight/ carton, kg
2.5	300	1.90	102	11.40
3.25	350	4.10	103	12.30
4.0	350	4.54	85	13.62

Standard designations

EN 14172 E Ni Cu 23 Mo 16
AWS A5.11 ENiCrMo-13

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 AWS A5.11
Yield strength, R _{p0.2}	550 N/mm ²	–
Tensile strength, R _m	780 N/mm ²	690 N/mm ²
Elongation, A ₅	35 %	25 %
Impact strength, KV		
+20°C	60 J	
–40°C	40 J	
Hardness approx.	220 Brinell	

Welding data

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

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: –

Welding positions

