

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
4301	1.4301	304	2333	304S31	Z7 CN 18-09
4307	1.4307	304L	2352	304S11	Z3 CN 18-10
4311	1.4311	304LN	2371	304S61	Z3 CN 18-10 Az
4541	1.4541	321	2337	321S31	Z6 CNT 18-10

\* Obsolete national standards, replaced by EN 10088.

#### Characteristics

AVESTA 308L/MVR-PW AC/DC is a rutile-acid type electrode which is easy to weld and has good welding properties when used with either positive pole DC or AC.

AVESTA 308L/MVR-PW is primarily designed for position welding, but can also be used as a general-purpose electrode.

AVESTA 308L/MVR-PW produces a neat weld surface, has a stable arc and good slag removal properties and produces very little spatter. It is therefore often preferred to the basic type electrode, which is renowned for its good position welding properties.

AVESTA 308L/MVR-PW is used for welding austenitic Cr-Ni-Mo steels of the ASTM 304 and 304L types. It can also be used for welding niobium and titanium stabilised steels, such as ASTM 321 in cases where the welded component will be operating at temperatures not exceeding 752°F (400°C). For higher temperatures a stabilised welding consumable (Avesta 347/MVNB) should be used.

#### Welding directions

In site welding using the "Point by Point" method, the pipe ends are joined by tack welding using a gap width related to the wall thickness. As an alternative the pipe ends can be tacked edge to edge and then a slot of suitable length ground with a cutting wheel, usually 0.08 inch (2 mm) thick. Welding is carried out by a series of short welds with the arc being extinguished and immediately struck again at 2-3 seconds intervals. When the slot has been filled an additional length of a slot is ground and so forth. Properly used this method ensures safe penetration.

#### Packaging data

Diam. inch	Diam. mm	Length mm/inch	Weight/ capsule, lbs	Electrodes/ capsule, approx.	Weight/ carton, lbs
1/16	1.6	250 / 10	3.0	223	18
5/64	2.0	250 / 10	3.0	156	18
3/32	2.5	300 / 12	4.0	113	24
1/8	3.25	350 / 14	9.1	115	27
5/32	4.0	350 / 14	10.0	87	30
3/16	5.0	350 / 14	10.0	60	30

#### Approvals:-

#### Standard designations

EN 1600            E 19 9 L R  
AWS A5.4        E 308L-17

#### Typical analysis % (All weld metal)

C	Si	Mn	Cr	Ni
0.02	0.8	1.0	19.0	10.0
Ferrite		5 FN DeLong		

#### Mechanical properties

	Typical values (IIW)			
Yield strength, R <sub>p0.2</sub>	430	N/mm <sup>2</sup>	62	ksi
Tensile strength, R <sub>m</sub>	580	N/mm <sup>2</sup>	84	ksi
Elongation, A <sub>5</sub>	39	%	39	%
Impact strength, KV				
+20°C	60	J	44	ft-lb
-40°C	50	J	37	ft-lb
Hardness approx.	210	Brinell		

#### Welding data

DC+ or AC	Diam. inch	Current A
	1/16	20– 45
	5/64	25– 60
	3/32	35– 80
	1/8	60–120
	5/32	100–160
	2/16	160–220

**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:** Very good under fairly severe conditions, e.g. in oxidising acids and cold or dilute reducing acids.

#### Welding positions

