

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
4301	1.4301	304	2333	304S31	Z7 CN 18-09
4541	1.4541	321	2337	321S31	Z6 CNT 18-10
-	1.4550	347	2338	347S31	Z6 CNNb 18-10

\* Obsolete national standards, replaced by EN 10088.

### CHARACTERISTICS

AVESTA 308H is designed for welding austenitic stainless steel type 18 Cr 10 Ni or similar. 308H has an enhanced carbon content compared to 308L. This provides improved creep resistance properties, which is advantageous at temperatures above 752°F (400°C). The filler metal is also suitable for welding titanium and niobium stabilised steels, e.g. ASTM 321 and ASTM 347. 308H type consumables are normally used at temperatures up to 1112°F (600°C). For higher temperatures a niobium stabilised consumable such as AVESTA 347 is required.

### 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.

### 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

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 ft<sup>3</sup>/hour (6–8 l/min).

Addition of about 30% helium (He) or 1–5% hydrogen (H<sub>2</sub>) will increase the energy of the arc. This will give a wider weld and a better fluidity of the melt pool. It is also advantageous because the welding speed can generally be increased why these kind of shielding gases often are used in automatic welding. Welding tubes, pipes etc. often requires a purging gas protection. Commonly used purging gases are pure Ar or Formier gas (90%N<sub>2</sub>+10%H<sub>2</sub>) with a flow of 20-42 ft<sup>3</sup>/hour (10–20 l/min).

### Standard designations

EN 12072	19 9 H
AWS A5.9	ER308H

### Chemical composition - Typical values, %

C	0.05	Cr	20.0
Si	0.4	Ni	9.0
Mn	1.8		
Ferrite:	10 FN	DeLong	
	10 FN	WRC-92	

### Mechanical properties – Typical values, IIW

	Typ. values	Typ. values
Yield strength, R <sub>p0.2</sub>	450 N/mm <sup>2</sup>	65 ksi
Tensile strength, R <sub>m</sub>	640 N/mm <sup>2</sup>	93 ksi
Elongation, A <sub>5</sub>	38 %	30 %
Impact strength, KV +20°C	150 J	111 ft·lb
Hardness	210 Brinell	-

**Interpass temperature:** Max. 300°F (150°C)

**Heat input:** Max. 50.8 kJ/in (2.0 kJ/mm)

**Heat treatment:** Generally none. In special cases quench annealing at 1922°F (1050°C).

**Structure:** Austenite with 5–10 % ferrite.

**Scaling temperature:** Approx. 1562°F (850°C) (in air).

**Corrosion resistance:** Corresponding to ASTM 304, i.e. good resistance to general corrosion. The enhanced carbon content, compared to 308L, makes it slightly more sensitive to intercrystalline corrosion.

**Approvals:** CWB