

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
4436	1.4436	316	2343	316S33	Z7 CND 18-12-03
4432	1.4432	316L	2353	316S13	Z3 CND 17-12-03
4429	1.4429	S31653	2375	316S63	Z3 CND 17-12 Az
4571	1.4571	316Ti	2350	320S31	Z6 CNDT 17-12

* Obsolete national standards, replaced by EN 10088.

Characteristics

AVESTA 316L/SKR has a rutile-acid type coating which provides very good weldability when working with both positive pole DC and AC.

The electrode is characterised by a steady arc with very little spatter, high welding speed and easy slag removal. It produces a smooth concave weld surface in a horizontal fillet weld, which improves the resistance to fatigue. A flat weld surface is obtained in butt welds and this reduces grinding costs.

AVESTA 316L/SKR is used for welding austenitic Cr-Ni-Mo steels of the ASTM 316 and 316L types. It can also be used for welding niobium and titanium stabilised steels, such as ASTM 316Ti and 316Nb in cases where the welded component will be operating at temperatures not exceeding 400°C. For higher temperatures a stabilised welding consumable (AVESTA 318/SKNb) should be used.

Welding directions

AVESTA 316L/SKR should be welded using a short arc or with its coating sliding along the workpiece. Direct current positive polarity is preferable. The electrode has a very stable arc over the whole current range.

To ensure good penetration it is often advantageous to tack weld with a somewhat larger gap than when using rutile or basic electrodes.

Packaging and weights

Diam. mm	Length mm	Weight/ capsule, kg	Approx. No. of electrodes/ capsule	Weight/ carton, kg
1.6	250	1.36	191	8.16
2.0	300	1.70	144	10.20
2.5	350	4.10	185	12.30
3.25	350	4.10	118	12.30
4.0	450	5.40	80	16.20
5.0	450	5.40	53	16.20

Approvals

DB, DNV, TÜV.

Standard designations

EN 1600 E 19 12 3 L R
AWS A5.4 E 316L-17

Typical analysis % (All weld metal)

C	Si	Mn	Cr	Ni	Mo
0.02	0.8	0.7	18.5	12.0	2.7

Ferrite 10 FN DeLong

Mechanical properties

	Typical values (IIW)	Min. values EN 1600
Yield strength, R _{p0.2}	445 N/mm ²	320 N/mm ²
Tensile strength, R _m	590 N/mm ²	510 N/mm ²
Elongation, A ₅	36 %	25 %
Impact strength, KV		
+20°C	54 J	
-40°C	52 J	
Hardness approx.	210 Brinell	

Welding data

DC+ or AC	Diam. mm	Current A
Current	1.6	25– 50
	2.0	30– 60
	2.5	45– 80
	3.25	70–120
	4.0	90–160
	5.0	150–220

Interpass temperature: Max. 150°C.

Heat input: Max. 2.0 kJ/mm.

Heat treatment: Generally none. In special cases quench annealing at 1050°C.

Structure: Austenite with 5–10 % ferrite.

Scaling temperature: Approx. 850°C (air)

Corrosion resistance: Excellent resistance to general, pitting and intercrystalline corrosion in chloride containing environments. Intended for severe service conditions, e.g. in dilute hot acids.

Welding positions

