



Datasheet updated 2012-01-13 11:29:00 (supersedes all previous editions)

# Sandvik 19.9.LSi

## (Welding wire)

Sandvik 19.9.LSi is a filler metal particularly suited for MIG welding. It can also be used for TIG and plasma arc welding. It is suitable for joining stainless steels of the 18Cr/8Ni ELC-type and 18Cr/8Ni/Nb type for service temperatures up to 350°C (660 °F).

### STANDARDS

- AWS ER308LSi
- EN number 19 9 L Si

### Product standards

- EN ISO 14343
- AMSE/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	20	10.5	<0.3	<0.06

#### Ferrite content

The ferrite number according to DeLong diagram based on aim analysis = 11FN.

#### 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%O<sub>2</sub> and TIG or plasma arc welding with Argon as shielding gas.

#### CHEMICAL COMPOSITION, WT%

C	Si	Mn	P	S	Cr	Ni	N
0.02	0.8	1.6	0.010	0.011	20	10.5	<0.06

#### MICROSTRUCTURE- ALL-WELD METAL

Austenitic matrix with a ferrite content of about 12FN according to DeLong diagram.

#### MECHANICAL PROPERTIES- ALL-WELD METAL

MIG TIG - typical for non heat treated weld metal

Temperature	°C	20	400	-196
Yield strength, R <sub>p0.2</sub>	MPa	390	290	-
Tensile strength, R <sub>m</sub>	MPa	600	440	-
Elongation, A <sub>5</sub>	%	42	24	-
Reduction in area, Z	%	60	-	-
Impact strength, Charpy V	J	120	-	50
Hardness, Vickers	HV	160	-	-

#### PHYSICAL PROPERTIES- ALL-WELD METAL

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

Thermal expansion per °C, from 20°C (68 °F) to 400°C (750 °F)  $18 \times 10^{-6}$   
Density, g/cm<sup>3</sup> 7,9

#### CORROSION PROPERTIES- ALL-WELD METAL

Sandvik 19.9.LSi has good resistance to general corrosion and due to its low carbon content, good resistance to intergranular corrosion. Example: Huey test for MIG weld metal (5 x 48 hours in boiling 65% HNO<sub>3</sub>). Rate of corrosion mean value, 0.13 mm/year.

#### 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 <sup>1)</sup>				
1.2	3-10	150-250	23-31	18

  

<sup>1)</sup> 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, 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.