

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 consumables have enhanced carbon content compared to 308L. This provides improved creep resistance properties, which is advantageous at temperatures above 752°F (400°C). 308H is also suitable for welding titanium and niobium stabilised steels such as ASTM 321 and ASTM 347. 308H type consumables are normally used at temperatures up to 1112°F (600°C). Above that a niobium stabilised consumable such as AVESTA 347 is required.

### WELDING DIRECTIONS

MIG welding can be performed as short, spray or pulsed arc. Short arc is preferably used for thin gauges, both for horizontal and positional welding. Spray arc increases the deposition rate

Welding with pulsed arc gives excellent possibilities for a good result in varying plate thicknesses in all positions. The highest flexibility using pulsed arc is achieved with Ø0.045" (1.14 mm) wire.

### WELDING DATA

	Ø (inch)	Ø (mm)	Current (A)	Voltage (V)
Short arc	0.035"	0.89	110–140	19–22
Spray arc	0.035"	0.89	160–220	25–29
	0.045"	1.14	200–270	26–30
Pulsed arc	1/16"	1.60	250–330	29–32
			I <sub>peak</sub> = 350–450 A I <sub>bg</sub> = 50–150 A Freq = 80–120 Hz	

For further recommendations, please contact Avesta Welding.

### Shielding gas recommendations

Ar + 2% O<sub>2</sub> or Ar + 2–3% CO<sub>2</sub>

The addition of O<sub>2</sub> or CO<sub>2</sub> provides good arc stability. Welding can also be performed using an addition of 30% helium (He), which will increase the energy of the arc. The fluidity is hereby improved and the weld is generally wider. The welding speed can therefore be increased. Addition of He will increase the blackening slightly.

Gas flow rate: 25–34 ft<sup>3</sup>/hour (12–16 l/min)

### Standard designations

EN 12072      19 9 H  
AWS A5.9      ER308H

### Chemical composition – Typical values, %

C	0.05	Cr	20.0
Si	0.40	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, Rp <sub>0.2</sub>	400 N/mm <sup>2</sup>	58 ksi
Tensile strength, R <sub>m</sub>	610 N/mm <sup>2</sup>	88 ksi
Elongation, A <sub>5</sub>	37 %	37 %
Impact strength, KV    +20°C	95 J	66 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) (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 inter crystalline corrosion.

**Approvals:** CWB