



Datasheet updated 2012-05-08 08:28:32 (supersedes all previous editions)

Sandvik 19.12.3.LSi

(Welding wire)

Sandvik 19.12.3.LSi is suitable for joining stainless Cr-Ni-Mo and Cr-Ni steels, stabilized or non-stabilized, e.g. ASTM 316, 316L and 316Ti as well as 304, 304L, 321 and 347, for service temperatures up to 400 °C (750 °F), stainless Cr-steels with max 19 % Cr. It is used for MIG/MAG-, TIG- and plasma-arc welding.

STANDARDS

- AWS ER316LSi
- EN number 19 12 3 L Si

Product standards

- EN ISO 14343
- ASME/AWS SFA5.9

FILLER METAL

CHEMICAL COMPOSITION (AIM), WT%

C	Si	Mn	P	S	Cr	Ni	Mo	N
<0.025	0.9	1.8	<0.025	<0.015	18.5	12	2.6	<0.060

Ferrite content

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

CHEMICAL COMPOSITION (NOMINAL) %

C	Si	Mn	P	S	Cr	Ni	Mo	N
max			max	max				
0.025	0.9	1.8	0.025	0.015	18.3	12.3	2.6	0.05

CHEMICAL COMPOSITION - ALL-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	0.9	1.7	0.010	0.013	18.5	11.5	2.6	0.06

MICROSTRUCTURE - ALL-WELD METAL

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

MECHANICAL PROPERTIES - ALL-WELD METAL

Temperature	°C	20	400	-196
Yield strength, R _{p0.2}	MPa	400	290	-
Tensile strength, R _m	MPa	610	440	-
Elongation, A ₅	%	37	29	-
Reduction in area, Z	%	68	-	-
Impact strength, Charpy V	J	130	-	50
Hardness, Vickers	HV	160	-	-

PHYSICAL PROPERTIES - ALL-WELD METAL

Temperature °C	20	100	300	500
Thermal conductivity, W/m	15	16	19	21

CORROSION PROPERTIES - ALL-WELD METAL

Sandvik 19.12.3LSi has good resistance to general corrosion and due to its low carbon content, good resistance to intercrystalline corrosion. It also has good resistance to pitting corrosion due to the balanced molybdenum content. Example: Pitting corrosion test. Three days in 1% FeCl₃ at 20 °C (68 °F), no corrosion observed.

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				
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
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.

APPROVALS

CE, DB, DNV, TÜV

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.