

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
904L	1.4539	904L	2562	904S13	Z2 NCDU 25-20

Also for welding similar steels of the 20-25 CrNiMoCu-type.

* Obsolete national standards, replaced by EN 10088.

Characteristics

AVESTA 904L-PW AC/DC is a rutile-acid type electrode which is easy to use. It offers good weldability using both positive pole DC and AC, but welding with DC is to be preferred.

AVESTA 904L-PW electrodes are available in the diameters 1.6 to 3.25 mm intended for site welding, position welding and for welding root runs. For heavy base material, 904L AC/DC electrodes should be used.

AVESTA 904L-PW is used for welding copper alloyed stainless steel of the ASTM N08904 type (AvestaPolarit 904L, Sandvik 20.25.5 LCu) or Cu-Nb alloyed steels such as EN 1.4505, 1.4506 and 1.4585.

Welding directions

AVESTA 904L-PW electrodes produce a fully austenitic high-alloy weld deposit material with relatively little risk of hot cracking, i.e. cracks occurring immediately after the solidification of the weld deposit, provided that welding is performed carefully. However, the risk of hot cracking is somewhat greater than for electrodes such as AVESTA 316L/SKR.

Therefore, to ensure optimum resistance to corrosion and cracking the heat input should be kept at a low level. High amperages and unnecessarily thick electrodes should be avoided and welding should be carried out without appreciable weaving. Finally, the material should be allowed to cool to below 100°C before the next run is welded.

In site welding using the "Point by Point" method, the pipe ends are joined by tack welding using a gap width related to the wall thickness. As an alternative the pipe ends can be tacked edge to edge and then a slot of suitable length ground with a cutting wheel, usually 2 mm thick. Welding is carried out by a series of short welds, with the arc being extinguished and immediately struck again at 2-3 second intervals. When the slot has been filled an additional length of slot is ground and so forth. Properly used this method ensures safe penetration.

When welding AvestaPolarit 904L steel to unalloyed steel, AVESTA P5 or 904L electrodes may be used.

Weld deposit data

Metal recovery approx. 110%.

Packaging data

Diam. mm	Length mm	Weight/ capsule, kg	Approx. No. of electrodes/ capsule	Weight/ carton, kg
2.0	250	1.60	182	9.60
2.5	300	1.90	117	11.40

Standard designations

EN 1600 E 20 25 5 Cu N L R

Typical analysis % (All weld metal)

C	Si	Mn	Cr	Ni	Mo	Cu
0.02	1.0	1.2	20.0	24.5	4.5	1.5

Ferrite 0 FN

Mechanical properties

	Typical values (IIW)	Min. values EN 1600
Yield strength, R _{p0.2}	400 N/mm ²	320 N/mm ²
Tensile strength, R _m	600 N/mm ²	510 N/mm ²
Elongation, A ₅	35 %	25 %
Impact strength, KV +20°C	70 J	
Hardness approx.	200 Brinell	

Welding data

DC+ or AC	Diam., mm	Current, A
	2.0	25- 55
	2.5	35- 75

Interpass temperature: Max. 100°C.

Heat input: Max. 1.5 kJ/mm.

Heat treatment: Generally none. In special cases quench annealing at 1050°C.

Structure: Fully austenitic.

Scaling temperature: Approx. 1000°C (air)

Corrosion resistance: Very good resistance in non-oxidising solutions such as sulphuric acid (up to 90% conc.), phosphoric acid and organic acids. Good resistance to pitting and crevice corrosion in chloride-containing solutions.

Approvals: -

Welding positions

