

Smootharc™ S 316L

MMA Electrodes, Stainless Steel.



Electrodes

Description Smootharc S 316L is a rutile coated, low carbon, 19Cr, 12Ni, 3 Mo, AC/DC electrode for the high quality welding of molybdenum alloyed, acid resisting austenitic stainless steels of the 316/316L type. The electrode is very easy to strike and restrike. Welding performance is excellent with a very smooth, low spatter arc producing a finely rippled bead surface with excellent slag detachability. Fillet welds have a slightly concave profile with excellent toe line blend-in.

Application Smootharc S 316L is recommended for single and multi-pass welding of molybdenum alloyed austenitic stainless steels 316 and 316L. It is also suitable for welding the Nb or Ti stabilised steels, provided service temperatures are below 400°C. Austenitic stainless steels of the 316/316L type may be used for applications such as food handling equipment, structures in marine environments, heat exchangers, chemical storage and transportation tanks, oil refining equipment and pharmaceutical equipment.

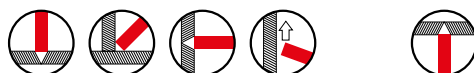
Technique Stainless steel can be welded using either AC or DC, with as short an arc as possible to overcome any possibility of alloy loss across the arc. When using AC, a slightly higher current setting may be required. When welding in the flat position, stringer beads should be used and, if weaving is required, this should be limited to 2 times the electrode diameter. The heat input, which can adversely affect corrosion resistance and lead to excessive distortion, should be limited by using the correct electrode diameter to give the required bead profile and properties at the maximum travel speed.

Storage Smootharc S 316L electrodes are packaged in hermetically sealed packs. For critical applications in damp environments, once the seal is broken, electrodes should be stored in heated cabinets at 70–120°C.

Re-Drying/Conditioning All electrode coatings are hygroscopic and, when left in an opened state for a period of time, will absorb moisture. Austenitic materials are generally insensitive to the presence of hydrogen. However, moisture in the electrode coating can lead to porosity in the weld metal. Start porosity is generally indicative of damp electrodes and is more common in fillet welds, than in butt welds where pores only occur at high moisture contents.

Electrodes that have been stored outside of their hermetically sealed packs, and have become damaged by moisture pick-up, can be redried at temperatures of 300–350°C for 1–2 hours. Redrying should be restricted to a maximum of three cycles.

Welding Positions



WARNING Welding can give rise to electric shock, excessive noise, eye and skin burns due to the arc rays, and a potential health hazard if you breathe in the emitted fumes and gases. Read all the manufacturer's instructions to achieve the correct welding conditions and ask your employer for the Safety Data Sheets. Refer to www.boc.com.au or www.boc.co.nz

Specifications

Coating type	Rutile
Classifications	AWS/ASME-SFA A5.4 E316L-17 AS/NZS 4854 B-ES316L-17
Welding current	AC, OCV 50V or DC+

**Chemical Composition, wt%
– All Weld Metal**

	C	Si	Mn	Cr	Ni	Mo
Typical	0.02	0.76	0.71	17.9	11.6	2.6

Ferrite content FN 6 (WRC-92)

**Mechanical Properties
– All Weld Metal**

	Typical (as welded)
Yield strength	490 MPa
Tensile strength	600 MPa
Elongation	32% min
Impact energy, CVN	55J @ -20°C 45J @ -120°C

Packaging Data

	2.5 mm	3.2 mm	4.0 mm
Diameter	2.5 mm	3.2 mm	4.0 mm
Part No.	188162VP	188163VP	188164VP
Length (mm)	300	350	350
Weight packet (kg)	1.7	2.0	2.0
Quantity (per pack) approx.	92	56	38

Welding Parameters

	2.5 mm	3.2 mm	4.0 mm
Diameter	2.5 mm	3.2 mm	4.0 mm
Current range (A)	40-80	80-120	100-160
Voltage (V)	29	29	30

Deposition Data

	2.5 mm	3.2 mm	4.0 mm
Diameter	2.5 mm	3.2 mm	4.0 mm
Weld metal kg/electrodes kg	0.64	0.64	0.65
No. of electrodes/weld metal kg	85	44	30
Weld metal kg/hour arc time	1.1	1.5	2.1
Burn off time/electrode (s)	35	43	56



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