

LINCOLN® RED MAX®

Premium stainless wire for semiautomatic MIG applications



Premium Quality, Excellent Weldability

Weldability + Control

- Engineered surface treatment
 - Keeps wire feeding and placement consistent
 - Clean fluid weld puddle
- Designed for an improved semiautomatic welding experience
 - Softer arc
 - Wide operating voltage range

Weld Appearance

- Excellent wetting
- Consistent arc start
- Lower spatter versus leading competition



Red Max

Competitor

Lincoln Red Max provides better wetting and less spatter than the leading competition.

Less Down Time

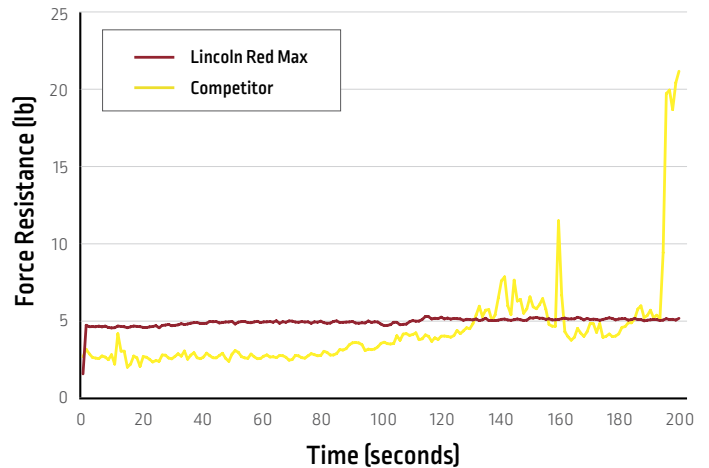
- Clean weld deposit – Minimal brushing required
- Surface treatment extends life of gun liners and contact tips
- Consistent wire feeding - Minimizes repair and rework

Consistent Feed Force Results

Severe Condition* Feeding Force Test

*25 ft cable with one and half tight loop @ 410 in/min wire feed

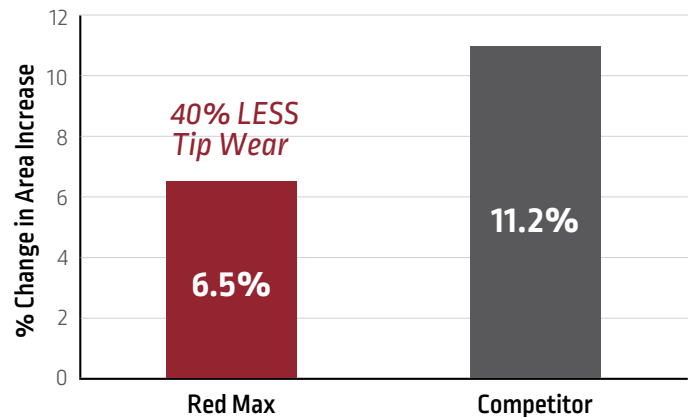
Flat line indicates consistent force resulting in arc stability; competitive product exhibits inconsistent feed force that can cause welding defects.



Tip Wear

Average % Area Increase of Four 2-hour Tests

Over the 8 hour test, results indicated Lincoln Red Max wire wore out the contact tip 6.5%; while Competitor X wire eroded 11.2%.



DIAMETERS / PACKAGING

	Diameter in (mm)	33 lb (15 kg) Steel Spool	500 lb (227 kg) Accu-Trak® Drum	500 lb (227 kg) Accu-Pak® Box
RED MAX 308LSi	0.035 (0.9)	ED036760	ED036895	ED036924
	0.045 (1.1)	ED036761	ED036896	ED036925
	1/16 (1.6)	ED036762	ED036897	ED036926
RED MAX 309LSi	0.035 (0.9)	ED036763	ED036971	ED036927
	0.045 (1.1)	ED036764	ED036972	ED036928
	1/16 (1.6)	ED036765	ED036973	ED036929
RED MAX 316LSi	0.035 (0.9)	ED036766	ED036974	ED036930
	0.045 (1.1)	ED036767	ED036975	ED036931
	1/16 (1.6)	ED036768	ED036976	ED036932
RED MAX 307_MOD	0.035 (0.9)	ED036933	ED036936	ED036937
	0.045 (1.1)	ED036934	ED036938	ED036939
	1/16 (1.6)	ED036935	ED036940	ED036941



