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E309LMoT0-1

Flux cored wire

For welding steel such as:

Outokumpu	EN	ASTM	BS*	NF*	SS*
Avesta P5 is primarily used when surfacing unalloyed or low-alloyed steels and when joining molybdenum-alloyed stainless and carbon steels.					

* Obsolete national standards, replaced by EN 10088.

Characteristics

AVESTA FCW E309LMoT0-1 is a type of flux-cored wire with high deposition rates and very good weldability in flat (PA) and horizontal-vertical (PB and PC) positions. The wire operates with a very stable arc producing a smooth weld bead surface and self-releasing slag.

AVESTA FCW E309LMoT0-1 is a molybdenum-alloyed wire of the 309LMo type, which is primarily designed for dissimilar joints between stainless steels and low-alloyed steels. The filler metal is also widely used for surfacing low-alloyed steels offering a composition that is more or less equal to that of AISI 316 already from the first run.

AVESTA FCW E309LMoT0-1 has a composition that under normal welding conditions will ensure a crack resistant weld metal with a ferrite content of min. 3%.

Welding directions

AVESTA FCW E309LMoT0-1 should be welded using direct current positive polarity (DC+) with a recommended wire stick-out of 15–20 mm. When welding stainless to mild steel or low-alloy steel, it is advisable/necessary to reduce the dilution of the weld as much as possible. Welding should therefore be performed with a limited heat input and appropriate bevel angle. Compared to the MIG-method, the range of welding current and voltage is considerably wider.

Welding data

Ø	Flat/Horizontal		Horizontal-vertical	
Inch	A	V	A	V
0.045	170–290	25–31	140–210	23–29

The above parameters are intended for Ar+CO_2 shielding gas.

For further recommendations, please contact Avesta Welding.

Shielding gas recommendations

Welding is preferably done using an Ar-based shielding gas with addition of 15–25% CO_2, which will give the best result with respect to arc stability, melt pool control and with a minimum of spatter. However, 100% CO_2 can also be used. If 100% CO_2 is used, the welding voltage should be increased by 2–3 V to ensure the right arc length.

Gas flow rate is typically 20–25 l/min.

Standard designations

EN 12073	T 23 12 2 L R M/C 3
AWS A5.22	E309LMoT0-4/-1

Chemical composition - Typical values, %

C	0.03	Cr	23.3
Si	0.6	Ni	12.8
Mn	1.5	Mo	2.5
Ferrite:	25 FN WRC-92		

Mechanical properties – Typical values, IIW

		Typ. values			
Yield strength, $Rp_{0,2}$		500	N/mm²	72	ksi
Tensile strength, R_m		690	N/mm²	100	ksi
Elongation, A5		29	%	29	%
Impact strength, KV	+20°C	50	J	37	ft·lb
	–10°C	48	J	35	ft·lb
Hardness		220	Brinell	–	

Interpass temperature: Max. 300°F (150°C)

Heat input: Max. 50.8kj/in (2.0 kJ/mm)

Heat treatment: Generally none. For constructions that include low-alloyed steels in mixed joints, a stress-relieving annealing stage may be advisable. However, this type of alloy may be susceptible to embrittlement-inducing precipitation in the temperature range 1022-1742°G (550–950°C). Always consult the supplier of the parent metal or seek other expert advice to ensure that the correct heat treatment process is carried out.

Structure: Austenite with 20–30 % ferrite.

Scaling temperature: Approx. 1742°F (950°C) (air).

Corrosion resistance: Superior to 316L. Excellent resistance to pitting and crevice corrosion in chloride containing environments. The corrosion resistance obtained in the first layer when surfacing is equivalent to that of 316.

Approvals: