Avesta Welding

P5

For welding steels such as					
Outokumpu	EN	ASTM	BS	NF	SS

AVESTA P5 is primarily used when surfacing unalloyed or low-alloy steels and when joining molybdenum-alloyed stainless and carbon steels.

Standard designations

EN ISO 14343 W 23 12 2 L
AWS A5.9 (ER309LMo)*

* Cr lower and Ni higher than standard.

Characteristics and welding directions

AVESTA P5 is a molybdenum-alloyed wire of the 309MoL type, which is primarily designed for surfacing low-alloy steels and in dissimilar welding between stainless steels and low-alloy steels ensuring a high resistance against cracking. It can also be used for welding high-strength steels such as Hardox® and Armox®. When used for surfacing, the composition is more or less equal to that of ASTM 316 from the first run.

Welding data

Diameter, mm	Current, A	Voltage, V
1.20	60 – 80	9 – 11
1.60	80 – 110	10 – 12
2.00	100 – 130	14 – 16
2.40	130 – 160	16 – 18
3.20	160 – 200	17 – 19

Shielding gas

Ar (99.95%) or Ar with an addition of 20 – 30% helium (He) or 1 – 5% hydrogen (H_2).
Gas flow rate 4 – 8 l/min.

Chemical composition, wire (typical values, %)

C	Si	Mn	Cr	Ni	Mo
0.02	0.35	1.5	21.5	15.0	2.7

Ferrite	9 FN	DeLong
	8 FN	WRC-92

Mechanical properties	Typical values (IIW)	Min. values EN ISO 14343
Yield strength $R_{p0,2}$	470 N/mm²	350 N/mm²
Tensile strength R_m	640 N/mm²	550 N/mm²
Elongation A_5	30 %	25 %
Impact strength KV		
+20°C	140 J	
–40°C	90 J	
Hardness	210 Brinell	

Interpass temperature: Max. 150°C.

Heat input: Max. 2.0 kJ/mm.

Heat treatment: Generally none.
For constructions that include low-alloy 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 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 5 – 10% ferrite.

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

Corrosion resistance: Superior to 316L.
The corrosion resistance obtained on the first layer when surfacing corresponds to that of ASTM 316.

Approvals

• CE • DB • DNV • TÜV