

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-VDX AC/DC is a rutile-acid type electrode that offers particularly good weldability in vertical down position welding due to the special composition of its coating. The good restriking properties in combination with its steady arc also make it suitable for site welding.

Welding in the vertical down position is a rapid procedure that was previously rather unreliable, since only short runs could be welded before slag started to interfere with the welding. Furthermore, very poor penetration was obtained. AVESTA 308L/MVR-VDX gives neat welds in butt joints, corner joints, lap joints and fillet joints. An application of particular interest is the welding of linings.

AVESTA 308L/MVR-VDX is primarily designed for welding austenitic stainless steel of the ASTM 304 and 304L type. It can also be used with good results for welding titanium and niobium stabilised steels, such as ASTM 321 and 347, 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

Welding is best performed using positive pole DC, but AC can also be used. Welding in the vertical down position requires well-adapted amperages. The degree of difficulty increases from the butt joint, through the corner joint and lap joint to the fillet joint. In the latter case it is especially important to use small tack welds or, in the case of stringent requirements, to interrupt welding and grind off the tack weld.

Penetration increases with increasing amperages and also with increasing electrode inclination and has its maximum at 90°. However, for optimum weldability, an inclination of approximately 60-70° is recommended.

#### Packaging data

Diam. inch	Diam. mm	Length mm/inch	Weight/capsule, lbs	Electrodes/capsule, approx.	Weight/carton, lbs
5/64	2.0	250 / 10	3.5	193	21
3/32	2.5	300 / 12	4.2	125	25
1/8	3.25	350 / 14	11.5	180	34

#### 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	0.7	0.8	19.0	10.0
Ferrite		5 FN DeLong		

#### Mechanical properties

Mechanical properties	Typical values (IIW)			
Yield strength, Rp <sub>0.2</sub>	450	N/mm <sup>2</sup>	65	ksi
Tensile strength, R <sub>m</sub>	600	N/mm <sup>2</sup>	87	ksi
Elongation, A <sub>5</sub>	35	%	35	%
Impact strength, KV				
+20°C	55	J	41	ft-lb
-40°C	40	J	29	ft-lb
Hardness approx.	210	Brinell		

#### Welding data

DC+ or AC	Diam. inch	Current A
Current	5/64	35– 55
	3/32	50– 70
	1/8	95–105

**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. 1562F (850°C) (air)

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

**Approvals:** -

#### Welding positions

