

LINCOLN® RED MAX® 309LSI

Stainless ▪ AWS ER309Si, ER309LSi

Key Features

- Engineered surface treatment for weldability control in semiautomatic applications
- High silicon level for increased puddle fluidity and toe wetting
- Q2 Lot® - Certificate showing actual wire composition and calculated ferrite number (FN) available online

Welding Positions

All

Shielding Gas

Short Circuiting Transfer:

90% He/ 7.5% Ar/ 2.5% CO₂

Axial Spray Transfer:

98% Argon/ Balance O₂ or CO₂

Conformances

AWS A5: ER309LSi, ER309Si

ABS: ER309LSi, ER309Si

ABS: SS309LSi, SS309Si

Typical Applications

- Semiautomatic welding
- Designed for joining stainless steel to mild steel or low alloy steel

DIAMETERS / PACKAGING

Diameter in (mm)	10 lb (4.5kg) Steel Spool	33 lb (15 kg) Steel Spool	500 lb (227 kg) Accu-Trak® Drum	500 lb (227 kg) Accu-Pak® Box
0.035 (0.9)	ED037347	ED036763	ED036971	ED036927
0.045 (1.1)	ED037348	ED036764	ED036972	ED036928
1/16 (1.6)		ED036765	ED036973	ED036929

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.9

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Ferrite Number
Requirements - AWS ER309Si, ER309LSi	Not Specified			
Typical Results⁽³⁾ - As-Welded	450 (65)	595 (86)	42	11

WIRE COMPOSITION⁽¹⁾ – As Required per AWS A5.9

	%C ⁽⁴⁾	%Cr	%Ni	%Mo	%Mn
Requirements - AWS ER309Si, ER309LSi	0.03 max	23.0-25.0	12.0- 14.0	0.75 max	1.0-2.5
Typical Results⁽³⁾ - As-Welded	0.03	23.5	13.7	0.28	2.0
	%Si	%P	%S	%N ⁽⁵⁾	%Cu
Requirements - AWS ER309Si, ER309LSi	0.65-1.00	0.03 max	0.03 max	Not Specified	0.75 max
Typical Results⁽³⁾ - As-Welded	0.89	0.02	0.01	0.06	0.22

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer. ⁽⁴⁾AWS Requirement for ER309Si is 0.12% max carbon. ⁽⁵⁾Included in 0.50% max. for other elements not specified.

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD ⁽⁶⁾ mm (in)	Wire Feed Speed m/min (in/min)	Voltage (Volts)	Approx. Current (Amps)	Deposition Rate kg/hr (lb/hr)
<i>Short Circuit Transfer</i>					
0.035 in (0.9 mm), DC+ 90% He / 7.5% Ar / 2.5% CO ₂	13 (1/2)	3.0 (120)	20-21	60	0.9 (2.0)
	13 (1/2)	4.6 (180)	21-23	90	1.4 (3.0)
	13 (1/2)	5.8 (230)	22-24	105	1.8 (3.9)
	13 (1/2)	7.6 (300)	23-25	130	2.3 (5.0)
	13 (1/2)	8.9 (350)	24-26	145	2.7 (5.9)
	13 (1/2)	10.2 (400)	25-27	155	3.1 (6.7)
0.045 in (1.1 mm), DC+ 90% He / 7.5% Ar / 2.5% CO ₂	13 (1/2)	2.5 (100)	20-21	80	1.1 (2.8)
	13 (1/2)	3.2 (125)	21-22	110	1.5 (3.5)
	13 (1/2)	3.8 (150)	21-23	130	1.7 (4.2)
	13 (1/2)	4.4 (175)	22-24	145	2.0 (4.8)
	13 (1/2)	5.6 (220)	23-25	170	2.6 (6.1)
	13 (1/2)	6.4 (250)	24-26	180	2.9 (6.9)
<i>Axial Spray Transfer</i>					
0.035 in (0.9 mm), DC+ 98% Ar / 2% O ₂	13 (1/2)	10.2 (400)	23-24	190	3.1 (6.7)
	13 (1/2)	10.8 (425)	24-25	200	3.3 (7.1)
	13 (1/2)	11.4 (450)	24-25	210	3.5 (7.5)
	13 (1/2)	12.1 (475)	25-26	220	3.7 (8.0)
0.045 in (1.1 mm), DC+ 98% Ar / 2% O ₂	13 (1/2)	6.1 (240)	22-24	195	2.8 (6.6)
	13 (1/2)	6.6 (260)	23-25	215	3.0 (7.2)
	13 (1/2)	7.6 (300)	24-26	245	3.5 (8.3)
	13 (1/2)	8.3 (325)	25-27	250	3.8 (9.0)
	13 (1/2)	9.1 (360)	25-27	275	4.2 (10.0)

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer. ⁽⁴⁾AWS Requirement for ER309Si is 0.12% max carbon. ⁽⁵⁾Included in 0.50% max. for other elements not specified.
⁽⁶⁾To estimate ESO, subtract 1/8 in (3.2 mm) from CTWD.

Safety Data Sheets (SDS) and Certificates of Conformance are available on our website at www.lincolnelectric.com

FUMES AND GASES can be hazardous to your health.

- Fumes from the normal use of this product contain significant quantities of potentially hazardous compounds. See consumable product label/insert.
- Keep your head out of the fumes.
- Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area.
- An approved respirator should be used unless exposure assessments are below applicable exposure limits.

TEST RESULTS

Test results for mechanical properties, deposit or electrode composition and diffusible hydrogen levels were obtained from a weld produced and tested according to prescribed standards, and should not be assumed to be the expected results in a particular application or weldment. Actual results will vary depending on many factors, including, but not limited to, weld procedure, plate chemistry and temperature, weldment design and fabrication methods. Users are cautioned to confirm by qualification testing, or other appropriate means, the suitability of any welding consumable and procedure before use in the intended application.

CUSTOMER ASSISTANCE POLICY

The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

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