

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
4845	1.4845	310S	2361	310S16	Z8 CN 25-20

* Obsolete national standards, replaced by EN 10088.

CHARACTERISTICS

AVESTA 310 is designed for welding high temperature steels such as ASTM 310S and similar. It can also be used for welding certain ferritic chromium steels, 14%-Mn steels and stainless to mild steel connections.

AVESTA 310 produces a fully austenitic type 26 Cr and 21 Ni weld metal.

WELDING DIRECTIONS

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.

The fully austenitic structure makes the weld metal somewhat susceptible to hot cracking. High welding currents and big weld pools should be avoided. The heat input should be maximised to 25.4 kJ/in (1.0 kJ/mm) and the material should be allowed to cool to below 212°F (100°C) between successive passes. The joint should be prepared with a sufficient root gap to ensure full penetration.

WELDING DATA

Ø (inch)	Ø (mm)	Current (A)	Voltage (V)
1/16"	1.60	80-110	10-12
3/32"	2.40	130-160	16-18
1/8"	3.20	160-200	17-19
5/32"	4.00	180-220	18-20

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 about 30% helium (He) or 1-5% hydrogen (H₂) will increase the energy of the arc. This will give a wider weld and better fluidity of the melt pool. It is also advantageous because the welding speed can generally be increased why these kind of shielding gases are often used in automatic welding.

Standard designations

EN 12072	25 20
AWS A5.9	ER310

Chemical composition - Typical values, %

C	0.12	Cr	25.5
Si	0.35	Ni	21.0
Mn	1.6		
Ferrite:	0 FN		

Mechanical properties – Typical values, IIW

	Typ. values	Typ. values
Yield strength, R _{p0.2}	420 N/mm ²	61 ksi
Tensile strength, R _m	610 N/mm ²	88 ksi
Elongation, A ₅	33 %	33 %

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. 2102°F (1150°C) (air).

Corrosion resistance: Intended primarily for constructions running at high temperatures. The wet corrosion properties are moderate.

Approvals: CWB