

## Classifications

EN ISO 3581-A	EN ISO 3581-B	AWS A5.4
E 23 12 L R 3 2	ES309L-17	E309L-17

## Characteristics and typical fields of application

Rutile electrode of type E 23 12 L / 309L providing increased delta ferrite contents (FN ~17) in the weld deposit for safe and crack resistant dissimilar joint welds and surfacing. BÖHLER FOX CN 23/12-A is noted for its superior welding characteristics and metallurgy. It can be used on AC and DC. Other advantages include high current carrying capacity, minimum spatter formation, self releasing slag, smooth and clean weld profile, safety against formation of porosity due to the moisture resistant coating and its packaging into hermetically sealed tins. Operating temperature from -60 °C to +300 °C and for weld claddings up to +400 °C.

## Base materials

**Dissimilar joint welds** of and between high-strength, mild steels and low-alloyed QT-steels, stainless, ferritic Cr- and austenitic Cr-Ni- steels, manganese steels

**Surfacing:** for the first layer of corrosion resistant weld surfacing on ferritic- perlitic steels in boiler and pressure vessel parts up to fine-grained steel S500N, as well as of high temperature steels like 22NiMoCr4-7 acc. SEW- Werkstoffblatt 365, 366, 20MnMoNi5-5 and G18NiMoCr3-7

## Typical analysis of all-weld metal (wt.-%)

	C	Si	Mn	Cr	Ni
wt-%	0.02	0.7	0.8	23.2	12.5

## Mechanical properties of all-weld metal

Condition	Yield strength R <sub>e</sub>	Tensile strength R <sub>m</sub>	Elongation A (L <sub>0</sub> =5d <sub>0</sub> )	Impact work ISO-V KV J	
	MPa	MPa	%	+20 °C	-60 °C
u	<b>460</b> (≥ 320)	<b>570</b> (≥ 520)	<b>40</b> (≥ 25)	<b>55</b>	≥ 32

u untreated, as welded

## Operating data

	Polarity:	Redrying if necessary:	Electrode identification:	ø (mm)	L mm	Amps A
	DC (+)	250 – 300 °C, min. 2 h	FOX CN 23/12-A 309L- 17 E 23 12 L R	2.5	350	60 – 80
	AC			3.2	350	80 – 110
				4.0	350	110 – 140
				5.0	450	140 – 180

Preheating and interpass temperature as required by the base metal.

## Approvals

TÜV (1771.), DB (30.014.08), ABS (E309L-17), BV (UP), DNV (NV 309 L), GL (4332), LR (DXV u. O, CMnSS), VUZ, SEPROZ, CE, CWB, NAKS (ø 3.2 mm; ø 4.0 mm)