

904L

For welding steels such as Outokumpu	EN	ASTM	BS	NF	SS
904L	1.4539	904L	904S13	Z2 NCDU 25-20	2562

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

Standard designations

EN ISO 14343 G 20 25 5 Cu L
AWS A5.9 ER385

Characteristics and welding directions

AVESTA 904L is intended for welding Outokumpu 904L and similar but can also be used for constructions in type ASTM 316 where a ferrite-free weld metal is required, such as cryogenic or non-magnetic applications. The impact strength at low temperature is excellent.

A fully austenitic structure is more prone to hot or solidification cracking than type ASTM 316 welds, so welding should be performed minimising the heat input, interpass temperature and penetration with parent metal.

Welding is best performed using a pulsed arc power source.

Welding data

	Diameter mm	Current A	Voltage V
Spray arc	1.00	170 – 210	25 – 29
	1.20	180 – 230	26 – 30
	1.60	250 – 330	29 – 32
Pulsed arc	1.20	$I_{peak} = 350 - 380$ A $I_{bkg} = 80 - 120$ A Freq = 100 – 120 Hz	

Shielding gas

Welding is best performed using pulsed arc with a shielding gas of pure argon or Ar + 30% He + 2.5% CO₂.
Gas flow rate 12 – 16 l/min.

Chemical composition, wire (typical values, %)

C	Si	Mn	Cr	Ni	Mo	Cu
0.01	0.35	1.7	20.0	25.5	4.5	1.5

Ferrite 0 FN

Mechanical properties

	Typical values (IIW)	Min. values EN ISO 14343
Yield strength $R_{p0.2}$	340 N/mm ²	320 N/mm ²
Tensile strength R_m	570 N/mm ²	510 N/mm ²
Elongation A_5	38 %	25 %
Impact strength KV		
+20°C	130 J	
-196°C	100 J	
Hardness	170 Brinell	

Interpass temperature: Max. 100°C.

Heat input: Max. 1.5 kJ/mm.

Heat treatment: Generally none (in special cases quench annealing at 1070 – 1100°C).

Structure: Fully austenitic with extra low content of impurities.

Scaling temperature: Approx. 1000°C (air).

Corrosion resistance: Very good in non-oxidising environments such as sulphuric or phosphoric acids. Very good resistance to pitting and crevice corrosion in chloride containing environments. Excellent resistance to general corrosion and stress corrosion cracking.

Approvals

- CE
- DB
- TÜV