

# UltraCore® STAINLESS FLUX-CORED WIRES

Downhand and All Position Stainless Flux-Cored Wires



## PERFORMANCE PERFECTED™

UltraCore® stainless steel flux-cored, gas-shielded wires are preferred by welders for the polished appearance of the weld deposits, ease of welding out-of-position and smooth wire feeding.

### IMPROVED WELDABILITY

- Polished weld bead appearance
- Easy out-of-position welding
- Smooth arc with minimal spatter
- Wide operating range

### UPGRADED PACKAGING

- Precision layer wound
- Steady spool payoff
- Consistent wire feeding
- Vacuum-sealed foil bag
- Moisture-resistant package
- Package size increased from 25 lb spool to 33 lb spool
- Less changover
- More arc time

### Processes

FCAW-G

### Positions

All

### Shielding Gas

100% CO<sub>2</sub>  
75% Ar / 25% CO<sub>2</sub>

### AWS Classifications

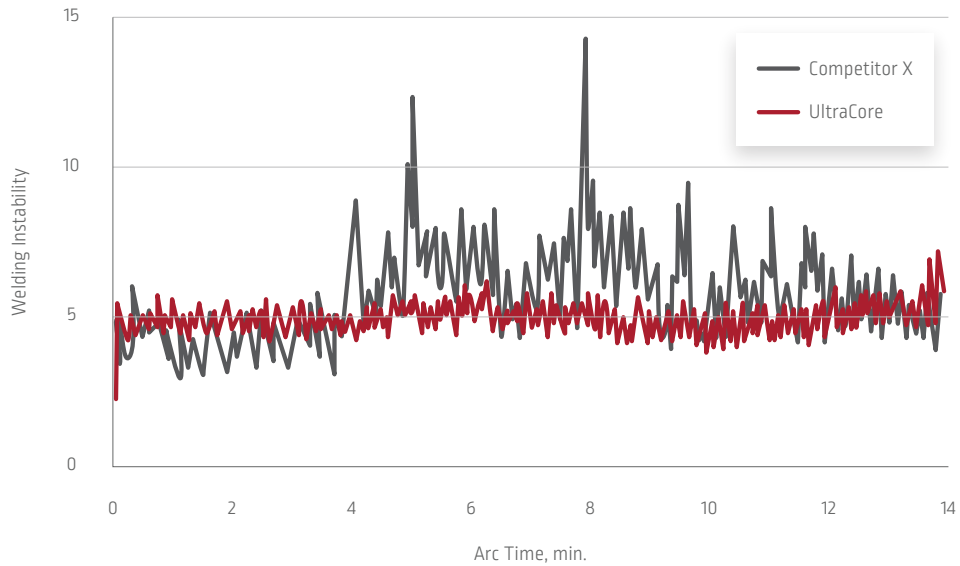
Dependent on Electrode

### Product Names

UltraCore 308L  
UltraCore 309L  
UltraCore 316L  
UltraCore 308L P  
UltraCore 309L P  
UltraCore 316L P

## ULTRACORE STABILITY THROUGHOUT THE WELD CYCLE

UltraCore wires exhibit significantly greater arc stability over the length of the weld.



## MINIMAL DISCOLORATION

- Welds below are in the 3F (Vertical Up) position, with no post weld cleaning (as welded)
- UltraCore weld beads have minimal discoloration compared to the competition



UltraCore 309L P



Competitor X

## DIAMETERS / PACKAGING

Product Name	Diameter in (mm)	10 lb (4.5 kg Plastic Spool (Vacuum Sealed Foil Bag)	Package 33 lb (14.9 kg) Plastic Spool (Vacuum Sealed Foil Bag)
ULTRACORE 308L	0.045 [1.1]	ED037216	ED037118
	1/16 [1.6]		ED037119
ULTRACORE 308LP	0.045 [1.1]	ED037217	ED037125
	1/16 [1.6]		ED037126
ULTRACORE 309L	0.045 [1.1]	ED037218	ED037120
	1/16 [1.6]		ED037121
ULTRACORE 309LP	0.045 [1.1]	ED037219	ED037127
	1/16 [1.6]		ED037128
ULTRACORE 316L	0.045 [1.1]	ED037220	ED037122
	1/16 [1.6]		ED037123
ULTRACORE 316LP	0.045 [1.1]	ED037221	ED037129
	1/16 [1.6]		ED037130

