

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
Overalloyed electrode for surfacing unalloyed steel, joint welding molybdenum alloyed stainless steel to unalloyed steel and for welding clad material.					

\* Obsolete national standards, replaced by EN 10088.

#### Characteristics

AVESTA P5 basic is a molybdenum-alloyed electrode of the 309LMO type, which is primarily designed for surfacing low-alloy steels and for joining stainless and low-alloy steels (dissimilar joints). When used for surfacing, the composition obtained is more or less equal to that of ASTM 316 from the very first run.

AVESTA P5 basic has a basic coating, which produces a weld metal that ensures safety against the formation of pores and cracks and possesses very good mechanical properties. The composition of the coating, characteristic of basic electrodes, gives very good penetration and position welding properties.

AVESTA P5 ensures very good protection against cracking in welds between stainless steel and plain carbon or low-alloy steels.

#### Welding directions

AVESTA P5 basic should be welded using a short arc and DC (positive polarity). High amperages causing overheating of the electrode should be avoided. The proper amperage and welding speed should be chosen in order to avoid producing large weld pools.

Welding to primer-coated sheet should be avoided, as there is a significant risk of pore formation. The paint should therefore be removed from all surfaces that are likely to be exposed to temperatures above 500°C.

#### Weld deposit data

Metal recovery approx. 105%.

#### Packaging data

Diam. mm	Length mm	Weight/capsule, kg	Approx. No. of electrodes/capsule	Weight/carton, kg
2.5	300	1.70	99	10.20
3.25	350	4.10	122	12.30
4.0	350	4.90	100	14.70

Approvals: TÜV

#### Standard designations

EN 1600 E 23 12 2 L B  
AWS A5.4 E309 MoL-15

#### Typical analysis % (All weld metal)

C	Si	Mn	Cr	Ni	Mo
0.03	0.2	2.0	22.5	13.0	2.7

Ferrite 15 FN DeLong

#### Mechanical properties

	Typical values (IIW)	Min. values EN 1600
Yield strength, R <sub>p0.2</sub>	465 N/mm <sup>2</sup>	350 N/mm <sup>2</sup>
Tensile strength, R <sub>m</sub>	615 N/mm <sup>2</sup>	550 N/mm <sup>2</sup>
Elongation, A <sub>5</sub>	30 %	25 %
Impact strength, KV		
+20°C	50 J	
-40°C	35 J	
Hardness approx.	230 Brinell	

#### Welding data

DC+	Diam., mm	Current, A
	2.5	50–75
	3.25	70–100
	4.0	100–140

**Interpass temperature:** Max. 150°C.

**Heat input:** Max. 2.0 kJ/mm.

**Heat treatment:** Generally none. For constructions, which include low-alloy steels in mixed joints, a stress relieving 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 15–20 % ferrite.

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

**Corrosion resistance:** Superior to 316L. The corrosion resistance obtained in the first layer when surface welding corresponds to that of ASTM 316.

#### Welding positions

