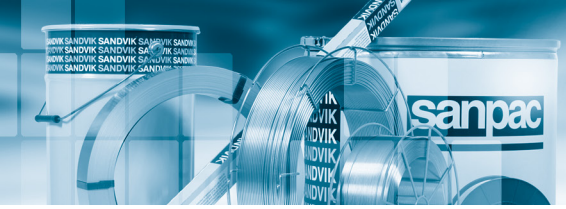

SANDVIK

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Sandvik 19.13.4.L

(Welding wire)

Sandvik 19.13.4.L is suitable for joining stainless CrNiMo steels e.g. 317L or similar. It is used for MIG/MAG-, TIG-, plasma-arc and submerged-arc welding.

STANDARDS

- AWS ER317L
- EN number 19 13 4 L

Product standards

- EN ISO 14343
- ASME/AWS SFA5.9

FILLER METAL

CHEMICAL COMPOSITION (AIM), WT%

C	Si	Mn	P	S	Cr	Ni	Mo	Co	Cu	N
<0.020	0.4	1.8	<0.015	<0.015	19	13.5	3.6	<0.20	<0.10	<0.060

Ferrite content

The ferrite number according to DeLong diagram based on aim analysis = 10FN.

CHEMICAL COMPOSITION - WELD METAL

The following data are typical for non heat treated weld metal made by MIG welding with a shielding gas of Ar + 2%O2.

CHEMICAL COMPOSITION, WT%

C	Si	Mn	P	S	Cr	Ni	Mo	N
0.02	0.4	1.7	0.010	0.012	18.5	13	3.5	0.05

Ferrite content
9FN (DeLong)

MICROSTRUCTURE- ALL-WELD METAL

Austenitic matrix with a ferrite content of about 9FN according to DeLong.

MECHANICAL PROPERTIES - WELD METAL

Temperature	°C	20	400
Yield strength, $R_{P0.2}$	MPa	380	290
Tensile strength, R_M	MPa	600	460
Elongation, A_5	%	42	28
Reduction in area, Z	%	70	-
Impact strength, Charpy V	J	140	-
Hardness, Vickers	HV	160	-

PHYSICAL PROPERTIES - WELD METAL

Temperature °C	20	100	300	500
Thermal conductivity, W/m	15	15	19	21

Density kg/m^3 8000

CORROSION PROPERTIES - WELD METAL

Sandvik 19.13.4L has, due to the high molybdenum content, good resistance to corrosion in most inorganic and organic acids. The weld metal has good resistance to pitting corrosion in chloride containing solutions. The resistance to intergranular corrosion is also good due to the low carbon content.

RECOMMENDED WELDING DATA

MIG welding
Electrode positive is used to give good penetration in all types of welded joint. The following table shows common conditions for MIG welding.

Wire diameter, mm	Wire feed, m/min	Current, A	Voltage, V	Gas, l/min
Short-arc welding				
0.8	4-8	40-120	15-19	12
1.0	4-8	60-140	15-21	12
Spray-arc welding				
1.0	6-12	140-220	23-28	18
1.2	5-9	180-260	24-29	18
1.6	3-5	230-350	25-30	18
Pulsed-arc welding[1)]				
1.2	3-10	150-250	23-31	18

[1)]Pulse parameters: Peak current 300 - 400 A
Background current 50 - 150 A
Frequency 80 - 120 Hz

Sandvik can provide recommendations for shielding gases.

Short-arc welding is used with light gauge material of less than about 3 mm, in depositing root runs, and in welding out-of-flat positions.

The higher the inductance in short-arc welding, the higher the fluidity of the molten pool.

Spray-arc welding is normally used for heavier gauge material.

TIG welding
The parameters for TIG welding depend largely upon the base metal thickness and the welding application.

Electrode negative and a shielding gas of argon or helium should be used to prevent oxidation of the weld metal.

DISCLAIMER:
Recommendations are for guidance only, and the suitability of a material for a specific application can be confirmed only when we know the actual service conditions. Continuous development may necessitate changes in technical data without notice. This datasheet is only valid for Sandvik materials.