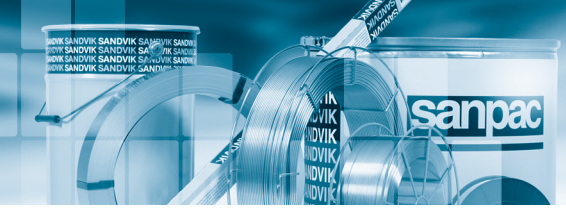

SANDVIK

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Sandvik 25.22.2.LMn

(Welding wire)

Sandvik 25.22.2.LMn is a fully austenitic filler material for welding Sandvik 2RE69 (310MoLN), Sandvik 3R60 U.G. (ASTM 316L) and corresponding grades used in the production of urea, nitric acid, sulphuric acid, acetic acid and in gas treatment plants. The weld deposit has excellent low temperature toughness that makes it suitable for joining stainless steels for cryogenic service.

Sandvik 25.22.2.LMn is a modified version of the 310 type which is the closest AWS grade in AWS A5.9. A constructed designation would be "310LMo".

STANDARDS

- AWS ER "310LMo"
- EN number 25 22 2 N L

Product standards
EN ISO 14343

Approvals
CE, TÜV.

CHEMICAL COMPOSITION - FILLER METAL

CHEMICAL COMPOSITION, WT%

C max	Si max	Mn	P max	S max	Cr	Ni	Mo	N
0.020	0.2	4.5	0.015	0.015	25	22	2.1	0.13

CHEMICAL COMPOSITION - ALL-WELD METAL

The following data is typical for non heat treated all-weld metal made by MIG welding with argon shielding gas.

CHEMICAL COMPOSITION, WT%

C max	Si	Mn	P max	S max	Cr	Ni	Mo	N
0.020	0.1	4	0.015	0.015	24.5	21.5	2.1	0.11

MICROSTRUCTURE - ALL-WELD METAL

Fully austenitic.

MECHANICAL PROPERTIES - ALL-WELD METAL

Temperature	°C	20	400	-196
Yield strength, $R_{p0.2}$	MPa	335	225	-
Tensile strength, R_m	MPa	575	410	-
Elongation, A	%	42	29	-
Reduction in area, Z	%	58	-	-
Impact strength, Charpy V	J	120	-	100
Hardness, Vickers	HV	170	-	-

PHYSICAL PROPERTIES- ALL-WELD METAL

Temperature, °C	20	100	300	500
Thermal conductivity, W/m °C	14	15	17	19

Thermal expansion per °C, from 20°C (68 °F) to 400°C (750 °F) $18x10^{-6}$
Density, g/cm^3, at 20 °C (68 °F) 7.9

CORROSION RESISTANCE- ALL-WELD METAL

Sandvik 25.22.2.LMn has been developed primarly to cope with the severe corrosion conditions existing in the urea industry. Therefore, this filler has excellent resistance to corrosion in ammonium carbamate and nitric acid. Sandvik 25.22.2.2LMn also exhibits excellent resistance to intregranular corrosion. As an example, the corrosion rate in a Huey test for TIG weld metal, (5 x 48 hours in boiling 65% HNO3), is below 0.12 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				
0.8	5-9	50-140	16-25	15
1.0	5-9	70-160	16-25	15
Spray-arc welding				
1.0	6-12	150-230	26-31	22
1.2	5-9	170-280	27-32	22
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 thin 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.

Submerged-arc welding
Electrode positive is suggested for joint welding to give good penetration.

Wire diameter, mm	Current, A	Voltage, V
2.0	200-300	28-32
2.4	250-400	28-32
3.2	300-450	29-34

Recommended welding flux is Sandvik 15W or Sandvik 31S.

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.