

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
4565	1.4565	S34565	–	–	–
254 SMO®	1.4547	S31256	2378	–	–

* Obsolete national standards, replaced by EN 10088.

CHARACTERISTICS

AVESTA P54 is an iron-based fully austenitic consumable designed for welding Outokumpu 254 SMO or other similar 6Mo and 7Mo-steels.

AVESTA P54 was specially developed for applications exposed to highly oxidising chloride containing environments, such as D-stage bleachers in pulp mills where a nickel-based filler would suffer from transpassive corrosion. P54 also offers very high resistance to localised corrosion.

WELDING DIRECTIONS

AVESTA P54 produces a fully austenitic high alloy weld metal, which makes it somewhat more sensitive to hot cracking than, for example, 304-type, steels.

Welding is performed using direct current negative polarity (DC-). Welding can also be performed using pulsed current, which can be advantageous when welding in positions and for the welding of thin gauges.

To ensure optimum corrosion resistance and mechanical properties, the heat input should be kept at a low level. High amperages should be avoided. Allow the weld to cool to below 212°F (100°C) between successive passes.

To obtain best corrosion properties a proper post weld cleaning is required, e.g. brushing followed by pickling.

WELDING DATA

Ø (inch)	Ø (mm)	Current (A)	Voltage (V)
0.045"	1.20	60– 80	9–11
3/32"	2.40	130–160	16–18

For further recommendations, please contact Avesta Welding.

Shielding gas recommendations

The most frequently used shielding gas is pure argon (Ar) with a gas flow of 12-17 ft³/hour (6–8 l/min).

Addition of up to 2% Nitrogen (N₂) is advantageous and will affect the mechanical as well as the corrosion properties in a positive way.

Welding tubes, pipes etc. often requires a purging gas protection. Common purging gases are pure Ar and Formier gas (90%N₂+10%H₂), with a flow of 20-42 ft³/hour (10–20 l/min).

Standard designations

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Chemical composition - Typical values, %

C	0.02	Cr	26.0
Si	0.2	Ni	22.0
Mn	5.1	Mo	5.5
Cu	0.9	N	0.35
Ferrite:	0 FN		

Mechanical properties – Typical values, IIW

	Typ. values	Typ. values
Yield strength, R _{p0.2}	450 N/mm ²	65 Ksi
Tensile strength, R _m	750 N/mm ²	109
Elongation, A ₅	30 %	30 %
Impact strength, KV +20°C	90 J	66 ft·lb
Hardness	220 Brinell	

Interpass temperature: Max. 212°F (100°C)

Heat input: Max. 25.4 kJ/in (1.0 kJ/mm)

Heat treatment: Generally none.

Structure: Fully austenitic.

Scaling temperature: Approx. 2012°F (1100°C) (air).

Corrosion resistance: Superior resistance in near neutral chloride dioxide containing environments, e.g. D-stage bleachers.

Approvals: -