

# P5

For welding steels such as Outokumpu	EN	ASTM	BS	NF	SS
AVESTA P5 is primarily used when joining molybdenum-alloyed stainless and carbon steels and for surfacing unalloyed or low-alloy steels.					

## Standard designations

EN ISO 14343 S 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 consumable of the 309LMo type, which is primarily designed for joining stainless steels with low-alloy steels (dissimilar joints), ensuring a high resistance to cracking and for surfacing low-alloy steels. When used for surfacing, the composition is more or less equal to that of ASTM 316 from the very first run. It can also be used for welding high-strength steels such as Hardox® and Armox®.

## Welding data

Diameter, mm	Current, A	Voltage, V
2.40	300 – 400	29 – 33
3.20	350 – 500	29 – 33

**Welding flux:** AVESTA Flux 801, 805 or 807.

**Corrosion resistance:** Superior to type 316L filler. When surfacing on mild steel a corrosion resistance equivalent to ASTM 316 is obtained at the very first layer.

## Approvals

In combination with flux

801 • DNV

805 • DNV

## 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 8 FN	DeLong WRC-92			

## Chemical composition, all weld metal (typical values in combination with flux, %)

Flux	C	Si	Mn	Cr	Ni	Mo	FN <sup>1)</sup>
801	0.02	0.8	0.8	22.0	14.5	2.7	14
805	0.02	0.6	1.0	22.0	15.0	2.7	15
807	0.02	0.6	1.0	21.0	15.5	2.7	11

<sup>1)</sup> According to DeLong.

## Mechanical properties

Typical values (IIW) in combination with flux

	801	805
Yield strength $R_{p0,2}$	470 N/mm <sup>2</sup>	410 N/mm <sup>2</sup>
Tensile strength $R_m$	620 N/mm <sup>2</sup>	600 N/mm <sup>2</sup>
Elongation $A_5$	31 %	35 %
Impact strength KV +20°C	50 J	70 J

**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).