Avesta Welding

Flux 301

For submerged arc strip cladding with all types of austenitic stainless steel strip such as

EQ 308L, 347, 316L, 309L and 309LNb.

Standard designation

EN 760 SA Z 2 DC

Characteristics

AVESTA Flux 301 is an agglomerated, slightly basic flux designed for submerged arc strip cladding. It offers excellent welding properties and easy slag removal. Strips of various widths (30, 60 or 90 mm) are used. Flux 301 has a composition that gives a weld metal with a ferrite level exceeding 4 FN (Delong) when welding the first layer with strip EQ 309L.

- Bulk density: 0.8 kg/dm^3
- Basicity index: 1.1 (Boniszewski)
- Flux consumption: 0.7 kg flux/kg strip (750 A, 28 V)

Welding data, 60 mm strip

Strip dim. mm	Current A	Voltage V	Speed mm/min
60 x 0.5	730 – 770	26 – 28	120 – 150

Stick-out: typically 30 mm
Bead thickness: 3 – 5 mm

Heat input

Typically 6 – 30 kJ/mm

Welding directions

Increased current increases the deposition rate, penetration, dilution and weld metal temperature considerably. Normal penetration is about 1 mm, differing slightly with travel speed.

Direct current, positive polarity, gives a smooth overlapping and the best bead appearance. Negative polarity is also possible and gives an increased deposition rate and less penetration.

Since strip surfacing requires high heat input the parent metal must be reasonably thick to ensure dimensional stability during welding. A thickness of 100 mm or more is often required.

Flux care

The flux should be stored indoors in a dry place. Moist flux can be redried at 250 – 300°C for 2 hours.

Approvals

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Chemical composition, all weld metal, 60 mm strip (typical values, %)

Strip, 60 mm		C	Si	Mn	Cr	Ni	Mo	Nb	Ferrite FN[1]	Ferrite %[2]
309L	strip	0.01	0.3	1.8	23.5	13.0	–	–	15	–
	1st layer	0.03	0.5	1.2	19.0	10.5	–	–	5	5
347	strip	0.01	0.2	1.8	19.5	10.5	–	0.5	9	–
	2nd layer	0.02	0.5	1.2	19.0	11.0	–	0.35	7	6
316L	strip	0.01	0.3	1.8	18.5	12.5	2.9	–	6	–
	2nd layer	0.02	0.5	1.2	18.0	12.0	2.3	–	6	5

Welding parameters: 750 A, 28 V, 130 mm/min
Deposition rate: 14 kg/h
Weld overlay thickness: 3.5 – 4.0 mm
Penetration: 1 mm

[1] According to DeLong
[2] Measured by Fischer Feritescope® MP-3

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