

**Classifications**

<b>EN ISO 3581-A</b>	<b>AWS A5.4 / SFA-5.4</b>
E 23 12 L R 3 2	E309L-17

**Characteristics and typical fields of application**

Rutile coated electrode of E 23 12 L / E309L-17 type primarily intended for surfacing low-alloyed steels and for dissimilar welds between mild steel and stainless steels. Can also be used for welding some high temperature steels, such as 1.4833 / ASTM 309S. Results in an austenitic all-weld metal microstructure with ~15% ferrite. The corrosion resistance is superior to E 19 9 L / E308L fillers. When used for overlay welding on mild steel a corrosion resistance equivalent to that of 1.4301 / 304 is obtained already in the first layer. Suitable for service temperatures from -60°C to 300°C and for weld claddings up to 400°C. The scaling temperature is approximately 1000°C in air.

**Base materials**

Primarily used for surfacing (buffer layer) unalloyed or low-alloyed steels and when joining mainly non-molybdenum-alloyed stainless steels to carbon steels, austenitic and heat resistant steels, etc.

**Typical analysis**


	C	Si	Mn	Cr	Ni	FN
wt.-%	0.02	0.7	0.8	23.1	12.7	12 – 17

**Mechanical properties of all-weld metal - typical values (min. values)**

Condition	Yield strength	Tensile strength	Elongation A	Impact energy ISO-V KV J		Hardness
	$R_{p0.2}$	$R_m$	( $L_0=5d_0$ )	20°C	-60°C	
u	450 (≥ 320)	570 (≥ 520)	40 (≥ 30)	55	45 (≥ 32)	230

u untreated, as-welded

**Operating data**

	Polarity	DC+ / AC	Dimension mm	Current A
	Electrode identification	309L-17/309L	2.0 × 300	40 – 60
			2.5 × 300	60 – 80
			3.2 × 350	80 – 110
			4.0 × 450	110 – 140
			5.0 × 450	140 – 180

Preheating and interpass temperature as required by the base metal.

Suggested heat input is max. 2.0 kJ/mm.

Re-drying at 250 – 300°C for min. 2 h if necessary.

Metal recovery 112 – 119%.

Post-weld heat treatment generally not needed. For constructions that include low-alloyed steels in mixed joints, stress relieving may be advisable. Always consult the supplier of the parent metal or seek other expert advice to ensure that the correct heat treatment process is carried out.

**Approvals**

TÜV (03023), DB (30.014.19), DNV, CWB, CE