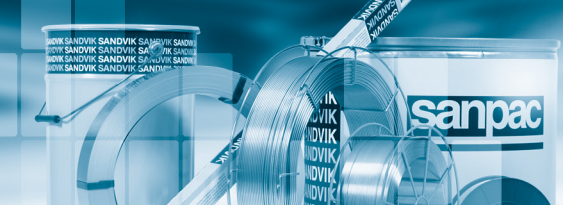

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Sandvik 19.9.LNb

(Welding strip)

Sandvik 19.9.LNb is a strip electrode used for the second layer to obtain a corrosion resistant overlay weld deposit on a transition layer of Sandvik 24.13.LNb, 24.13.L, 21.11.LNb or 22.11.L on C-, CMn- and low-alloy steels using submerged-arc welding (SAW) with the fluxes Sandvik 10SW or 10S or electroslag welding (ESW) with the fluxes Sandvik 47S or 49S the high speed flux. It gives a 347/E347 weld deposit. There are also other possible combinations and conditions.

STANDARDS

- AWS EQ347
- EN number B 19 9 Nb

Product standards
- EN ISO 14343
- ASME/AWS SFA5.9

CHEMICAL COMPOSITION - STRIP ELECTRODE

CHEMICAL COMPOSITION, WT%

C max	Si	Mn	P max	S max	Cr	Ni	Mo max	Cu max	Nb
0.02	0.4	1.8	0.02	0.02	20	10.5	0.3	0.3	0.5

Ferrite content
The ferrite content is nominally 11 FN WRC.

CHEMICAL COMPOSITION OF OVERLAY

Typical chemical compositions in the second layer obtained on C-Mn steel and low-alloy steel.

CHEMICAL COMPOSITION, WT%

	Type of overlay	C	Cr	Ni	Nb/C	FN, WRC
SAW 24.13.LNb+19.9.LNb/10SW	E347	max 0,04	19-20	9,5-10,5	8-20	5-10
SAW 24.13.LNb+19.9.LNb/10S	E347	max 0,04	18-19,5	9,5-10,5	8-20	3-8
ESW 21.11.LNb+19.9.LNb/47S	E347	max 0,03	18,5-19,5	9,5-10,5	10-30	4-9
ESW 24.13.LNb+19.9.LNb/49S	E347	max 0,04	18,5-19,5	10-11	10-30	3-8
SAW 24.13.L+19.9.LNb/10SW	E347	max 0,04	19-20	10-11	8-15	3-8
ESW 22.11.L+19.9.LNb/47S	E347	max 0,03	18,5-19,5	10-11	10-20	3-8
ESW 24.13.L+19.9.LNb/49S	E347	max 0,04	18,5-19,5	10-11	10-20	3-8

Consider the figures as examples. Parameters selected and conditions influence on the result. Please contact Sandvik for details and guidelines

MECHANICAL PROPERTIES OF OVERLAY

Passes side bend testing according to ASME Section IX.

CORROSION PROPERTIES OF OVERLAY

On par with the base metal 347. The weld overlay is resistant to intergranular corrosion in Strauss testing (ASTM A262 Practice E) also after the commonly applied post weld

heat treatments specified for C-, CMn- and low-alloyed steels.

Better corrosion resistance at elevated temperature than 304/304L.

WELDING DATA

Process/Flux	Size	Current, A	Voltage, V	Travel speed, mm/min
SAW/10SW, 10S	30 x 0.5 mm	300 - 425	28-30	80 - 160
SAW/10SW, 10S	60 x 0.5 mm	650 - 850	28-30	80 - 160
SAW/10SW, 10S	90 x 0.5 mm	975 - 1275	28-30	80 - 160
ESW/47S	60 x 0.5 mm	1100 - 1400	23 - 26	130 - 220
ESW/47S	90 x 0.5 mm	1650 - 2100	23 - 26	130 - 220
ESW/49S	60 x 0.5 mm	1600 - 2200	23 - 26	250 - 450
ESW/49S	90 x 0.5 mm	2400 - 2800	23 - 26	250 - 350

Direct current, with electrode positive is normally used.
The welding data in the table represent the operation capability of the flux. The desired properties of the overlay are obtained by proper selection of the settings within the ranges.

APPLICATIONS

Sandvik 19.9.LNb is used for weld surfacing of components in the chemical, petrochemical, nuclear industries where corrosion resistance on level with 347 is needed. Typical components are pressure vessels, heat exchangers, shafts, industrial piping etc.

It is very common in the petrochemical industry.

APPROVALS

TÜV. Contact Sandvik for information about the extent.

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.