## MECHANICAL PROPERTIES<sup>(1)</sup> –As Required per AWS A5.22/A5.22M: 2012

Product Name	Requirements / Typical Results	Yield Strength <sup>(2)</sup> MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Ferrite Number
ULTRACORE 308L	<b>Requirements</b> - AWS E308LT0-1, E308LT0-4 AWS E308T0-1, E308T0-4	Not Specified Not Specified	520 (75) min 550 (80) min	35 min	Not Specified Not Specified
	<b>Typical Results<sup>(3)</sup></b> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	386 (56) 393 (57)	566 (82) 572 (83)	40 39	7-11 8-12
ULTRACORE 308LP	<b>Requirements</b> - AWS E308LT1-1, E308LT1-4 AWS E308T1-1, E308T1-4	Not Specified Not Specified	520 (75) min 550 (80) min	35 min	Not Specified Not Specified
	<b>Typical Results<sup>(3)</sup></b> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	386 (56) 393 (57)	566 (82) 572 (83)	40 39	7-11 8-12
ULTRACORE 309L	<b>Requirements</b> - AWS E309LT0-1, E309LT0-4 AWS E309T0-1, E309T0-4	Not Specified Not Specified	520 (75) min 550 (80) min	30 min	Not Specified Not Specified
	<b>Typical Results<sup>(3)</sup></b> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	434 (63) 450 (65)	565 (82) 593 (86)	33 33	* *
ULTRACORE 309LP	<b>Requirements</b> - AWS E309LT1-1, E309LT1-4 AWS E309T1-1, E309T1-4	Not Specified Not Specified	520 (75) min 550 (80) min	30 min	Not Specified Not Specified
	<b>Typical Results<sup>(3)</sup></b> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	434 (63) 450 (65)	565 (82) 593 (86)	33 33	* *
ULTRACORE 316L	<b>Requirements</b> - AWS E316LT0-1, E316LT0-4 AWS E316T0-1, E316T0-4	Not Specified Not Specified	520 (75) min 550 (80) min	30 min	Not Specified Not Specified
	<b>Typical Results<sup>(3)</sup></b> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	414 (60) 421 (65)	552 (80) 565 (82)	34 34	6-8 8-11
ULTRACORE 316LP	<b>Requirements</b> - AWS E316LT1-1, E316LT1-4 AWS E316T1-1, E316T1-4	Not Specified Not Specified	520 (75) min 550 (80) min	30 min	Not Specified Not Specified
	<b>Typical Results<sup>(3)</sup></b> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	414 (60) 421 (65)	552 (80) 565 (82)	34 34	6-8 8-11

<sup>(1)</sup> Typical all weld metal, DC+.

<sup>(2)</sup> Measured with 0.2% offset.

