

# LINCOLNWELD® 316/316L

Stainless ▪ AWS ER316, ER316L

## KEY FEATURES

- Designed to be used primarily with basic fluxes that recover nearly all of the wire chromium in the deposit
- Q2 Lot® - Certificate showing actual wire composition and calculated ferrite number (FN) available online
- Low carbon content recommended where there is a risk of intergranular corrosion
- The 2-3% molybdenum improves pitting corrosion resistance of the weld deposit
- Low carbon content reduces the possibility of carbide precipitation and intergranular corrosion

## RECOMMENDED FLUXES

Lincolnweld® 801, 802, 880, 880M, 882, P2007, ST-100

## CONFORMANCES

<b>AWS A5.9/A5.9M:</b>	ER316, ER316L
<b>ASME SFA-A5.9:</b>	ER316, ER316L
<b>ABS:</b>	ER316L
<b>CWB/CSA W48-06:</b>	SS316L
<b>EN ISO 14343-B:</b>	(19 12 3 L)
<b>ISO 14343:2009:</b>	ER316, ER316L
<b>MIL-E-19933E (SH)</b>	MIL 316L

## TYPICAL APPLICATIONS

- ASTM A743, A744 Types CF-8 and CF-3
- Developed for welding type 316 and 316L stainless steels
- For joining the more common austenitic stainless steel grades referred to as "18-8" steels
- For very good corrosion resistance in acid environments
- Power Generation
- Chemical and Petrochemical Processing

## DIAMETERS / PACKAGING

Diameter in (mm)	55 lb (25 kg) Steel Coil	500 lb (227 kg) Speed Feed® Drum	750 lb (340 kg) Speed Feed® Drum	600 lb (272 kg) Speed Feed® Reel
1/16 (1.6)	ED035180			
5/64 (2.0)	ED035174			
3/32 (2.4)	ED035177	ED036452	ED036603	ED034479
1/8 (3.2)	ED035178	ED036453	ED036605	
5/32 (4.0)	ED035179	ED036454*		

\*Available upon request

## MECHANICAL PROPERTIES<sup>(1)</sup> – As Required per AWS A5.9/A5.9M

	Yield Strength <sup>(2)</sup> MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Ferrite Number
<b>Test Results<sup>(3,5)</sup> – As-Welded</b>	380 (55)	550 (80)	42	9

<sup>(1)</sup>Typical all weld metal. <sup>(2)</sup>Measured with 0.2% offset. <sup>(3)</sup>See test results disclaimer <sup>(4)</sup>AWS Requirement for ER316 is 0.08% max. carbon.

<sup>(5)</sup>Results shown correspond with the recommended Lincolnweld® and Blue Max® fluxes listed above, but not required per AWS A5.9-93.

**WIRE COMPOSITION<sup>(1)</sup> – As Required per AWS A5.9/A5.9M**

	%C <sup>(4)</sup>	%Cr	%Ni	%Mo	%Mn	%Si
<b>Requirements</b> - AWS ER316, ER316L	0.03 max	18.0 - 20.0	11.0 - 14.0	2.0 - 3.0	1.0 - 2.5	0.30 - 0.65
<b>Typical Results<sup>(3)</sup></b>						
As-Welded	0.02	19.0	11.9	2.2	1.8	0.50
All Weld Metal Composition <sup>(5)</sup>	0.02	17.8 - 18.4	11.9	2.2	1.6 - 2.0	0.50 - 0.80

**TYPICAL OPERATING PROCEDURES**

Diameter - in (mm)	Wire Feed Speed - m/min (in/min)	Voltage (volts)	Current (amps)
5/64 (2.0)	2.0-6.1 (80-240)	24-30	190-500
3/32 (2.4)	1.5-5.3 (60-210)	26-32	195-575
1/8 (3.2)	0.9-2.8 (35-110)	28-34	200-700
5/32 (4.0)	0.8-1.9 (30-75)	30-36	320-775

<sup>(1)</sup>Typical all weld metal. <sup>(2)</sup>Measured with 0.2% offset. <sup>(3)</sup>See test results disclaimer <sup>(4)</sup>AWS Requirement for ER316 is 0.08% max. carbon. <sup>(5)</sup>Results shown correspond with the recommended Lincolnweld® and Blue Max® fluxes listed above, but not required per AWS A5.9-93.

**IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED**

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m<sup>3</sup> maximum exposure guideline for general welding fume.

BEFORE USE, READ AND UNDERSTAND THE SAFETY DATA SHEET (SDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER.

*Material Safety Data Sheets (MSDS) and Certificates of Conformance are available on our website at [www.lincolnelectric.com](http://www.lincolnelectric.com)*

**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](http://www.lincolnelectric.com) for any updated information.

