

308L/MVR Cryo

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

Standard designations

EN ISO 17633 T 19 9 L P M/C 1
 AWS A5.22 ER308LT1-4/-1

Characteristics and welding directions

AVESTA FCW 308L/MVR Cryo is a flux-cored wire with controlled weld metal ferrite content (FN 3 – 6). The weld goods produced offers good cryogenic toughness and lateral expansion down to -196°C as specified for LNG applications.

The rutile type flux-cored wire provides excellent positional characteristics and high travel speed. The flux composition ensures excellent arc stability, very little spatter, a smooth weld surface and self-releasing slag.

308L/MVR Cryo is designed for welding austenitic stainless steel type 19 Cr 10 Ni, but can also be used for welding titanium and niobium stabilised steels such as ASTM 321 and ASTM 347 in cases where the construction will be operating at temperatures below 400°C . For higher temperatures a niobium stabilised consumable should be used.

AVESTA FCW 308L/MVR Cryo should be welded using direct current positive polarity (DC+) with a recommended wire stick-out of 15 – 20 mm. Compared to the MIG method, the range of welding current and voltage is considerably wider.

Welding data

Diameter, mm	Current, A	Voltage, V
1.20	100 – 220	20 – 31

Shielding gas

Ar + 15–25% CO_2 offers the best weldability, but 100% CO_2 can also be used (voltage should be increased by 2V).

Gas flow rate 20 – 25 l/min.

Chemical composition, wire (typical values, %)

C	Si	Mn	Cr	Ni
0.03	0.6	1.4	19.0	11.0

Ferrite 3–6 FN WRC-92

Mechanical Properties

	Typical values (IIW)	Min. values EN ISO 17633
Yield strength $R_{p0,2}$	390 N/mm ²	320 N/mm ²
Tensile strength R_m	550 N/mm ²	510 N/mm ²
Elongation A_5	40 %	30 %
Impact strength KV		
+20°C	80 J	–
–196°C	45 J	–
Lateral expansion –196°C	> 0.38 mm	–

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 approx. 3–6 % ferrite.

Scaling temperature: Approx. 850°C (air).

Corrosion resistance: Very good. Equivalent to that of ASTM 304L, i.e. fairly good under severe conditions such as oxidising and cold dilute reducing acids.

Approvals

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