<sup>(3)</sup> See test results disclaimer

**DEPOSIT COMPOSITION<sup>(1)</sup> – As Required per AWS A5.22/A5.22M:2012**

Product Name	Requirements / Typical Results	%C <sup>(4)</sup>	%Mn	%Si	%S	%P
ULTRACORE 308L	Requirements - AWS E308LT0-1 & E308LT0-4	0.04 max	0.5-2.5	1.0 max	0.03 max	0.04 max
	Typical Results <sup>(3)</sup> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	≤ 0.03 ≤ 0.03	1.2-1.3 1.4-1.5	0.6-0.7 0.7-0.8	≤ 0.01 ≤ 0.01	≤ 0.02 ≤ 0.02
		%Ni	%Cr	%Mo	%Cu	%Bi
	Requirements - AWS E308LT0-1 & E308LT0-4	9.0-11.0	18.0-21.0	0.75 max	0.75 max	-
ULTRACORE 308L P	Requirements - AWS E308LT1-1 & E308LT1-4	0.04 max	0.5-2.5	1.0 max	0.03 max	0.04 max
	Typical Results <sup>(3)</sup> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	≤ 0.03 ≤ 0.03	1.2-1.3 1.4-1.5	0.6-0.7 0.7-0.8	≤ 0.01 ≤ 0.01	≤ 0.02 ≤ 0.02
		%Ni	%Cr	%Mo	%Cu	%Bi
	Requirements - AWS E308LT1-1 & E308LT1-4	9.0-11.0	18.0-21.0	0.75 max	0.75 max	-
ULTRACORE 309L	Requirements - AWS E309LT0-1 & E309LT0-4	0.04 max	0.5-2.5	1.0 max	0.03 max	0.04 max
	Typical Results <sup>(3)</sup> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	≤ 0.03 ≤ 0.03	1.0 1.0	0.8 0.9	≤ 0.01 ≤ 0.01	≤ 0.02 ≤ 0.02
		%Ni	%Cr	%Mo	%Cu	%Bi
	Requirements - AWS E309LT0-1 & E309LT0-4	12.0-14.0	22.0-25.0	0.75 max	0.75 max	-
ULTRACORE 309L P	Requirements - AWS E309LT1-1 & E309LT1-4	0.04 max	0.5-2.5	1.0 max	0.03 max	0.04 max
	Typical Results <sup>(3)</sup> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	≤ 0.03 ≤ 0.03	1.0 1.0	0.8 0.9	≤ 0.01 ≤ 0.01	≤ 0.02 ≤ 0.02
		%Ni	%Cr	%Mo	%Cu	%Bi
	Requirements - AWS E309LT1-1 & E309LT1-4	12.0-14.0	22.0-25.0	0.75 max	0.75 max	-
ULTRACORE 316L	Requirements - AWS E316LT0-1 & E316LT0-4	0.04 max	0.5-2.5	1.0 max	0.03 max	0.04 max
	Typical Results <sup>(3)</sup> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	≤ 0.03 ≤ 0.03	1.0 1.1	0.6 0.7	≤ 0.01 ≤ 0.01	≤ 0.02 ≤ 0.02
