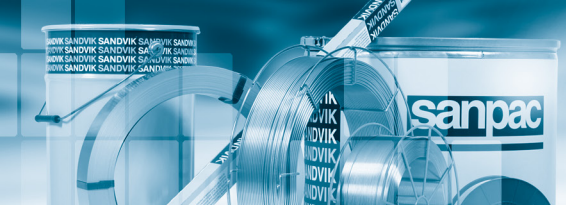

Datasheet updated 2012-08-17 14:52:39 (supersedes all previous editions)

Sandvik 22.15.3.L

(Welding wire)

Sandvik 22.15.3.L is an austenitic filler material for joining stainless steels to carbon steels or low-alloy steels such as 316L to mild steel and for overlay welding where where higher Mo content is desired in the second and third layers.

STANDARDS

- AWS ER (309LMo)
- EN number 23 12 2 L

Product standards

- EN ISO 14343
- ASME/AWS SFA5.9

CHEMICAL COMPOSITION - FILLER METAL

CHEMICAL COMPOSITION, WT%

C max	Si	Mn	P max	S max	Cr	Ni	Mo
0.025	0.4	1.5	0.025	0.015	21.5	15	2.7

CHEMICAL COMPOSITION - ALL-WELD METAL

The following data is typical for non heat treated all-weld metal made by MIG welding with a shielding gas of Ar + 2%O_2.

CHEMICAL COMPOSITION, WT%

C max	Si	Mn	P max	S max	Cr	Ni	Mo
0.025	0.4	1.6	0.025	0.015	21.5	15	2.7

MICROSTRUCTURE - ALL-WELD METAL

Austenitic matrix with a ferrite content of about 12FN according to DeLong and 11.5 FN, measured by a Magne Gage instrument.

MECHANICAL PROPERTIES - ALL-WELD METAL

Temperature	°C	20
Yield strength, $R_{P0.2}$	MPa	400
Tensile strength, R_m	MPa	600
Elongation, A	%	40
Reduction in area, Z	%	60
Impact strength, Charpy V	J	140
Hardness, Vickers	HV	180

PHYSICAL PROPERTIES - ALL-WELD METAL

Temperature °C	20	100	300	500
Thermal conductivity, W/m	14	15	17	18

Thermal expansion per °C, from 20° to 400°C	18×10^{-6}
Density, g/cm^3, at 20°C	7.9

CORROSION PROPERTIES - ALL-WELD METAL

Sandvik 22.15.3.L is normally used for joints between non alloyed or low alloyed steels and stainless steels, where resistance to corrosion is of secondary importance.

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.

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

Wire diameter, mm	Current, A	Voltage, V
2.0	200-350	28-32
2.4	250-450	28-32
3.2	300-500	29-34
4.0	400-600	30-35

Recommended welding flux is Sandvik 15W.

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.