WIRE COMPOSITION⁽¹⁾

		%C ⁽⁴⁾		%Cr	%Ni	%Mo	%Mn	
		Requirements - AWS ER308Si, ER308LSi	0.03 max	19.5-22.0	9.0-11.0	0.75 max	1.0-2.5	
RED MAX 308LSi	Test Results ⁽²⁾ - As-Welded	0.01	19.9	10.0	0.16	2.1		
		%Si	%P	%S	%N ⁽⁷⁾	%Cu		
	Requirements - AWS ER308Si, ER308LSi	0.65-1.00	0.03 max	0.03 max	Not Specified	0.75 max		
	Test Results ⁽²⁾ - As-Welded	0.88	0.02	0.01	0.05	0.17		
		%C ⁽⁵⁾		%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	
RED MAX 309LSi	Test Results ⁽²⁾ - As-Welded	0.03	23.5	13.7	0.28	2.0		
		%Si	%P	%S	%N ⁽⁷⁾	%Cu		
	Requirements - AWS ER309Si, ER309LSi	0.65-1.00	0.03 max	0.03 max	Not Specified	0.75 max		
	Test Results ⁽²⁾ - As-Welded	0.89	0.02	0.01	0.06	0.22		
		%C ⁽⁶⁾		%Cr	%Ni	%Mo	%Mn	
		Requirements - AWS ER316Si, ER316LSi	0.03 max	18.0-20.0	11.0-14.0	2.0-3.0	1.0-2.5	
RED MAX 316LSi	Test Results ⁽²⁾ - As-Welded	0.02	18.9	11.8	2.2	2.1		
		%Si	%P	%S	%N ⁽⁷⁾	%Cu		
	Requirements - AWS ER316Si, ER316LSi	0.65-1.00	0.03 max	0.03 max	Not Specified	0.75 max		
	Test Results ⁽²⁾ - As-Welded	0.81	0.02	0.01	0.05	0.23		
RED MAX 307_MOD	Test Results ⁽²⁾ - As-Welded	%C	%Mn	%Si	%Cr	%Ni	%S	%P
		0.08	7.1	0.80	18.8	8.6	0.009	0.023

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer. ⁽⁴⁾AWS Requirement for ER308Si is 0.08% max carbon. ⁽⁵⁾AWS Requirement for ER309Si is 0.12% max carbon.

⁽⁶⁾AWS Requirement for ER316Si is 0.08% max carbon. ⁽⁷⁾Included in 0.50% max. for other elements not specified. ⁽⁸⁾To estimate ESO, subtract 1/8 in [3.2 mm] from CTWD.

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

		Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Ferrite Number
RED MAX 308LSi	Requirements - AWS ER308Si, ER308LSi	Not Specified			
	Test Results ⁽³⁾ - As-Welded	455 (66)	635 (92)	46	13
RED MAX 309LSi	Requirements - AWS ER309Si, ER309LSi	Not Specified			
	Test Results ⁽³⁾ - As-Welded	450 (65)	595 (86)	42	14
RED MAX 316LSi	Requirements - AWS ER316Si, ER316LSi	Not Specified			
	Test Results ⁽³⁾ - As-Welded	405 (59)	560 (81)	40	10
RED MAX 307_MOD	Test Results ⁽³⁾ - As-Welded	434 (63)	627 (91)	38	-

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD ⁽⁸⁾ 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 / 75% 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 / 75% 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)	
0.045 in (1.1 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)	
<i>Axial Spray Transfer</i>						

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer. ⁽⁴⁾AWS Requirement for ER308Si is 0.08% max carbon. ⁽⁵⁾AWS Requirement for ER309Si is 0.12% max carbon. ⁽⁶⁾AWS Requirement for ER316Si is 0.08% max carbon. ⁽⁷⁾Included in 0.50% max. for other elements not specified. ⁽⁸⁾To estimate ESO, subtract 1/8 in [3.2 mm] from CTWD.

For additional wire diameters, grades and packaging, contact Lincoln Electric.

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.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.