		%Ni	%Cr	%Mo	%Cu	%Bi
	Requirements - AWS E316LT0-1 & E316LT0-4	11.0-14.0	17.0-20.0	2.0-3.0	0.75 max	-
ULTRACORE 316L P	Requirements - AWS E316LT1-1 & E316LT1-4	0.04 max	0.5-2.5	1.0 max	0.03 max	0.04 max
	Typical Results <sup>(3)</sup> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	≤ 0.03 ≤ 0.03	1.0 1.1	0.6 0.7	≤ 0.01 ≤ 0.01	≤ 0.02 ≤ 0.02
		%Ni	%Cr	%Mo	%Cu	%Bi
	Requirements - AWS E316LT1-1 & E316LT1-4	11.0-14.0	17.0-20.0	2.0-3.0	0.75 max	-
ULTRACORE 316L P	Requirements - AWS E316LT1-1 & E316LT1-4	0.04 max	0.5-2.5	1.0 max	0.03 max	0.04 max
	Typical Results <sup>(3)</sup> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	≤ 0.03 ≤ 0.03	1.0 1.1	0.6 0.7	≤ 0.01 ≤ 0.01	≤ 0.02 ≤ 0.02
		%Ni	%Cr	%Mo	%Cu	%Bi
	Requirements - AWS E316LT1-1 & E316LT1-4	11.0-14.0	17.0-20.0	2.0-3.0	0.75 max	-
ULTRACORE 316L P	Requirements - AWS E316LT1-1 & E316LT1-4	0.04 max	0.5-2.5	1.0 max	0.03 max	0.04 max
	Typical Results <sup>(3)</sup> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	≤ 0.03 ≤ 0.03	1.0 1.1	0.6 0.7	≤ 0.01 ≤ 0.01	≤ 0.02 ≤ 0.02
		%Ni	%Cr	%Mo	%Cu	%Bi
	Requirements - AWS E316LT1-1 & E316LT1-4	11.0-14.0	17.0-20.0	2.0-3.0	0.75 max	-
ULTRACORE 316L P	Requirements - AWS E316LT1-1 & E316LT1-4	0.04 max	0.5-2.5	1.0 max	0.03 max	0.04 max
	Typical Results <sup>(3)</sup> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	≤ 0.03 ≤ 0.03	1.0 1.1	0.6 0.7	≤ 0.01 ≤ 0.01	≤ 0.02 ≤ 0.02
		%Ni	%Cr	%Mo	%Cu	%Bi
	Requirements - AWS E316LT1-1 & E316LT1-4	11.0-14.0	17.0-20.0	2.0-3.0	0.75 max	-
ULTRACORE 316L P	Requirements - AWS E316LT1-1 & E316LT1-4	0.04 max	0.5-2.5	1.0 max	0.03 max	0.04 max
	Typical Results <sup>(3)</sup> - As-Welded with 100% CO <sub>2</sub> As-Welded with 75% Ar/25% CO <sub>2</sub>	≤ 0.03 ≤ 0.03	1.0 1.1	0.6 0.7	≤ 0.01 ≤ 0.01	≤ 0.02 ≤ 0.02
		%Ni	%Cr	%Mo	%Cu	%Bi
	Requirements - AWS E316LT1-1 & E316LT1-4	11.0-14.0	17.0-20.0	2.0-3.0	0.75 max	-

