

Stainless steel electrode

Classification

AWS A5.4-92 : E309L-16*
EN 1600-97 : E 23 12 L R 32

* Deviation: see remarks

Temperature Range

pressurized parts: -120 ... +350°C
scaling resistance: n.a.

General description

A rutile-basic all position CrNi over-alloyed buffer electrode
Developed for welding stainless steel to mild steel and for clad steel
Self releasing slag
Excellent side wall wetting, no undercut, mirror like bead appearance
High resistance to porosity
Weldable on AC and DC+ polarity
Also available in vacuum sealed Sahara ReadyPack® (SRP)

Welding positions



ISO/ASME PA/1G PB/2F PC/2G PF/3G up PE/4G PF/5G up

Current type

AC / DC electr. +

Approvals

CTL	DB	DNV	GL	LR	RMRS	TÜV
+	+	309L	4432	SS/CMn	SS/CMn	+

Chemical composition (w%), typical, all weld metal

C	Mn	Si	Cr	Ni	FN
0.020	0.8	1.0	23.0	12.5	10-20

Mechanical properties, all weld metal

	Condition	0.2% Proof strength (N/mm ²)	Tensile strength (N/mm ²)	Elongation (%)	Impact ISO-V(J)	
					+20°C	-20°C
Required: AWS A5.4-92		not required	min. 520	min. 30	not required	
EN 1600-97		min. 320	min. 510	min. 25	not required	
Typical values	AW	480	560	40	55	50

Packaging, available sizes and identification

	Diameter (mm)	2.0	2.5	3.2	4.0	5.0
	Length (mm)	300	350	350	450	450
Unit: Box	Pieces / unit (nominal)	200	125	135	85	55
	Net weight/unit (kg)	2.3	2.8	4.9	5.9	6.0
Unit: SRP	Pack Pieces / unit	60	65	50	28	22
	Net weight/unit (kg)	0.6	1.5	1.8	2.0	2.4

Identification

Imprint: 309L-16 /Limarosta 309S

Tip colour: sea green

Limarosta® 309S: rev. EN 15

Materials to be welded

Steel grades	EN 10088-1/-2	W.Nr.	ASTM/ACI A240/A312/A351	UNS
Corrosion resisting	X2 CrNiN 18-10	1.4311	(TP)304LN	S30453
Cladsteel	X2 CrNi 19-11	1.4306	(TP)304L	S30403
	X4 CrNi 18-10	1.4301	CF-3 (TP)304	J92500 S30400

- Dissimilar joints (mild and low alloyed steel to CrNi or CrNiMo stainless steel)
- Build-up welding on mild and low alloyed steel
- Bufferlayer CrNi-cladsteel

Calculation data

Sizes Diam. x length (mm)	Current range type (A)	Current	Arc time - per electrode at max. current - (s)*	Energy E(kJ)	Dep.rate H(kg/h)	Weight/ 1000 pcs. (kg)	Electrodes/ kg weldmetal B	kg Electrodes/ kg weldmetal 1/N
2.0 x 300	35 - 55	DC+	38	49	0.66	11.3	142	1.59
2.5 x 350	45 - 80	DC+	48	95	0.99	22.1	77	1.69
3.2 x 350	80 - 115	DC+	56	160	1.4	35.1	46	1.59
4.0 x 450	100 - 155	DC+	76	317	2.0	69.9	23	1.64
5.0 x 450	150 - 220	DC+	84	575	2.9	108.0	15	1.59

* stub end 35mm

Welding parameters, optimum fill passes

Welding position Diameter (mm)	PA/1G Current (A)	PB/2F	PC/2G	PF/3G up	PE/4G	PF/5G up
2.0		45	45	40	40	40
2.5	70	70	70	60	60	60
3.2	100	100	100	70	70	70
4.0	140	140	140			
5.0	180	180				

Remarks

Deviations: chemical composition:

Si = max. 1.2%

AWS: Si = max. 0.90%