

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 P5-4D 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 P5-4D is primarily intended for pipe and position welding, but can also be used as a general purpose electrode, especially for thin material.

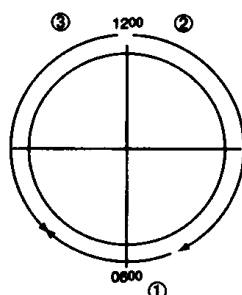
#### Welding directions

AVESTA P5-4D is designed for the continuous welding of pipes.

The combination of low welding currents and good fluidity means that pipes with a wall thickness of 0.08 inch (2 mm) can be welded using an electrode with a diameter of 0.08 inch (2 mm).

Pipe welding can be performed in several different ways. One possibility is to start welding in overhead position (1), followed by vertical-down on both sides from 12 o'clock position (2 and 3). Another possibility is to start at the 7 o'clock position and weld vertical up to the 11 o'clock position on both sides.

This requires an inverter power source with a remote control.



When welding stainless to unalloyed thin plates and pipes, DC- is often preferred.

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 932°F (500°C).

#### Packaging data

Diam. inch	Diam. mm	Length mm/inch	Weight/capsule, lbs	Electrodes/capsule, approx.	Weight/carton, lbs
5/64	2.0	300 / 12	2.6	168	24
3/32	2.5	300 / 12	3.5	97	21
1/8	3.25	350 / 14	9.1	125	27

Approvals: -

#### Standard designations

EN 1600	E 23 12 2 L R
AWS A5.4	E309MoL-17

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

C	Si	Mn	Cr	Ni	Mo
0.02	0.7	1.0	23.0	13.0	2.5
Ferrite 20 FN WRC-92					

#### Mechanical properties

	Typical values (IIW)	
Yield strength, R <sub>p0.2</sub>	530 N/mm <sup>2</sup>	77 ksi
Tensile strength, R <sub>m</sub>	660 N/mm <sup>2</sup>	96
Elongation, A <sub>5</sub>	28 %	28 %
Impact strength, KV +20°C	40 J	29 ft-lb
Hardness approx.	220 Brinell	

#### Welding data

DC+/- or AC	Diam., inch	Current, A
	5/64	25- 55
	3/32	30- 85
	1/8	45-110

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

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

**Heat treatment:** Generally none. For constructions, which include low-alloyed 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 1022-1742°F (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. 1742°F (950°C) (air)

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

#### Welding positions