<sup>(1)</sup> Typical all weld metal, DC+.

<sup>(3)</sup> See test results disclaimer

<sup>(4)</sup> Requirement for E316T1-1 and E316T1-4 is 0.08% max. carbon.

## TYPICAL OPERATING PROCEDURES

Product Name	Diameter, Polarity Shielding Gas	CTWD <sup>(5)</sup> mm (in)	Wire Feed Speed Voltage m/min (in/min)	Voltage (Volts)	Approx. Current (Amps)	Melt-Off Rate kg/hr (lb/hr)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
ULTRACORE 308L	0.045 in (1.1 mm), DC+ 75% Ar/25% CO <sub>2</sub>	19 (3/4)	5.3 (210)	22-24	140	2.1 (4.6)	1.8 (4.0)	86
		19 (3/4)	8.9 (350)	24-26	185	3.6 (8.0)	3.1 (6.9)	86
		19 (3/4)	11.4 (450)	26-28	225	4.7 (10.4)	4.0 (8.8)	84
	1/16 in (1.6 mm), DC+ 75% Ar/25% CO <sub>2</sub>	25 (1)	3.6 (140)	25-29	155	2.8 (6.2)	2.6 (5.2)	89.6
		25 (1)	6.4 (250)	27-31	250	5.0 (11.0)	4.2 (9.2)	89.3
		25 (1)	8.1 (320)	28-32	285	6.0 (13.2)	5.3 (11.7)	88.6
ULTRACORE 308LP	0.045 in (1.1 mm), DC+ 75% Ar/25% CO <sub>2</sub>	19 (3/4)	5.1 (200)	22-24	130	2.0 (4.3)	1.5 (3.3)	76.7
		19 (3/4)	8.4 (330)	24-26	180	3.3 (7.2)	2.6 (5.7)	79.1
		19 (3/4)	11.2 (440)	26-28	220	4.3 (9.5)	3.5 (7.8)	82.1
	1/16 in (1.6 mm), DC+ 75% Ar/25% CO <sub>2</sub>	25 (1)	3.6 (140)	24-26	160	2.5 (5.6)	2.2 (4.8)	85.7
		25 (1)	5.0 (195)	24-26	200	3.5 (7.8)	3.0 (6.7)	85.8
		25 (1)	6.4 (250)	25-27	220	4.6 (10.1)	3.9 (8.6)	85.6
ULTRACORE 309L	0.045 in (1.1 mm), DC+ 75% Ar/25% CO <sub>2</sub>	19 (3/4)	5.3 (210)	22-24	140	2.1 (4.6)	1.9 (4.2)	91.3
		19 (3/4)	8.9 (350)	24-26	185	3.9 (8.7)	3.4 (7.5)	86.2
		19 (3/4)	11.4 (450)	26-28	225	4.7 (10.3)	4.4 (9.6)	93.2
	1/16 in (1.6 mm), DC+ 75% Ar/25% CO <sub>2</sub>	25 (1)	3.6 (140)	24-25	165	2.7 (5.9)	2.3 (5.0)	84.7
		25 (1)	6.4 (250)	25-27	235	4.8 (10.6)	4.2 (9.3)	87.7
		25 (1)	8.1 (320)	26-28	290	6.1 (13.5)	5.4 (12)	88.8
ULTRACORE 309LP	0.045 in (1.1 mm), DC+ 75% Ar/25% CO <sub>2</sub>	19 (3/4)	5.1 (200)	22-24	130	2.1 (4.6)	1.7 (3.8)	82.6
		19 (3/4)	8.4 (330)	24-26	180	3.4 (7.4)	2.8 (6.1)	82.4
		19 (3/4)	11.2 (440)	26-28	220	4.5 (10)	3.7 (8.1)	81
	1/16 in (1.6 mm), DC+ 75% Ar/25% CO <sub>2</sub>	25 (1)	3.6 (140)	22-24	150	2.5 (5.6)	2.2 (4.8)	85.7
		25 (1)	5.0 (195)	24-26	190	3.6 (7.9)	3.0 (6.7)	84.8
		25 (1)	7.1 (280)	25-27	220	5.2 (11.4)	4.4 (9.6)	84.2
ULTRACORE 316L	0.045 in (1.1 mm), DC+ 75% Ar/25% CO <sub>2</sub>	19 (3/4)	5.3 (210)	22-24	130	2.2 (4.8)	1.9 (4.1)	85.4
		19 (3/4)	8.9 (350)	24-26	175	3.7 (8.2)	3.2 (7)	85.3
		19 (3/4)	11.4 (450)	26-28	210	4.6 (10.1)	4.1 (9)	89.1
	1/16 in (1.6 mm), DC+ 75% Ar/25% CO <sub>2</sub>	25 (1)	3.6 (140)	23-25	155	2.7 (5.9)	2.3 (5.0)	84.7
		25 (1)	6.4 (250)	25-27	230	4.8 (10.6)	4.3 (9.4)	88.6
		25 (1)	8.1 (320)	26-28	280	6.2 (13.6)	5.5 (12.1)	88.9
ULTRACORE 316LP	0.045 in (1.1 mm), DC+ 75% Ar/25% CO <sub>2</sub>	19 (3/4)	5.1 (200)	22-24	130	2.0 (4.5)	1.5 (3.3)	73.3
		19 (3/4)	8.4 (330)	24-26	180	3.3 (7.3)	2.6 (5.8)	79.4
		19 (3/4)	11.2 (440)	26-28	220	4.4 (9.7)	3.6 (7.9)	81.4
	1/16 in (1.6 mm), DC+ 75% Ar/25% CO <sub>2</sub>	25 (1)	3.6 (140)	24-26	170	2.6 (5.7)	2.2 (4.8)	84.2
		25 (1)	5.0 (195)	24-26	200	3.6 (7.9)	3.0 (6.7)	84.8
		25 (1)	7.1 (280)	25-27	220	5.2 (11.4)	4.4 (9.7)	85

<sup>(5)</sup> To estimate ESO, subtract 1/4 in (6.0 mm) from CTWD.

NOTE: Increase Voltage by 2V when using 100% CO<sub>2</sub>

## **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.

For best welding results with Lincoln Electric® equipment, always use Lincoln Electric consumables. Visit [www.lincolnelectric.com](http://www.lincolnelectric.com) for more details.

### **CUSTOMER ASSISTANCE POLICY**

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